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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

SPRING 1987

Program Report

International Studies

William H. Branson

Since my last program report (Fall 1984 *NBER Reporter*), issues of competitiveness and protection, macroeconomic policy coordination, debt and stabilization in developing countries, and the structure of international financial markets have taken center stage in international economics. Members of the Program in International Studies have considered a number of these issues and are currently working in five research areas: trade and competitiveness; strategic behavior and trade; international macroeconomics; international finance; and developing country debt.

Trade and Competitiveness

Analyses of U.S. trade, 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 it began in 1978. From 1982 through 1986, much of this work was supported by a grant from the Division of Policy Research and Analysis of the National Science Foundation (NSF) to a group of NBER research associates headed by J. David Richardson and myself. We have tested a number of broad theories of trade and have studied general changes in the patterns of trade. Additional studies in this area have analyzed differential productivity growth, trends in national price levels, and the competitiveness of U.S. firms.

Research Associates Irving B. Kravis and Robert E. Lipsey, who participated in the NSF project, have shown that U.S. multinational firms operating abroad maintained their shares of world manufactured exports while the share of world exports produced in the United States declined. This finding suggests that the fall in

In This Issue

Program Report: International Studies	1
Research Summaries	
Uncertainty, Capital Market Imperfections, and Government Finance	7
Affirmative Action	9
Economic Outlook Survey	12
NBER Profiles	14
Conferences	16
Conference Calendar	20
Bureau News	22
Bureau Books	24
Current Working Papers	25

This issue of the *Reporter* highlights the Bureau's Program in International Studies. Next, R. Glenn Hubbard describes his research on the effects of government finance when there are uncertainty and market imperfections; and Jonathan S. Leonard discusses affirmative action. 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.

the U.S. share of world manufactured exports is not caused by problems inherent to U.S. firms.¹

Additional research in this area was undertaken by Research Associates Robert E. Baldwin, John F. Helliwell, Richard C. Marston, and Rachel McCulloch, and by Faculty Research Fellow Harry P. Bowen. McCulloch's focus is the relationship between the United States and Japan, while Bowen's empirical work tends to confirm a broad factor-endowments view of trade patterns. Marston's research on productivity trends indicates that, to maintain trade equilibrium, the dollar

¹R. E. Lipsey and I. B. Kravis, "The Competitiveness and Comparative Advantage of U.S. Multinationals, 1951-1983," NBER Working Paper No. 2051, October 1986.

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would have to depreciate slowly in real terms along a trend against the yen.²

Several papers on trade and structural change will be included in a forthcoming NBER book, edited by Research Economist Colin I. Bradford, Jr., and myself.³

Another aspect of competitiveness, the effects of import competition on the U.S. manufacturing sector, has been studied by Research Associates Gene M. Grossman, Robert S. Pindyck, and Julio J. Rotemberg, and by James P. Love and myself. Grossman shows that both a negative trend and foreign competition have contributed to the loss of employment in the steel industry from 1976 to 1983. Love and I show that real appreciation of the dollar has significant effects on manufacturing employment across a broad range of sectors.⁴ A recent paper by Research Associate Paul R. Krugman and Richard Baldwin explored the added possibility that a prolonged appreciation of the dollar would result in *hysteresis* in trade—that is, lasting effects on competitiveness.⁵

Several program members, including Research Fellow Jorge B. de Macedo and myself, are examining the measurement of competitiveness. We are estimating the effects of changes in the cost of capital on competitiveness, and the role of taxation in determining returns to capital.

Another major focus of our research, partially funded by the NSF grant, is the role of financial markets in transmitting real disturbances internationally. Richardson coordinated a 1985–6 project designed to describe and to measure empirically some of the linkages among exchange rates, competitiveness, productivity, and the sectorial structure of production in open economies. Other project members included Kravis, Krugman, Lipsey, Marston, and Research Associate Alan C. Stockman. The linkages estimated in this work were both

²R. E. Baldwin, "Structural Change and Patterns of International Trade," NBER Working Paper No. 2058, October 1986; J. F. Helliwell, P. Sturm, and G. Salou, "International Comparison of the Sources of the Productivity Slowdown, 1973–82," NBER Reprint No. 658, November 1985; R. C. Marston, "Real Exchange Rates and Productivity Growth in the United States and Japan," NBER Working Paper No. 1922, May 1986; H. P. Bowen, E. E. Leamer, and L. Sveikauskas, "Multicountry, Multifactor Tests of the Factor Abundance Theory," NBER Working Paper No. 1918, May 1986; and R. McCulloch, "Trade Deficits, Industrial Competitiveness, and the Japanese," *California Management Review* (Winter 1985), pp. 49–73.

³C. I. Bradford, Jr., and W. H. Branson, eds., *Trade and Structural Change in Pacific Asia*, Chicago: University of Chicago Press, forthcoming 1987.

⁴G. M. Grossman, "Imports as a Cause of Injury: The Case of the U.S. Steel Industry," NBER Reprint No. 769, September 1986; R. S. Pindyck and J. J. Rotemberg, "Are Imports to Blame? Attribution of Injury under the 1974 Trade Act," NBER Working Paper No. 1640, June 1985; and W. H. Branson and J. P. Love, "Dollar Appreciation and Manufacturing Employment and Output," NBER Working Paper No. 1972, July 1986.

⁵R. Baldwin and P. R. Krugman, "Persistent Trade Effects of Large Exchange Rate Shocks," NBER Working Paper No. 2017, August 1986.

statistically significant and strong. The final results of the project will be presented in a forthcoming NBER book.⁶

A related project on American trade relations, financed mainly by the Ford Foundation, is led by Robert E. Baldwin. After a working meeting in Washington in April 1985, the project met in Cambridge in August 1985 for a one-day conference on "Current U.S. Trade Policy: Analysis, Agenda, and Administration." An NBER Conference Report summarizing the papers presented there and edited by Baldwin and Richardson was published in 1986. A second series of conferences on U.S. trade policy, conducted by Baldwin and Richardson, is planned for 1987.

In addition, Baldwin organized (with Robert O. Keohane) a conference on "The Political Economy of Trade Policy" in Washington in January 1986, and another conference on "Trade Policy Issues and Empirical Analysis" in Cambridge in February 1987.

Finally, NBER and the Center for European Policy Studies held a conference on "Issues in U.S.-European Trade Relations" in Brussels in June 1986. Baldwin, André Sapir, and Carl Hamilton are editing a conference volume based on the papers presented there.

Strategic Behavior and Trade

Another major area of research in the program since 1983 has been the consequences of trade policy in a world of imperfect competition, and strategic behavior between and among governments and members of the private sector. A working group of researchers in strategic behavior and trade was organized by Research Associate Alvin K. Klevorick and myself in 1983 and its work has continued under Klevorick's leadership since 1985. Funding for this work was originally provided by an NSF grant and since 1986 has been supported by the Ford Foundation through a joint project with the Centre for Economic Policy Research (CEPR) in London.

In this area, Krugman has written on the roles of increasing returns and industrial organization in trade. With Richard Baldwin, he also has been studying the evolution of the semiconductor industry. They conclude that the U.S. has produced 16K random access memory chips at lower cost than Japan. Krugman also organized a 1984 conference that summarized the work in this area to that point, and edited the resulting volume.⁷

⁶J. D. Richardson and S. W. Arndt, eds., *Real-Financial Linkages among Open Economies*, Cambridge, MA: M.I.T. Press, forthcoming 1987. In addition to an overview chapter by the editors, this volume contains revised versions of the following NBER Working Papers: P. R. Krugman, "Pricing to Market When the Exchange Rate Changes," No. 1926, May 1986; R. C. Marston, "Real Exchange Rates and Productivity Growth in the United States and Japan," No. 1922, May 1986; and I. B. Kravis and R. E. Lipsey, "The Assessment of National Price Levels," No. 1912, May 1986.

⁷P. R. Krugman, "Increasing Returns and the Theory of International Trade," NBER Working Paper No. 1752, November 1985, and "Industrial Organization and International Trade," NBER Working Paper No. 1957, June 1986; R. Baldwin and P. R. Krugman, "Market Access and International Competition: A Simulation Study of 16K Random Access Memories," NBER Working Paper No. 1936, May 1986; and P. R. Krugman, ed., *Strategic Trade Policy and the New International Economics*, Cambridge, MA: M.I.T. Press, 1986.

Faculty Research Fellow Kala Krishna and Research Associates James A. Brander and Barbara J. Spencer have continued their work on market structure and trade. They have produced examples in which the government's commitment to a particular form of intervention can alter an oligopolistic trade equilibrium and increase domestic welfare.

Robert Baldwin and Research Associates Robert C. Feenstra and Barry J. Eichengreen have all analyzed trade policy in the strategic framework, with Eichengreen using a historical perspective. Finally, Grossman and Research Associate Carl Shapiro have used the strategic framework to analyze trade in counterfeit products, a relevant topic for trade in high tech and property rights.⁸

Members of the working group met with government trade officials at the Office of the U.S. Trade Representative in Washington in June 1985 to discuss the application of their results to current trade problems. Since then, meetings have been held at the NBER offices in New York in December 1985, in Cambridge in August 1986, and at the CEPR offices in London in January 1987. In parallel, Feenstra organized a conference on "Empirical Methods for International Trade" in Cambridge in April 1986, and a resulting conference volume is forthcoming from M.I.T. Press. Another conference on strategic behavior and trade is scheduled for summer 1987.

Until now, the research has provided many theoretical examples of why the traditional, perfectly competitive analysis of trade seems inappropriate. An NBER Research Progress Report by Grossman and Richardson in 1984 surveyed the early research, and several contributions in the Krugman conference volume (see footnote 6) provided a later perspective. However, while numerous special cases can be cited, no general alternative to the perfectly competitive analysis has yet emerged. Therefore, the emphasis of this NBER working group's research is now shifting toward empirical work and industry case studies, as a means of assessing the broad relevance of the New International Economics.

International Macroeconomics

Since the international studies program began in 1978, the international monetary system has been a major focal point for research. In the last two years, our work in this area has evolved into two fields—international macroeconomics and international finance—

⁸K. Krishna and M. Itoh, "Content Protection and Oligopolistic Interactions," NBER Working Paper No. 1843, February 1986; J. A. Brander and B. J. Spencer, "International Oligopoly and Asymmetric Labor Market Institutions," NBER Working Paper No. 2038, October 1986; R. E. Baldwin and R. N. Clarke, "Game Modeling in the Tokyo Round of Tariff Negotiations," NBER Working Paper No. 1588, March 1985; R. C. Feenstra, "Incentive-Compatible Trade Policies," NBER Working Paper No. 1977, July 1986; B. J. Eichengreen, "The Political Economy of the Smoot-Hawley Tariff," NBER Working Paper No. 2001, August 1986; and G. M. Grossman and C. Shapiro, "Counterfeit-Product Trade," NBER Working Paper No. 1876, March 1986.

discussed separately in this and the next section of the report.

Macroeconomic problems of developing countries and attempts at policy coordination among the major developed countries have attracted the interest of NBER researchers and have become distinct sub-areas within the program's research on international macroeconomics since 1984. Further, the prolonged real appreciation of the dollar in the 1980s has attracted the attention of several program members. The causes of the dollar's appreciation have been studied by NBER President Martin Feldstein, myself, and others. They conclude that a main cause of the dollar's rise was the shift of the U.S. fiscal position in the early 1980s. Krugman and Research Associate Jeffrey A. Frankel suggest that the height and persistence of its appreciation imply that the dollar was on a speculative *bubble* path for part of the time.⁹

The consequences of the appreciation have been studied at the macroeconomic level by Research Associate Rudiger Dornbusch. He traces these consequences to relative price effects caused by differences in the speed of price adjustment across sectors. This finding is consistent with the sectorial results of Love and myself, and with the historical study of the 1930s by Eichengreen and Research Associate Jeffrey D. Sachs.¹⁰

The dollar's real appreciation also has had significant effects in the manufacturing sectors. To study the effects of the real appreciation of the dollar against the Japanese yen, Marston organized a working group on dollar-yen misalignment, supported in part by the Ford and Mellon Foundations. Their results will be discussed in a conference in Cambridge in May 1987.

A related area of research interest is the interaction of national saving and investment and the international mobility of capital. Frankel and others confirm earlier findings that saving and investment are correlated across countries, suggesting a lack of international capital mobility. They conclude that while financial markets may be integrated internationally, as evidenced by returns correlations, domestic financial and real investment markets may not be as well integrated.

In related work, Research Associate Albert Ando is studying American and Japanese saving behavior. Stockman is analyzing capital flows, exchange rates,

and interest rates, and Faculty Research Fellow Charles M. Engel has studied the effects of tariffs on saving.¹¹

The effect of labor market arrangements, such as wage indexation and stickiness of nominal or real wages, on the international transmission of disturbances is another important area of research. In a series of separate and joint papers, Research Associates Joshua Aizenman, Jacob A. Frenkel, and Stephen J. Turnovsky have continued to work in this area. One result of their research is that wage indexation schemes and stabilizing monetary rules tend to come in pairs; for each indexation scheme, there is a particular stabilizing rule.¹²

Research Associate Robert J. Gordon has continued the program's tradition of empirical research on international comparisons of wage adjustment. He finds that the United States exhibits more nominal wage stickiness than Europe or Japan only in the manufacturing sector. Gordon and Research Associates Olivier J. Blanchard and Lawrence H. Summers reject the hypothesis that rising European unemployment is caused by real wage rigidity.¹³

The macroeconomics of developing countries, and their connections to the international economy, are an area of growing interest in the program. Research Associate Willem H. Buiter, Dornbusch, Faculty Research Fellow Sebastian Edwards, and Research Affiliate Louka T. Katseli are all studying the response of advanced developing countries to external shocks. Dornbusch shows that in some unstable circumstances a devaluation can lead to an inflationary crisis. Edwards's empirical work confirms earlier results that devaluations tend to be contractionary in the short run.¹⁴ In cases in which

⁹W. H. Branson, "Causes of Appreciation and Volatility of the Dollar," with comment by J. A. Frenkel, NBER Reprint No. 785, November 1986; M. Feldstein, "The Budget Deficit and the Dollar," NBER Working Paper No. 1898, April 1986; P. R. Krugman, "Is the Strong Dollar Sustainable?" NBER Reprint No. 788, January 1987; and J. A. Frankel and K. Froot, "The Dollar as a Speculative Bubble: A Tale of Fundamentalists and Chartists," Part I in The Marcus Wallenberg Papers on International Finance 1, 1, Washington, DC: International Law Institute, 1986, pp. 27-55. Part II in Economic Record, forthcoming.

¹⁰R. Dornbusch, "Exchange Rates and Prices," NBER Working Paper No. 1769, December 1985; W. H. Branson and J. P. Love, "Dollar Appreciation and Manufacturing Employment and Output," NBER Working Paper No. 1972, July 1986; and B. J. Eichengreen and J. D. Sachs, "Exchange Rates and Economic Recovery in the 1930s," NBER Reprint No. 714, May 1986.

¹¹J. A. Frankel, M. Dooley, and D. Mathieson, "International Capital Mobility in Developing Countries versus Industrial Countries: What Do Saving-Investment Correlations Tell Us?" NBER Working Paper No. 2043, October 1986; A. C. Stockman and L. E. O. Svensson, "Capital Flows, Investment, and Exchange Rates," NBER Working Paper No. 1598, April 1985; and C. M. Engel and K. Kletzer, "Tariffs, Saving, and the Current Account," NBER Working Paper No. 1869, March 1986.

¹²J. Aizenman and J. A. Frenkel, "Supply Shocks, Wage Indexation, and Monetary Accommodation," NBER Reprint No. 786, January 1987; J. Aizenman, "Monopolistic Competition, Relative Prices, and Output Adjustment in the Open Economy," NBER Working Paper No. 1787, January 1986; and S. J. Turnovsky, "Optimal Monetary Policy and Wage Indexation under Alternative Disturbances and Information Structures," NBER Working Paper No. 2042, October 1986.

¹³R. J. Gordon, "Productivity, Wages, and Prices Inside and Outside of Manufacturing in the United States, Japan, and Europe," NBER Working Paper No. 2070, November 1986; and O. J. Blanchard and L. H. Summers, "Hysteresis and the European Employment Problem," NBER Reprint No. 808, January 1987, and in NBER Macroeconomics Annual 1986, S. Fischer, ed., Cambridge, MA: M.I.T. Press, 1986.

¹⁴W. H. Buiter, "Macroeconomic Responses by Developing Countries to Changes in External Economic Conditions," NBER Working Paper No. 1836, February 1986; R. Dornbusch, "Inflation, Exchange Rates, and Stabilization," NBER Reprint No. 807, January 1987; S. Edwards, "Are Devaluations Contractionary?" NBER Reprint No. 809, January 1987; and L. T. Katseli, "Asset Returns, Discount Rate Changes, and Market Efficiency," NBER Working Paper No. 1529, December 1984.

both stabilization of inflation and liberalization of the economy are attempted, the outcome may depend on the order in which the policy actions are taken. Edwards and Research Associate Maurice Obstfeld are studying this emerging issue.¹⁵

Initial results of this work were discussed at a joint NBER-World Bank conference in Washington in November 1984.¹⁶

Finally, the international coordination of macroeconomic policies provides an intriguing and difficult topic for research at NBER. It requires quantitative models of the economies that are involved, and consideration of the strategic interaction among the participants. As our research has progressed, this complexity has become apparent. For example, the behavior of the private sector may change when it learns that the policy authorities are cooperating. This can reduce the gains from coordination, or even make them negative. A survey of the existing research in the area was presented at a joint conference with CEPR in June 1984, organized by Marston and Buiter. For that conference, Sachs and several collaborators modeled macroeconomic coordination among the major industrial countries. Frankel studied the issue of coordination when the parties do not agree on the model of the economy; de Macedo looked at currency areas among developing countries.¹⁷ One result of the research on coordination is that monetary policy tends to be tighter when noncooperating countries face a common inflation shock than if they had cooperated. Coordination can remove the incentive for both countries to use currency appreciation to fight inflation.

International Finance

The structure and functioning of international financial markets is also a central area of research for the program. It includes studies of international interest rate linkages and exchange rate variability, capital controls and market structure, the effects of international investment and sovereign risk, speculative bubbles, and collapsing exchange regimes.

¹⁵S. Edwards, "The Order of Liberalization of the Current and Capital Accounts of the Balance of Payments," NBER Working Paper No. 1507, November 1984; and M. Obstfeld, "Capital Flows, the Current Account, and the Real Exchange Rate: Consequences of Liberalization and Stabilization," NBER Working Paper No. 1526, December 1984.

¹⁶S. Edwards and L. Ahamed, eds., *Economic Adjustment and Exchange Rates in Developing Countries*, Chicago: University of Chicago Press, 1986.

¹⁷W. H. Buiter and R. C. Marston, eds., *International Economic Policy Coordination*, Cambridge, England: Cambridge University Press, 1985; W. J. McKibbin and J. D. Sachs, "Comparing the Global Performance of Alternative Exchange Arrangements," NBER Working Paper No. 2024, September 1986; J. A. Frankel and K. Rockett, "International Macroeconomic Policy Coordination When Policymakers Disagree on the Model," NBER Working Paper No. 2059, October 1986; and J. B. de Macedo, "Macroeconomic Policy under Currency Inconvertibility," NBER Working Paper No. 1571, February 1985.

Research Associate Frederic S. Mishkin and Faculty Research Fellows John Y. Campbell, Richard H. Clarida, and Robert E. Cumby have studied the movements of international interest rate differentials.¹⁸ Research Associate Kenneth Rogoff has continued to test empirical models of the behavior of exchange rates, finding that they explain little of the observed volatility in rates. Research Associate Robert J. Hodrick has examined that volatility in a series of papers and finds that risk premiums are more volatile than expected rates of change of exchange rates.¹⁹ Volatility in the exchange markets could be caused partly by the periodic existence of speculative bubbles, as the work of Krugman and Frankel suggests.²⁰

Several researchers have focused on the structure of these international markets. Research Associates Robert P. Flood and Nancy P. Marion are looking at dual exchange markets and the determinants of the premium on the financial rate. In a series of papers, Stockman shows how financial markets can anticipate the imposition of capital controls or tariffs. Research Associates Bernard Dumas and Richard M. Levich are studying international investment at the microeconomic level. Dumas shows how capital movements can be caused by differences in risk preferences. Research Associate Jonathan Eaton has studied the effects of trade flows and foreign investment on the prices of fixed resources such as land. One of his results is that foreign investment in capital can reduce welfare by raising land prices.²¹

Another area of increasing interest is collapsing exchange rate regimes. A fixed exchange rate collapses when the private sector anticipates that the central bank has insufficient reserves to withstand a run on the currency. The anticipation itself leads to the run on the currency and the resultant collapse of the exchange rate regime typically leads to a period of floating rates. Flood, Hodrick, and Obstfeld, among others, have studied aspects of this problem including what triggers the run, and what its consequences are. One of their results is that a run begins when the public sees that the rate of

¹⁸R. E. Cumby, "Monetary Policy under Dual Exchange Rates," NBER Reprint No. 815, February 1987; and J. Y. Campbell and R. H. Clarida, "The Term Structure of Euromarket Interest Rates: An Empirical Investigation," NBER Working Paper No. 1946, June 1986.

¹⁹R. Meese and K. Rogoff, "Was It Real? The Exchange Rate-Interest Relation, 1973-84," NBER Working Paper No. 1732, October 1985; and R. J. Hodrick and S. Srivastava, "The Covariation of Risk Premiums and Expected Future Spot Exchange Rates," with comment by J. A. Frenkel, NBER Reprint No. 731, July 1986.

²⁰See references in footnote 9.

²¹A. Hernandez D. and A. C. Stockman, "Exchange Controls, Capital Controls, and International Financial Markets," NBER Working Paper No. 1755, November 1985; R. M. Levich, "A View from the International Capital Markets," NBER Reprint No. 715, June 1986; B. Dumas, "Two-Person Dynamic Equilibrium: Trading in the Capital Market," NBER Working Paper No. 2016, August 1986; and J. Eaton, "Foreign-Owned Land," NBER Working Paper No. 1512, December 1984.

credit expansion, or the perceived rule for monetary policy, will make the current exchange rate unsustainable.²²

Developing Country Debt

The debt problems of the developing countries and their partners, the lending banks, and the potential threat that they pose for the international monetary system, have become a focus of research and public policy in the 1980s. Several NBER researchers have analyzed these problems and, with support from the Ford and Tinker Foundations and the Rockefeller Brothers Fund, Sachs has organized a working group on developing country debt. Faculty Research Fellow Susan Collins is an active member of the group, which is conducting a number of case studies of the interaction between the borrowing countries and the banks.

Issues of sovereign, or country, risk have been studied by NBER researchers, including Eaton, Aizenman, Edwards, and Research Associate Joseph E. Stiglitz.²³ The potential for default, or the ability to force renegotiations, makes the borrowing and repaying process a strategic interaction between the banks and the borrower. Again, the importance of strategic behavior comes to the forefront. The difficulty of the analytical problem may be increased by asymmetries of information between borrower and lender. A basic insight from this line of research is that default or renegotiation is not a last-resort action forced by unexpected economic events, but rather a choice to be negotiated between maximizing parties. The relevance of this insight has become increasingly clear in the late 1980s. Rogoff and Research Associate Jeremy I. Bulow study the borrowing process as ongoing, with each side knowing that there will be future plays of the same game. In this case, equilibrium includes a provision for renegotiation, or partial default, in the event of adverse disturbances. One problem, though, is reaching agreement on the nature of the disturbances and on the method for verifying their occurrence.²⁴

Sachs has also studied the debt problem and asked how the possibility of debt repudiation may affect the rate of growth and the borrowing ability of the debtor country. Eichengreen and Research Associate Richard Portes have added a historical dimension to the analysis of the debt problem by focusing on the particular episode of the 1930s.²⁵ The program's working

²²M. Obstfeld, "Rational and Self-Fulfilling Balance-of-Payments Crises," NBER Reprint No. 722, May 1986; and R. P. Flood and R. J. Hodrick, "Real Aspects of Exchange Rate Regime Choice with Collapsing Fixed Rates," NBER Working Paper No. 1603, April 1985.

²³J. Eaton, M. Gersovitz, and J. E. Stiglitz, "The Pure Theory of Country Risk," NBER Reprint No. 793, January 1987; J. Aizenman, "Country Risk, Asymmetric Information, and Domestic Policies," NBER Working Paper No. 1880, March 1986; and S. Edwards, "Country Risk, Foreign Borrowing, and the Social Discount Rate in an Open Developing Economy," NBER Reprint No. 759, September 1986.

²⁴J. I. Bulow and K. Rogoff, "A Constant Recontracting Model of Sovereign Debt," NBER Working Paper No. 2088, December 1986.

²⁵D. Cohen and J. D. Sachs, "Growth and External Debt under Risk of Debt Repudiation," NBER Working Paper No. 1703, September 1985; and B. J. Eichengreen and R. Portes, "Debt and Default in the 1930s: Causes and Consequences," NBER Reprint No. 790, January 1987.

group on debt issues has met several times, first to organize case studies and then to review them; its last meeting was in Cambridge in February 1987.

Other Projects

In addition to the research and meetings already described, other related work is being conducted in the international studies program. Marston leads a group looking at U.S.-Japan economic relations. With a grant from the U.S.-Japan Fulbright Commission, the group met in Tokyo in March 1985, and in Cambridge in August 1985 and March 1986. They discussed papers on "International Economic Problems Confronting the United States and Japan." Their work is now partly supported by the Ford Foundation.

In December 1985, Frenkel organized a Universities-NBER Conference in Cambridge on "The International Aspects of Fiscal Policies." Following up on that conference, and on a series of papers by Buiter, Frenkel, Research Associate Assaf Razin, and others, the Programs in International Studies and Taxation are jointly organizing a project on "International Aspects of Taxation."²⁶ This project will be headed by Razin, an international economist, and Joel Slemrod, a tax economist. Its first meeting will be held in August 1987.

Since my last report, four research associates have moved on to official positions in the public sector. Michael Bruno was appointed governor of the Bank of Israel, and Michael R. Darby was appointed Assistant Secretary of the (U.S.) Treasury for Economic Policy, both in 1986. Jacob A. Frenkel was named economic counsellor and director of research at the International Monetary Fund in 1987, and Michael L. Mussa was appointed a member of the President's Council of Economic Advisers in 1985.

Each year since 1979, the international studies program has held an intensive series of workshops and seminars, over a period of three weeks or so, in Cambridge as part of NBER's Summer Institute. This provides an opportunity that is especially important for the international studies group, because its members are quite dispersed geographically, many in Europe and Israel. In 1985 and 1986, Marston organized the macroeconomic and finance portions of the program's Summer Institute. The trade portion was organized by Grossman and Richardson in 1985 and by Feenstra and Richardson in 1986. The 1987 organizers are Marston, Feenstra, and Richardson.

Finally, the International Seminar on Macroeconomics (ISOM), a joint venture of NBER and the Ecole des Hautes Etudes en Sciences Sociales (EHESS) in Paris, has been held each year in June and is organized

²⁶W. H. Buiter, "Fiscal Policy in Open, Interdependent Economies," NBER Working Paper No. 1429, August 1984; and J. A. Frenkel and A. Razin, "Deficits with Distortionary Taxes: International Dimensions," NBER Working Paper No. 2080, November 1986.

by Robert J. Gordon of NBER and Georges de Menil of EHESS. ISOM brings together roughly equal numbers of American and European researchers to study common macroeconomic problems. In 1985 it was expanded to include Japanese participation. ISOM met in 1985 in Ragny, France, and will meet there again in 1987. The 1986 meeting was held in Namur, Belgium, and the 1988 meeting will be in Tokyo. Papers presented at ISOM are published in the *European Economic Review*, in the May issue that follows the meeting.

Research Summaries

Uncertainty, Capital Market Imperfections, and Government Finance

R. Glenn Hubbard

Analyzing the impact of taxation and public spending programs on individual welfare (as well as on such aggregate measures as the saving rate or the aggregate capital stock) requires treating explicitly the way individuals make spending decisions. Recent advances in the examination of efficiency gains from tax reforms have used dynamic simulation models to isolate intra-generational and intergenerational effects. But two important considerations are missing from such a framework. First, most of these exercises have assumed perfect certainty. However, many fiscal policies affect lifetime budget constraints when private insurance markets are incomplete. Second, the specification of a lifetime budget constraint may be too narrow a description of the restrictions on individuals' optimizing behavior in the presence of imperfections in the capital market. Omitting these two considerations may have seriously biased the conclusions of previous studies of the impact of Social Security on national saving and welfare or of the optimality of progressive income taxation and taxation of capital income.

In my research, I began by developing a theoretical model of the effects of lifetime uncertainty on consumption.¹ My intent was to examine the impact of the public

provision of old age annuities (that is, Social Security) on national saving and welfare. Most previous research on Social Security had analyzed the effect of an unfunded system on saving, but not on welfare, in a model with perfect capital markets. I considered the market failure in the private provision of annuities arising from adverse selection. Under reasonable assumptions about technology and preferences, the effect of this imperfection on saving is large. In particular, I showed that "precautionary" or "uncertainty" saving is likely to exceed life-cycle saving. This further supports the idea that the version of the life-cycle model with perfect certainty does not adequately describe observed saving behavior. This point is important for a range of fiscal policy issues, particularly the effects of intergenerational transfer programs.

My work on Social Security showed that with imperfections in the annuity market, even a fully funded Social Security system would reduce national saving while increasing the welfare of the representative individual in steady state. Hence, previous estimates of the impact of Social Security on saving, obtained in life-cycle models under the assumption of perfect capital markets, were likely to be misleading. I also showed that the distribution of participation in Social Security annuities by earnings level (as in the United States) implies the desirability of supplemental private pensions and the integration of the benefit structures of Social Security and private pensions.

Two puzzles stimulated my subsequent research in this area.² First, in empirical work, I found that Social Security had a more significant effect on nonpension saving for high-income individuals than for low-income individuals. Second, the steady-state welfare and saving effects of the system predicted by the theory seemed implausibly large. These puzzles suggested the relevance of a second imperfection in the capital market: restrictions on borrowing against future earnings or annuity benefits.³ That is, Social Security generates large potential gains in lifetime consumption, but if borrowing restrictions are important, the ability to smooth those gains over the lifetime will be limited. Moreover, to the extent that the system is financed by a proportional payroll tax, the borrowing constraint will bind young workers because of reduced current

¹R. G. Hubbard, "Personal Taxation, Pension Wealth, and Portfolio Competition," *Review of Economics and Statistics* 67 (February 1985), pp. 53-60; "Pension Wealth and Individual Saving: Some New Evidence," *Journal of Money, Credit, and Banking* 18 (May 1986), pp. 167-178; and *The Financial Aspects of Social Security: A Study of Effects on Household Wealth Accumulation and Allocation*, New York: New York University Monograph Series in Finance and Economics, 1983.

²R. G. Hubbard and K. L. Judd, "Social Security and Individual Welfare: Precautionary Saving, Liquidity Constraints, and the Payroll Tax," NBER Working Paper No. 1736, October 1985.

³R. G. Hubbard, "Uncertain Lifetimes, Pensions, and Individual Saving," in Z. Bodie, J. B. Shoven, and D. A. Wise, eds., *Issues in Pension Economics*, Chicago: University of Chicago Press, 1986, pp. 175-205.

earnings and because of a gap between actual and desired consumption. Adding this imperfection to my previous model. I found that the Social Security system could increase saving and reduce, or in some cases eliminate, the increase in individual welfare. However, by replacing the proportional payroll tax with a progressive tax, I showed that age-specific tax schemes can restore much of the potential gain from participating in Social Security. The application of an "earned income credit" to the system would also improve welfare.

My paper with Ken Judd expanded these ideas about capital market imperfections to a broader class of fiscal policy issues.⁴ We showed that the existence of liquidity constraints as a preexisting distortion was important in the determination of consumption behavior in a life-cycle model. Forced lifetime saving caused by liquidity constraints can be substantial; if the intertemporal elasticity of substitution in consumption is small, the incorporation of borrowing constraints enables the life-cycle model to generate more realistic predictions about the size of the aggregate capital stock.

The normative side of our analysis showed that consideration of liquidity constraints would also have a significant impact on how one views various tax changes. Many of the principal findings about the saving and welfare effects of tax reforms drawn from simulation models of fiscal policy rely heavily on the assumption that capital markets are perfect and that individuals can borrow and lend freely to smooth consumption in response to policy changes. When borrowing constraints are included, theoretical predictions about the efficiency effects of altering the relative reliance on various tax bases or the degree of progressivity of the income tax are no longer clear.

There were two conclusions from this work. First, arguments that reduced taxation of capital income financed by increased taxation of labor income raises individual welfare depend on a substantial sensitivity of saving to interest in the life-cycle framework and on the ability of consumers with low current earnings to borrow to finance higher taxes on labor income. With restrictions on borrowing, the gains from higher saving rates and output must be weighed against the efficiency losses from the reduced consumption of constrained individuals. Under some plausible assumptions, elimination of capital income taxation compensated by higher labor income taxation can actually reduce the welfare of a representative individual.

In a similar vein, recent analyses of progressive taxation focus on the disincentive effects of high marginal tax rates on work effort and saving. A move toward proportional taxation would indeed reduce these ef-

fects but, in the presence of the borrowing constraints, would also reduce the consumption of low-income individuals. We found that the use of an exemption and a higher marginal tax rate in some cases can improve efficiency relative to a proportional tax. That is, there may be significant welfare gains from using exemptions. If we combine these findings with those from the capital taxation experiments, we can conclude that replacing capital taxes with a progressive tax on labor earnings would improve efficiency.

Further extensions that take into account similar restrictions will likely reinforce these conclusions. For example, an inability to insure against wage uncertainty implies that binding constraints on borrowing may occur not only in the early and middle stages of life but also later if adverse wage shocks occur in those periods. The addition of uncertainty to the model would introduce portfolio decisions for the individual that would also be distorted by the liquidity considerations. Such distortions would likely be aggravated by tax policies that increase the severity of the liquidity constraints. While our analysis focused on a tractable type of capital market imperfection, it is likely that the addition of more realistic elements would only reinforce the results.

Finally, borrowing constraints are important for analyzing the effects of deficit-financed tax cuts on consumption. We showed that liquidity constraint considerations dominate finite-horizon considerations in determining the aggregate marginal propensity to consume out of temporary tax cuts.

Capital market imperfections are also likely to be quantitatively important in the analysis of tax policy. However, the presence of a significant number of constrained consumers earning a nontrivial proportion of aggregate disposable income does not necessarily imply that temporary tax changes will be effective in modifying the level of consumer spending. In general, the distribution of tax changes matters. The benefits of past tax cuts have gone largely to high-income groups, so that measured effects on consumption could be small even with a substantial number of potentially affected consumers. Hence, it is difficult to make inferences about the aggregate importance of liquidity constraints from econometric studies of temporary tax changes.

Much more theoretical and empirical research is needed on taxpayers' decisions about consumption, saving, and labor supply, and on the responsiveness of those decisions to public policies. I will be more closely considering the origins of borrowing constraints (and capital market imperfections more generally) in consumer finance and their implications for intragenerational and intergenerational issues in optimal taxation. I am currently pursuing two theoretical extensions: (1) modeling the role of collateral requirements in the presence of multiple loan markets and imperfect information, with implications for the nonneutrality of

⁴R. G. Hubbard and K. L. Judd, "Liquidity Constraints, Fiscal Policy, and Consumption," *Brookings Papers on Economic Activity* 1 (1986), pp. 1-51.

fiscal policy;⁵ and (2) refining the analysis of fiscal policy issues in finite-horizon models when capital markets are imperfect.⁶

⁵R. G. Hubbard and C. W. Calomiris, "Multiple Loan Markets, Collateral, and Credit Rationing," mimeograph, Northwestern University, 1986; and R. G. Hubbard, C. W. Calomiris, and J. Stock, "The Farm Debt Crisis and Public Policy," NBER Working Paper No. 2085, November 1986, and Brookings Papers on Economic Activity (1986:2), pp. 441-479.

⁶R. G. Hubbard and K. L. Judd, "Finite Lifetimes, Borrowing Constraints, and Short-Run Fiscal Policy," mimeograph, Northwestern University, 1986.

Affirmative Action

Jonathan S. Leonard

In recent years there have been two major criticisms of affirmative action. The first is that affirmative action does not work; therefore, we should dispose of it. The second is that affirmative action does work; therefore, we should dispose of it. This article discusses my research on the effects of affirmative action on employment patterns. If affirmative action has not changed the employment patterns of nonwhites and females, then much of the discussion since 1965 of its philosophical merits amounts to shadow-boxing.

Past Studies

The literature on affirmative action can be divided into studies of the regulatory process that find it mortally flawed and studies of impact that find it successful. The few direct econometric studies of the impact of affirmative action in its first years have generally found that despite weak enforcement in its early years, and despite the ineffectiveness of compliance reviews, affirmative action has been effective in increasing black male employment share among federal contractors but generally ineffective for other protected groups.¹ [Also see Brown for a review.²]

The Impact of Affirmative Action on Employment

Affirmative action under Executive Order 11246 (issued in 1965) applies only to federal contractors. There-

¹G. Burman, "The Economics of Discrimination: The Impact of Public Policy," Ph.D. dissertation, University of Chicago, 1973; O. C. Ashenfelter and J. J. Heckman, "Measuring the Effect of an Antidiscrimination Program, in Evaluating the Labor Market Effects of Social Programs, O. C. Ashenfelter and J. Blum, eds.; and M. Goldstein and R. S. Smith, "The Estimated Impact of the Antidiscrimination Program Aimed at Federal Contractors," Industrial and Labor Relations Review 29 (July 1976), pp. 544-564.

²C. C. Brown, "The Federal Attack on Labor Market Discrimination: The Mouse That Roared?" NBER Working Paper No. 669, April 1981, and in Research in Labor Economics, R. G. Ehrenberg, ed. Greenwich, CT: JAI Press, 1984.

fore, one method of judging its effect is to compare the growth of minority and female employment at federal contractor establishments with their employment growth at similar noncontractor establishments. With the cooperation of the U.S. Department of Labor, I performed such a comparison using employment data reported in 1974 and 1980 by 68,690 establishments with more than 16 million employees.³

The results of this study indicate that affirmative action has been more effective than its critics allow. Between 1974 and 1980, the employment shares of blacks and of white females increased significantly faster in contractor establishments subject to affirmative action than in noncontractor establishments. On the other hand, the employment share of white males declined significantly more among contractors than noncontractors. The growth rate was 3.8 percent faster for black males, 7.9 percent for other minority males, 2.8 percent for white females, and 12.3 percent for black females. White male employment grew 1.2 percent slower in the contractor sector.⁴

Compliance reviews, the major enforcement tool, have also played a significant role, advancing the employment of black males by 7.9 percent, other minority males by 15.2 percent, and black females by 6.1 percent among reviewed establishments. Compliance reviews have retarded the employment growth of whites and curiously may have reduced white female employment growth in the reviewed establishments. This anomalous result for white females is difficult to reconcile with the countervailing and dominant positive impact of contractor status on white females but may be influenced by the review process that asks for employment more than last year, rather than more than average, in a time of sharply increasing female labor supply. With the exception of white females, compliance reviews have an additional positive impact on protected group employment beyond the contractor effect. Direct pressure does appear to make a difference.

Employment opportunities, and the efficacy of affirmative action, also depend critically on growth. Minorities and females experienced significantly greater increases in representation in establishments that were growing and thus had many job openings. Other establishment characteristics also make a difference. Establishments that are not part of multiplant corporations have significantly lower growth rates of employment of members of protected groups. Corporate size is probably of greater consequence than establishment size, with larger corporations showing greater increases in minority and female employment. Establishments

³J. S. Leonard, "What Promises Are Worth: The Impact of Affirmative Action Goals," NBER Working Paper No. 1346, May 1984, and Journal of Human Resources 20, 1 (Winter 1983), pp. 3-20.

⁴J. S. Leonard, "The Impact of Affirmative Action on Employment," NBER Reprint No. 535, October 1984, and Journal of Labor Economics 2 (October 1984), pp. 439-463.

that employ a large proportion of nonclerical white collar workers exhibit faster employment growth for both male and female blacks and significantly slower growth for white males. Unionized establishments generally have comparable or better records than those without unions.⁵ Also, while the central focus of this analysis is on affirmative action under the Executive Order, it should be understood that the Executive Order has functioned within the backdrop of Title VII's congressional mandate and substantial legal sanctions.

Occupational Advance

One of the major affirmative action battlefields lies in the white collar and craft occupations. It is in these skilled positions that employers are most sensitive to productivity differences and have complained the most about the burden of goals for minority and female employment. It is also in these occupations that the potential wage gains to members of protected groups are the greatest.

The contract compliance program has raised the demand for black males more in the highly skilled white collar and craft jobs than in the blue collar operative, laborer, and service occupations. While this may help explain why highly skilled black males have been better off than their less-skilled brethren, it does not help explain why low-skilled black males should be having greater difficulty over the years in finding and holding jobs, because affirmative action has generally increased the demand for black males, even in unskilled jobs.⁶

Affirmative action has also helped nonblack minority males. There is evidence of a twist in demand toward Hispanic, Asian, and American Indian males in white collar occupations, particularly in sales and clerical positions, and away from this group in operative and laborer positions. The evidence within occupations suggests that the contract compliance program has had a mixed and often negative impact on white females. In contrast to whites, black females in contractor establishments have increased their employment shares in most occupations.

While part of this occupational upgrading may be overstated because of biased reporting, in particular the upward reclassification of minority- or female-intensive occupations,⁷ the finding of occupational advancement is reinforced by evidence that affirmative action has narrowed the difference in earnings between the races by raising the occupational level of nonwhite males. Similarly, affirmative action does not appear to have contributed directly to the economic

bifurcation of the black community but rather appears to increase the demand for less-educated minority males as well as for the highly educated.⁸

If minorities and females do not share the skills and job interests of white males, then perhaps the most an affirmative action program can do is to increase their employment. But to the extent that minorities and females share the qualifications and interests of white males, an effective affirmative action program will also improve their chances of sharing the same occupations.

Just as no policy works in isolation, so none can be evaluated in isolation. The success of this program in skilled occupations is probably partly the result of the increasing supply of skilled minorities in many fields as well as of the more aggressive use of sanctions after the early 1970s. Affirmative action programs are most effective when they are vigorously enforced, when they work with other policies that augment the skills of members of protected groups, and when they work with growing employers.

Goals or Quotas?

Have these employment advances been achieved through the use of rigid quotas? The goals and timetables for the employment of minorities and females drawn from federal contractors under affirmative action stand accused on two mutually inconsistent charges. The first is that "goal" is just an expedient and polite word for inflexible quotas. The second is that these goals are worth less than the paper they are written on because affirmative action has never been stringently enforced. Is negotiation over affirmative action goals an empty charade played with properly penciled forms, or does it in fact lead to more jobs for minorities and females in the contractor sector? If the latter is the case, are these goals so strictly adhered to as to constitute quotas?

Goals set in these costly negotiations between contractors and the federal government do have a measurable and significant correlation with improvements in the employment of minorities and females at reviewed establishments. At the same time, these goals are not being fulfilled with the rigidity one would expect of quotas. While the projections of future employment of members of protected groups are inflated (by roughly a factor of 10), they are not hollow: the establishments that promise to employ more actually do employ more.

We have a regulatory process that appears to be effective in its whole and ineffective in its parts. The paperwork requirements of the affirmative action plan, the notification and resolution of plan deficiencies, and even conciliation agreements and show-cause notices appear to have little significant impact on subsequent employment demographics when considered individu-

⁵J. S. Leonard, "Unions and the Employment of Blacks, Hispanics, and Women," NBER Reprint No. 689, March 1986, and *Industrial and Labor Relations Review* 39 (October 1985).

⁶J. S. Leonard, "Employment and Occupational Advance under Affirmative Action," *Review of Economics and Statistics* 66 (August 1984), pp. 377-385.

⁷J. Smith and F. Welch, "Affirmative Action and Labor Markets," *Journal of Labor Economics* 2 (April 1984), pp. 269-301.

⁸J. S. Leonard, "Splitting Blacks? Affirmative Action and Earnings Inequality Within and Between Races," NBER Working Paper No. 1327, April 1984, and *Proceedings of the Industrial Relations Research Association* (1986).

ally. Nevertheless, protected-group employment share generally does grow more rapidly at reviewed firms, and goals are strongly correlated with this growth. While much of the nit-picking over paperwork is ineffective, the system of affirmative action goals has played a significant role in improving employment opportunities for members of protected groups.

The Targeting of Compliance Reviews

Affirmative action can be broadly conceived of as pursuing either antidiscrimination or job and earnings redistribution goals. It can pursue either equality of opportunity or equality of result, although given the historical records, progress toward one goal often will entail progress toward the other.

If the primary goal of compliance review were to fight the most blatant forms of prima facie employment discrimination directly in the workplace, then reviews would be concentrated at establishments with a relatively small proportion of females and black males, once size, industry, and region are taken into account. There is little consistent significant evidence that this has occurred in the past. In part, this may be explained by the requirement of pre-award compliance reviews. Establishments with the smallest proportion of minorities or females are not consistently more likely to be reviewed. Reviews are significantly more likely to take place in establishments that employ more nonclerical white collar workers, and at both large and growing establishments where any costs to white males are likely to be more diffused.⁹

In interviews, field officers of the OFCCP have stated that they do not generally look at an establishment's past employment records in targeting reviews. Reviewing large establishments with little regard for their past records of minority or female employment illustrates a lack of attention to attacking the grossest prima facie forms of current employment discrimination.

Antidiscrimination or Reverse Discrimination?

Despite poor targeting, affirmative action has helped promote the employment of members of protected groups, and Title VII likely has played an even greater role. This raises the most important and the most controversial question: has this reduced discrimination, or has it gone beyond and induced reverse discrimination against white males? This is also the question on which our evidence is least conclusive. The finding of decreased employment growth for white males is not sufficient to answer the question since it is consistent with both possibilities.

The hypothesis inherent in some criticisms of affirmative action as reverse discrimination is that the rela-

tive marginal productivities of minorities and females have declined as their employment has increased and have not moved toward equality with relative wages. This suggests a novel test for discrimination: comparing wages to directly measured productivity.

Using estimates of production functions for the manufacturing sector, I find weak evidence that relative minority and female productivity increased between 1966 and 1977, a period coinciding with government antidiscrimination policy to increase employment opportunities for members of these groups.¹⁰ I find no significant evidence that this increase in employment equity has decreased efficiency. Direct tests of the impact of governmental antidiscrimination and affirmative action regulation on productivity find no significant evidence of a productivity decline. These results suggest that antidiscrimination and affirmative action efforts have helped to reduce discrimination without yet inducing significant and substantial reverse discrimination. However, the productivity estimates are not measured with great precision, and the available evidence is not conclusive.

Residential Segregation

The success of efforts to integrate the workplace depends in obvious ways on the degree of residential integration. Distance from black neighborhoods is the single strongest determinant of workplace demographics. The changes over time are of greater concern. Despite the pressures of affirmative action and antidiscrimination policy, as the average blue collar job moved farther from the ghetto in Chicago and as jobs disappeared from the ghetto, the average black employed in a blue collar job was found closer to the ghetto. As jobs dispersed, black employment became more concentrated.¹¹ Blacks have less success than whites, Hispanics, or Asians in finding work close to their homes, as evidenced by their longer commuting times even when the commuting mode and the spatial distribution of surrounding jobs are held fixed. However, the distance of jobs from homes is of little importance in explaining variation in employment-population ratios across neighborhoods or demographic groups.¹² Apparently, blacks simply increase their commuting time when available jobs are far from their homes.

¹⁰J. S. Leonard, "Antidiscrimination or Reverse Discrimination: The Impact of Changing Demographics, Title VII, and Affirmative Action on Productivity," NBER Working Paper No. 1240, November 1983, and *Journal of Human Resources* 19 (Spring 1984), pp. 145-174.

¹¹J. S. Leonard, "The Interaction of Residential Segregation and Employment Discrimination," NBER Working Paper No. 1274, February 1984, and *Journal of Urban Economics* (1987).

¹²D. T. Ellwood, "The Spatial Mismatch Hypothesis," in *The Black Youth Employment Crisis*, R. B. Freeman and H. J. Holzer, eds. Chicago: University of Chicago Press, 1986; and J. S. Leonard, "Space, Time, and Unemployment: Los Angeles 1980," unpublished paper.

⁹J. S. Leonard, "Affirmative Action as Earnings Distribution: The Targeting of Compliance Reviews," NBER Working Paper No. 1328, April 1984, and *Journal of Labor Economics* 3 (July 1985), pp. 363-384.

The Role of Unions

Unions play an important role in mediating affirmative action pressure. In the manufacturing sector, industrial unions have not hindered the application of affirmative action or the progress of women and minorities.¹³ In the public sector, unions typically raise women's wages more than they raise the wages of men. Because of their greater legal access to information and their right to set wages through collective bargaining, unions also offer the most immediate prospects for the implementation of comparable worth.¹⁴

Conclusion

While numerical standards in the quest for equal opportunity may open the door to an emphasis on equal results, an affirmative action program without measurable results invites sham efforts. After all, executive orders barring discrimination by federal contractors have been with us since President Franklin D. Roosevelt, but these had little if any effect until policies relying on voluntary compliance were given teeth in the mid-1960s with a monitoring mechanism and a set of sanctions.

The evidence reviewed here is that a process that has been criticized frequently by various parties as either a system of draconian quotas or as an exercise in paper pushing has actually been of material importance in prompting companies to increase their employment of minorities. For a program lacking public consensus and vigorous, consistent enforcement, this is a strong showing.

¹³J. S. Leonard, "Unions and the Employment of Blacks, Hispanics, and Women."

¹⁴R. B. Freeman and J. S. Leonard, "Union Maids: Unions and the Female Work Force," NBER Working Paper No. 1652, June 1985.

Economic Outlook Survey

First Quarter 1987

Victor Zarnowitz

According to the February survey of 22 professional forecasters taken by NBER and the American Statistical

Association, real GNP will grow 2.7 percent in 1987-8 and 2.9 percent in 1987:1-1988:1. This signals a modest improvement from a pace of 2.5 percent in 1985-6. All but a few respondents rate the chances of a recession beginning in any quarter during 1987:1-1988:1 as low (20 percent or less). Inflation of consumer and producer prices is expected to rise from 3 percent or less now to 4 percent or slightly more next year.

Moderate Growth Forecasts Prevail but Prospects Range from Good to Poor

The forecasters are unusually divided on expansion prospects in 1987-8. About 60 percent of the group predict that real GNP will grow 3.0-3.9 percent, but four forecasters see it rising by 2.5-2.9 percent, three by 1 percent or less, and one predicts an outright recession. For 1987:1-1988:1, the distribution is similar, but there are only two deep pessimists and two respondents who expect growth of 4 percent or more.

The median forecasts project annual growth rates of 2.5 percent, 2.9 percent, 2.9 percent, 3.1 percent, and 2.7 percent in the five successive quarters 1987:1-1988:1. Taken together, the quarterly and annual predictions suggest a gradual improvement this year but more uncertainty for 1988.

The mean percentage distribution based on the individual probabilistic forecasts of real growth in 1987-8 shows the extent of that uncertainty more directly:

<i>Percentage Change in Real GNP</i>	<i>Mean Response (Percentage) 1987-8</i>
4.0 percent or more	10
2.0 to 3.9 percent	53
0 to 1.9 percent	21
Negative	16

Probabilities of a Downturn Are Low, Higher Next Year

The individual assessments that the economy's output will decline average 8, 10, 13, 15, and 21 out of 100 in the five quarters through 1988:1. For 1987:1-1987:3 none of the mean probabilities exceeds 30 percent, but for 1987:4 one-sixth fall into the 31-40 percent class and for 1988:1 more than one-fifth lie between 31 percent and 80 percent. Thus, some forecasters see the chances of a recession growing in 1988.

Inflation Rates to Increase Gradually

According to the median forecasts, the GNP implicit price deflator (IPD) will increase at annual rates of 2.8 percent, 3.5 percent, 3.5 percent, 3.8 percent, and 4.1 percent in the five consecutive quarters, 1987:1-1988:1. The group estimates that the index rose 2.7 percent in 1986-7 and predicts that it will rise 3.7 percent in 1987-8.

Projections of GNP and Other Economic Indicators, 1987-8

	Annual				
	1986 Actual	1987 Forecast	1988 Forecast	Percent Change	
				1986 to 1987	1987 to 1988
1. Gross National Product (\$ billions)	4208.5	4435.0	4727.7	5.4	6.6
2. GNP Implicit Price Deflator (1982 = 100)	114.5	117.6	122.0	2.7	3.7
3. GNP in Constant Dollars (billions of 1982 dollars)	3676.5	3766.6	3868.3	2.5	2.7
4. Unemployment Rate (percent)	7.0	6.7	6.6	-0.3 ¹	-0.1 ¹
5. Corporate Profits After Taxes (\$ billions)	133.8	147.9	158.0	10.5	6.8
6. Nonresidential Fixed Investment (billions of 1982 dollars)	455.0	454.0	465.5	-0.2	2.5
7. New Private Housing Units Started (annual rate, millions)	1.81	1.71	1.72	-5.32 ²	0.88 ²
8. Change in Business Inventories (billions of 1982 dollars)	10.8	16.0	23.6	5.2 ³	7.6 ³
9. Treasury Bill Rate (3-month, percent)	5.97	5.60	6.10	-0.37 ¹	0.50 ¹
10. Consumer Price Index (annual rate)	1.9	3.3	4.0	1.4 ¹	0.7 ¹

	Quarterly							Percent Change	
	1986 Q4 Actual	Q1	1987 Forecast			1988 Q1	Q4 86 to Q4 87		
				Q2	Q3	Q4			
1. Gross National Product (\$ billions)	4268.4	4324.0	4389.9	4467.8	4554.0	4626.2	6.7	7.0	
2. GNP Implicit Price Deflator (1982 = 100)	115.3	116.1	117.1	118.1	119.2	120.4	3.4	3.7	
3. GNP in Constant Dollars (billions of 1982 dollars)	3702.4	3725.1	3751.6	3778.6	3807.9	3833.7	2.8	2.9	
4. Unemployment Rate (percent)	6.8	6.8	6.8	6.7	6.7	6.7	-0.1 ¹	-0.1 ¹	
5. Corporate Profits After Taxes (\$ billions)	148.3	142.0	144.1	148.8	155.0	153.0	4.5	7.7	
6. Nonresidential Fixed Investment (billions of 1982 dollars)	451.0	451.5	452.6	455.0	459.1	460.9	1.8	2.1	
7. New Private Housing Units Started (annual rate, millions)	1.67	1.70	1.72	1.70	1.71	1.72	2.27 ²	1.18 ²	
8. Change in Business Inventories (billions of 1982 dollars)	-11.5	12.0	15.0	17.4	15.5	21.4	27.0 ³	9.3 ³	
9. Treasury Bill Rate (3-month, percent)	5.34	5.47	5.37	5.55	5.70	5.98	0.36 ¹	0.51 ¹	
10. Consumer Price Index (annual rate)	2.3	3.4	3.5	4.0	4.1	4.0	1.8 ¹	0.6 ¹	

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, March 1987. The figures on each line are medians of twenty-two individual forecasts.

¹Change in rate, in percentage points.

²Possible discrepancies in percentage changes are caused by rounding.

³Change in billions of dollars.

The probabilistic forecast distributions for 1987-8 can be summarized as follows:

Percentage Change in IPD	Mean Response (Percentage) 1987-8
6.0 percent or more	12
4.0 to 5.9 percent	25
2.0 to 3.9 percent	45
Less than 2.0 percent	18

The pattern of the median forecasts of inflation in the consumer price index (CPI) for the five quarters 1987:1-1988:1 is similar to that of the corresponding IPD forecasts, namely, 3.4 percent, 3.5 percent, 4.0 percent, 4.1 percent, and 4.0 percent. The group's estimate for 1986-7 is 3.3 percent; its prediction for 1987-8 is 4.0 percent.

Some increases in inflation are expected by all but a few respondents. However, the predicted changes tend to be small for both the CPI and IPD inflation.

Interest Rates Also Are Likely to Rise Slowly

The predictions of the three-month Treasury bill rate for 1987:1 range from 5.1 to 6.8 percent with a median of 6.0 percent. The corresponding figures for 1988 are 5.4-8.0 percent and a median of 6.1 percent. The individual forecasts differ, but most of them indicate some increases from the levels predicted for 1987:1 that are concentrated in the interval 5.3-5.5 percent. The average of the forecasts for 1987 is 5.6 percent, down from the 6 percent figure for 1986; the group's expectation for 1988 is 6.1 percent.

The yield on new high-grade corporate bonds also is expected to increase slightly, from 8.8 percent in 1987:1

to 9.2 percent in 1988:1, and from 9.0 percent in 1987 to 9.2 percent in 1988.

Gains in Industrial Production and Corporate Profits

Output of manufacturing, mining, and utilities was almost stationary last year: it grew less than 1 percent. The projected gains are on average 2.7 percent for 1986-7 and 3.1 percent for both 1987:1-1988:1 and 1987-8.

Corporate profits after taxes also increased a little in 1986, about 1.3 percent. According to the median forecasts, they should gain 10.5 percent in 1987 and 6.8 percent in 1988.

Less Strength in Consumption and Housing

Real consumption, which increased 4.1 percent in 1986 (when real GNP gained only 2.5 percent), is expected to gain only 2.2 percent on average in 1987. However, the quarterly forecasts suggest some pickup as the year progresses: the median rates for the five quarters 1987:1-1988:1 are 1.2 percent, 2.2 percent, 2.8 percent, 2.6 percent, and 2.8 percent. The group's projection for 1987-8 is a gain of 2.7 percent (the same as for total output).

Residential fixed investment, a source of great strength in 1986 when it rose 9.5 percent, will move up 2.5 percent in 1986-7, while housing starts will decline 5.3 percent, according to the median forecasts. The gains projected for 1987:1-1988:1 and 1987-8 are weak: 0.5 percent and 0.9 percent for residential investment, and 1.2 percent and 0.9 percent for the starts, respectively

A Trough and Recovery Predicted for Business Investment

Nonresidential fixed investment in 1982 dollars declined 1.1 percent in 1986; it is expected to register another small loss of 0.2 percent in 1987, followed by a slow recovery, with average gains of 2.1 percent in 1987:1-1988:1 and 2.5 percent in 1987-8.

The median forecasts for inventory investment, in billions of 1982 dollars, are 16 for 1986-7; 9 for 1987:1-1988:1; and 24 for 1987-8.

Lower Trade Deficits

The forecasters predict that the deficits, as measured by net exports of goods and services, will average \$143 billion (1982 dollars) in 1987:1 and \$120 billion in 1988:1, a reduction of about 16 percent. The median forecasts for 1987 and 1988 are \$132 billion and \$110 billion, a similar reduction. Some individuals are more optimistic, others less so, but all expect the trade deficits to decrease.

Policy and Other Assumptions

No further changes in tax policy are expected by most of the forecasters, although a few assume large increases in the tax burden for the year ahead. Defense outlays are expected to increase in 1987, then decrease in 1988. Federal government purchases of goods and services in 1982 dollars will gain 4 percent in 1986-7, only 0.3 percent in 1987-8, according to the median forecasts. The corresponding predictions for state and local government expenditures are 3.3 percent and 1.9 percent.

Numerical estimates of monetary growth in 1986-7 range from 7 percent to 15 percent for M1 and 5 percent to 9 percent for M2. The few projections for 1987-8 are concentrated in the 7-9 percent interval.

The dollar will continue to decline in 1987-8, most forecasters believe, but the range of the estimates widened to 5-15 percent in 1987 alone. Moderate increases in energy prices are expected by some respondents; others assume that oil prices will stay in the \$15-20/barrel range.

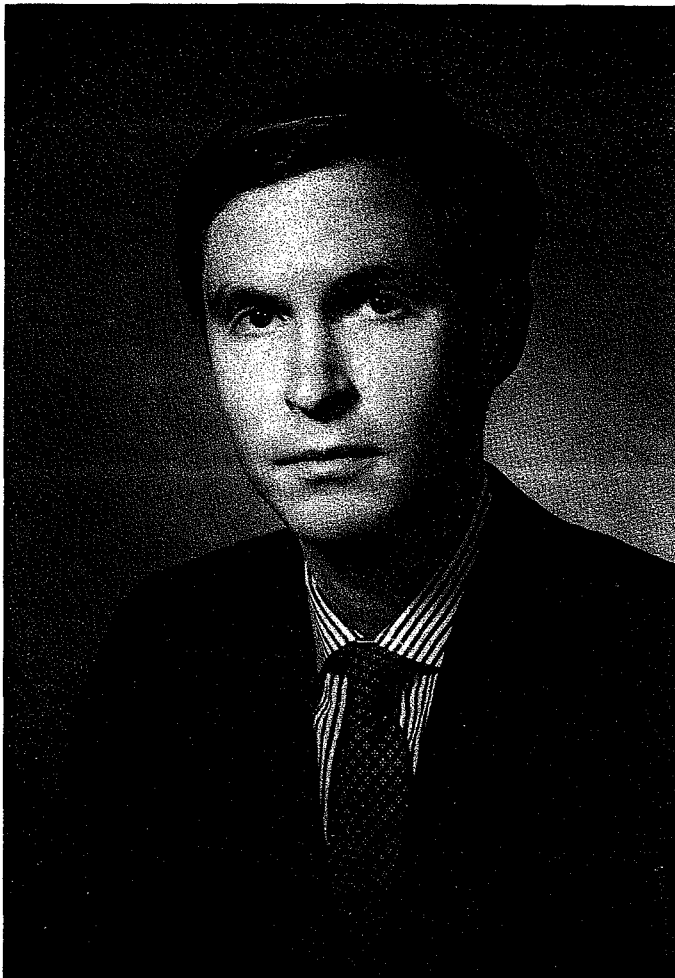
This report summarizes a quarterly survey of predictions by 22 business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate School of Business of the University of Chicago and NBER, assisted by Robert E. Allison of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

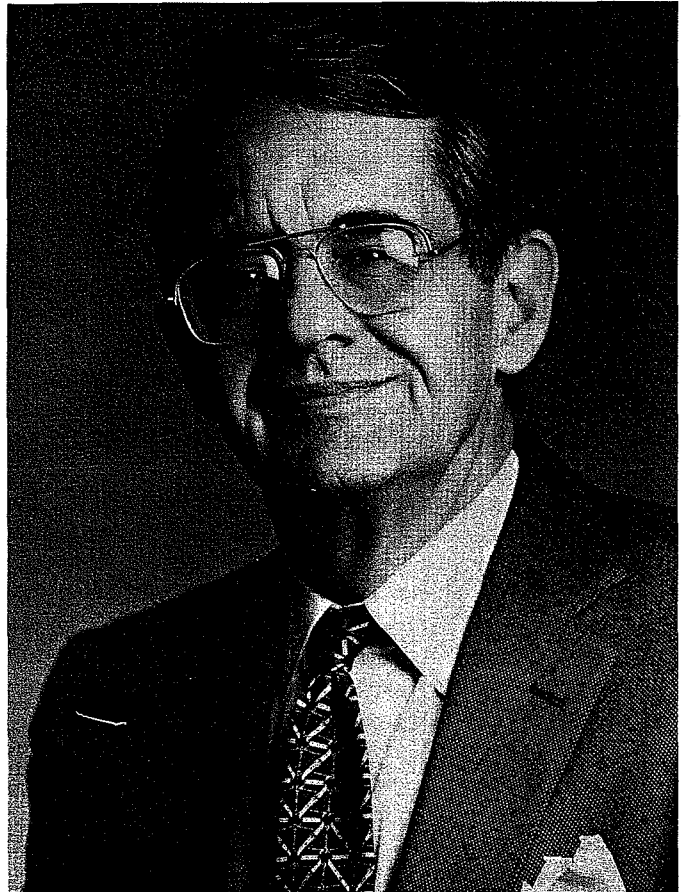
R. Glenn Hubbard

Glenn Hubbard has been a faculty research fellow in NBER's Program in Financial Markets and Monetary Economics since 1983. A native of Orlando, FL, Hubbard received B.A. and B.S. degrees from the University of Central Florida in 1979 and his Ph.D. in economics from Harvard University in 1983.

He was named assistant professor of economics at Northwestern University in 1983, with a half-time research appointment in Northwestern's Center for Urban Affairs and Policy Research. In the fall of 1985, Hubbard was a visiting scholar at Harvard's Kennedy School of Government, where he was also an adjunct faculty research fellow from 1983-6. This fall, Hubbard will become an Olin Fellow, doing research at the Bureau in Cambridge for the year.



He began his business career in 1948 with Market Facts, a market counsel and product research firm. In 1952, he became director of marketing services for McCann-Erickson, where he subsequently served as vice president, general manager of the Chicago office, and a director of the company. In 1958, Peterson was named executive vice president and director of Bell & Howell; he was promoted to president there in 1961, and to chief executive officer in 1963, a position he held until 1971.



Hubbard's fields of interests include public finance, macroeconomics, industrial organization, and natural resource economics. He serves as a research consultant to the Social Security Administration and is a member of the National Petroleum Council Committee on U.S. Oil and Gas Outlook. Hubbard's work has been published in many economic journals as well as in the 1986 NBER conference volume, *Issues in Pension Economics*.

Hubbard is single and lives in Evanston, IL. In his leisure time, he enjoys dining out, listening to jazz, and reading.

Peter G. Peterson

Peter G. Peterson, a member of NBER's Board of Directors since 1976, is chairman of The Blackstone Group, a private investment banking firm founded in 1985. Peterson received a B.S., summa cum laude, from Northwestern University in 1947 and an M.B.A. with honors from the University of Chicago in 1951.

Leaving the private sector, Peterson joined the White House staff in February 1971 as Assistant to the President for International Economic Affairs. In January 1972 he was named Secretary of Commerce and chairman of the President's National Commission on Productivity.

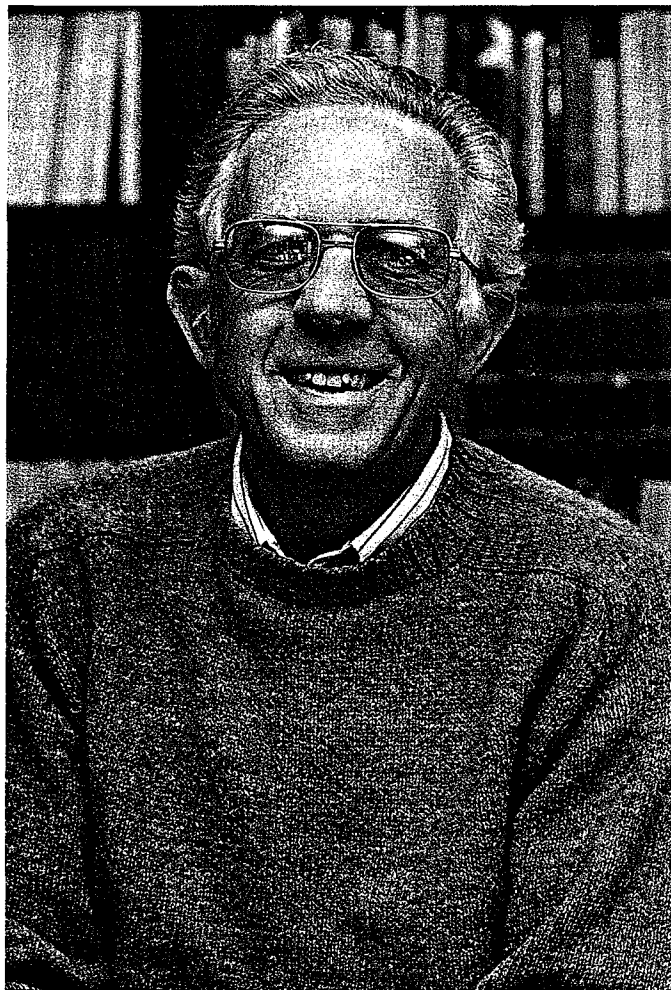
In 1973, Peterson returned to the private sector as chairman and chief executive officer of Lehman Brothers. After its merger with Kuhn, Loeb in 1977, he became chairman, serving until the end of 1983.

Peterson currently chairs the Council on Foreign Relations and the Institute for International Economics. He is a former chairman of the U.S. Council of the International Chamber of Commerce (1978-9) and the Commission on Foundations and Philanthropy (1981-3).

Peterson and his wife, Joan Ganz Cooney, reside in New York City. She is the founder and president of Children's Television Workshop.

Nathan Rosenberg

Nathan Rosenberg, professor of economics at Stanford University, has been a member of NBER's Board of Directors since 1980. Rosenberg received his B.A., summa cum laude, from Rutgers University in 1950 and his M.A. and Ph.D. (1955) from the University of Wisconsin. He was also a Fulbright Scholar at the Queen's College, Oxford University, from 1952-4.



Rosenberg began his teaching career in 1955 as an instructor at Indiana University. He subsequently taught economics at the University of Pennsylvania, Purdue University, Harvard University, and the University of Wisconsin. He became a professor of economics at Stanford University in 1974, chaired the department from 1983-6, and was also named the Fairleigh S. Dickinson, Jr., Professor of Public Policy there in 1980.

Rosenberg was elected a Fellow of the American Academy of Arts and Sciences in 1981 and a Fellow of the American Academy for the Advancement of Science in 1985. He was also director of Stanford's Program on Public Policy from 1979-83, a member of the Commerce Department's Technology Advisory Board from 1977-80, and editor of the *Journal of Economic History* from 1972-4.

Rosenberg's main research interests have been in the economics of technological change, a subject on which he has written a number of articles and books. His books include *Perspectives on Technology*, *Inside the Black Box*, and, most recently, *How the West Grew Rich* (with L. E. Birdzell, Jr.).

A New Jersey native, Rosenberg is married and has four children.

Conferences

Trade Policy Issues

NBER sponsored a conference on "Trade Policy Issues and Empirical Analysis" in Cambridge on February 13-14. Research Associate Robert E. Baldwin, a director of NBER's Trade Project and a professor at the University of Wisconsin, organized the two-day meeting. The agenda was:

Chairman: Robert E. Baldwin

James Levinsohn, Princeton University, "Empirics of Taxes on Differentiated Products: The Case of Tariffs in the U.S. Automobile Industry"

Discussants: Ray Riezman, University of Iowa, and James Anderson, Boston College

Richard Baldwin, Columbia University, and Paul R. Krugman, NBER and MIT, "Industrial Policy and International Competition in Wide-Bodied Jet Aircraft"

Discussants: Richard G. Harris, Queen's University, and Catherine Mann, Federal Reserve Board

Marie Thursby, Ohio State University, "Strategic Models, Market Structure, and State Trading: An Agricultural Application"

Discussants: J. David Richardson, NBER and University of Wisconsin, and Kala Krishna, NBER and Harvard University

Chairman: Anne O. Krueger, NBER and Duke University
Val Lambson, University of Wisconsin, "Trade Restrictions and Intermediate Products"

Discussants: Avinash Dixit and Gene M. Grossman, NBER and Princeton University

Edward E. Leamer, University of California, Los Angeles, "Measures of Openness"

Discussants: Alan Deardorff, University of Michigan, and Drusilla Brown, Tufts University

Chairman: Mordechai E. Kreinin, Michigan State University

Robert E. Baldwin and Richard Green, University of Wisconsin, "The Effects of Protection on Output and Employment: A Time-Series Analysis"

Discussants: Robert C. Feenstra, NBER and University of California, Davis, and Robert M. Stern, University of Michigan

Rachel McCulloch, NBER and University of Wisconsin, "United States-Japan Economic Relations"

Discussants: Peter Petri, Brandeis University, and Robert Staiger, Stanford University

Chairman: Rachel McCulloch

Robert E. Lipsey, NBER and Queens College, CUNY, Magnus Blomström, Columbia University, and Ksenia Kulchicky, University of Pennsylvania, "U.S. and Swedish Direct Investment and Exports"

Discussants: Steven J. Matusz, Michigan State University, and John Mutti, University of Wyoming

Dani Rodrik, Harvard University, "Imperfect Competition and Trade Policy in Developing Countries"

Discussants: Harry P. Bowen, NBER and New York University, and Beth Yarbrough, Amherst College

In the first paper, Levinsohn develops a new methodology for investigating the effects of taxes on differentiated products. He calculates which products are close substitutes. Levinsohn then estimates a demand system for a panel of 100 automobile models over 1983-5. These estimated elasticities can be used to analyze a number of possible trade and industrial policy scenarios.

Baldwin and Krugman study the world aircraft industry, which has neither the traditional constant returns nor perfect competition. Massive initial R and D costs and a steep learning curve combine to generate large dynamic scale economies in aircraft; because of these scale economies, in any given size-range class of large aircraft, the world market as a whole supports at most two producers. At the same time, aircraft are the subject of a major exercise in industrial policy: Europe's Airbus program. Baldwin and Krugman analyze the effects of the Airbus program with a simulation model that includes learning curves and increasing returns. They calibrate this model to match the actual experience in medium-range, wide-bodied jets. Their simulation suggests that the Airbus A300 was heavily subsidized with an extremely low internal rate of return and negative present value at any reasonable interest rate. However, they find that by increasing competition in the world market, Airbus generated substantial consumer gains, even in the United States.

Thursby asks whether export subsidies for agricultural products can maximize social welfare in a strategic environment. She notes that the production and marketing of agricultural products are typically conducted by different institutions. In many countries, products are exported by marketing boards that maximize joint producer returns. Using data from the world wheat market, Thursby finds that the incentive for govern-

ments of countries with marketing boards to tax or to subsidize exports depends on whether they regulate the domestic pricing of the boards. Whether governments with private marketing systems have an incentive to subsidize or to tax exports depends on the degree of competition in export marketing.

Lambson notes that changes in the terms of trade in the presence of a protectionist policy may have different effects that depend on the nature of that policy. For example, an industry producing intermediate goods can be protected by the imposition of tariffs or quotas. But it also can be protected by the imposition of domestic content requirements on final goods producers, which may be denominated in physical units or in terms of value added. If there is a change in the world price of intermediate goods, what will happen to the domestic price of these same goods? Lambson shows that if a tariff is in place, the two prices will be positively correlated. If a quota is in place, the two prices will be uncorrelated. If domestic content requirements are denominated in physical units, the two prices will be negatively correlated; if denominated in value-added terms, then the sign of the correlation is ambiguous. Lambson derives the magnitudes of these correlations in a simulated economy whose parameters were derived from the 1977 input-output tables for the United States.

Leamer asks how to determine which countries have the most severe trade barriers. The traditional measure of openness of an economy is the ratio of trade to GNP. But this measure is defective in that there are many determinants of the trade dependence ratio other than barriers to trade, particularly the supply of productive resources. Leamer attempts to control for the availability of resources by regressing net trade at the three-digit SITC level of aggregation on resource supplies, and then attributes the residuals to the barriers. He first uses measures of capital, labor, and land to explain net exports, and then treats the resources as unobservable latent variables.

The paper by Baldwin and Green asks whether protectionism is an effective means of achieving policy objectives. They examine the evidence presented in International Trade Commission Section 203 cases and use a panel study approach to see whether protection Granger-causes output in five different industries: steel; food and kindred products; textile; apparel; and footwear. They conclude that protection is often ineffective in preserving declining industries.

McCulloch reevaluates the past and future course of U.S.-Japan economic relations. She identifies six distinct aspects of the relationship that may underlie the continuing friction: bilateral imbalance on merchandise trade; capital flows from Japan to the United States; the yen-dollar exchange rate; sectorial trade distortions; Japan's technological catch-up; and societal differences. For each source of conflict, she assesses the main causes and potential remedies. Several important conclusions emerge from the analysis. First, although the bilateral trade and capital account imbalances were

produced primarily by macroeconomic factors and therefore can be viewed as "temporary" rather than long-term developments, elimination of the imbalances without serious damage may be difficult to achieve. In terms of sectorial adjustments, the U.S.-Japan relationship is entering a new phase as the two nations grow more similar in terms of technology base, abundance of capital and skilled labor, and per capita income. Two-way trade in technology and technology-based services will become increasingly important, while both nations will cope with similar problems of adjustment to increasing pressure from a new tier of competitors in Asia and elsewhere. As the aggregate imbalances diminish, sectorial trade conflict will be increasingly concentrated on differing approaches to the phasing out of uncompetitive industries and by the nurturing of new technology-based industries.

The paper by Lipsey, Blomström, and Kulchycky examines the effect of overseas production by U.S. and Swedish firms on exports by their home countries. They find the predominant effect of such production has been to increase home country exports, especially from Sweden, although they observe some substitution for U.S. exports in a couple of industries. For the United States, minority-owned overseas production in particular serves to raise the U.S. export market share in a host country. They also find that both the initial levels of overseas production by affiliates of Swedish firms and the increases in such production in a host country seem to have raised Swedish exports to the country over time.

Rodrik argues that the imperfect competition and scale economies emphasized by the "new trade theory" are, if anything, more serious in the developing than in the developed countries. Rodrik uses a general equilibrium model to determine how the presence of increasing returns and imperfect competition at home may reduce the benefits of partial trade liberalization. Given the market structure and level of protection in developing countries, he concludes that oligopolistic profits per se do not reduce the level of such benefits, but the presence of significant scale economies may clash seriously with the objective of pulling resources out of protected sectors. Rodrik also uses a partial equilibrium model to simulate a number of Turkish industries. He finds that partial trade liberalization increases welfare in all but the least protected industries. These results suggest that the levels of protection observed in the manufacturing sectors of most developing countries exceed any that could be justified by the presence of imperfect competition.

Also participating in the conference discussions were: Sven Arndt, American Enterprise Institute; Thomas Bayard, The Ford Foundation; Geoffrey Carliner, NBER; James Cassing, University of Pittsburgh; Susan Collins and Barry J. Eichengreen, NBER and Harvard University; Richard Cooper and Andrew Warner, Harvard University; Robert Crandall, Brookings Institution; Charles M. Engel, NBER and University of Virginia; Steven Husted, Council of Economic Advisers; Alasdair

MacBean, The World Bank; Keith E. Maskus, U.S. Department of State; Sumiye Okubo McGuire, Central Intelligence Agency; Allan Mendelowitz, U.S. General Accounting Office; Joseph Pelzman, George Washington University; Alan Rapoport, National Science Foundation; Alfred Reifman, Congressional Research Service; Gregory Schoepfle, U.S. Department of Labor; Edward Tower, Duke University; and Robert Yarbrough, Amherst College.

Economic Effects of Mergers and Acquisitions

Alan J. Auerbach, director of NBER's Project on Mergers and Acquisitions and a professor of economics at the University of Pennsylvania, organized a recent NBER conference on "The Economic Effects of Mergers and Acquisitions." The agenda for the February 20 and 21 meeting was:

Chairman: Alan J. Auerbach

Charles C. Brown, NBER and University of Michigan, and James L. Medoff, NBER and Harvard University, "The Impact of Firm Acquisitions on Labor"

Discussants: Geoffrey Carliner, NBER, and Henry S. Farber, NBER and MIT

Andrei Shleifer, NBER and Princeton University, and Lawrence H. Summers, NBER and Harvard University, "Hostile Takeovers as Breaches of Trust"
Discussants: Bengt Holmstrom and Oliver Williamson, Yale University

Bronwyn H. Hall, NBER and Stanford University, "The Effect of Takeover Activity on Corporate Research and Development"

Discussants: Charles C. Brown, and Ariel Pakes, NBER and University of Wisconsin

Chairman: Martin Feldstein, President, NBER

Alan J. Auerbach, and David Reishus, Harvard University, "The Effects of Taxation on the Merger Decision"

Discussants: James M. Poterba, NBER and MIT, and John B. Shoven, NBER and Stanford University

John B. Shoven and Laurie B. Simon, Stanford University, "Share Repurchases and Acquisitions: An Analysis of Which Firms Participate"

Discussants: David F. Bradford, NBER and Princeton University, and Jerry R. Green, NBER and Harvard University

Chairman: Michael Jensen, Harvard University and University of Rochester

Devra Golbe, Rutgers University, and Lawrence White, New York University, "A Time-Series Analysis of Mergers and Acquisitions in the U.S. Economy"

Discussants: Steven Salop, Georgetown University, and Robert A. Taggart, Jr., NBER and Boston University

Richard Ruback, MIT, "The Performance of Unsuccessful Takeover Targets: A Long-Run View"

Discussants: Andrei Shleifer, and Robert Vishny, NBER and University of Chicago

Roundtable Discussion: Joseph Grundfest, Commissioner, Securities and Exchange Commission (SEC); Greg Jarrell, University of Rochester, formerly Chief Economist, SEC; Steven Salop, formerly Associate Director, Federal Trade Commission; and Lawrence White, member, Federal Home Loan Bank Board, and New York University

Chairman: Alan J. Auerbach

Randall Mørck, University of Alberta, Andrei Shleifer, and Robert Vishny, "Differences between Hostile and Friendly Targets: Asset and Ownership Structure"

Discussants: Oliver Hart, MIT, and Michael Jensen

Julian Franks, London Business School; Robert Harris, University of North Carolina; and Colin Mayer, City University, London, "Means of Payment in Takeovers: Results for the United Kingdom and the United States"

Discussants: Artur Raviv, Northwestern University, and Richard Ruback

Brown and Medoff investigate the changes in wages and employment that follow a firm's involvement in an acquisition. They compare those changes with what typically occurs in firms not involved in acquisitions. Contrary to popular press coverage, Brown and Medoff's research shows that wages generally grow faster following acquisitions, although this is not uniformly true for different types of acquisitions. They also find that employment grows faster at firms involved in an acquisition.

Shleifer and Summers question the common view that share price increases of firms involved in hostile takeovers are a measure of the efficiency gains from acquisitions. Even if such gains exist, most of the increase in the combined value of the target and the acquirer may come from losses in stakeholder wealth, for example, declines in the value of subcontractors' firm-specific capital or employees' human capital.

Shleifer and Summers also suggest a theory of managerial behavior in which hiring and entrenching trustworthy managers enables shareholders to keep implicit contracts with stakeholders. Hostile takeovers are innovations that allow shareholders to renege on such contracts against the managers' will. By this theory, shareholder gains are redistributions from stakeholders

and can result in the long run in a deterioration of the trust necessary to the functioning of the corporation.

Hall uses new data on all acquisitions of publicly traded manufacturing firms in the last ten years to determine whether corporate mergers and acquisitions tend to reduce long-term investments in R and D. She finds that manufacturing firms involved in acquisitions and mergers have roughly the same pattern of spending on R and D as the sector as a whole. High levels of R and D spending do not predispose a firm to being taken over, and expenditures on R and D are not reduced in the new firm. Moreover, the acquiring firm values the acquired R and D capital more highly than the stock market does.

On the other hand, the substantial increase in the number and size of acquisitions made by privately held firms in the 1980s has been concentrated primarily on firms with low R and D intensity that are also in non-R and D-intensive industries (food, textiles, oil, plastics, stone, clay, glass, metals, autos, wood, and miscellaneous manufacturing). In these industries, R and D intensities in the remaining firms grew during the 1980s, but not at as high a rate as in the high technology industries. Because the pattern of low investment in R and D is long-standing, and because the firms taken over have less rather than more R and D capital than the industry as a whole, it seems unlikely that the recent increase in takeover activity has had a significantly negative effect on R and D spending in these industries, which was very low already.

Auerbach and Reishus consider the impact of tax incentives on merger and takeover activity in the United States from 1968-83. By comparing a sample of over 300 mergers that did occur with another sample of "pseudo mergers" that they create, they are able to detect whether tax benefits are associated with heightened merger activity. Such simple comparisons suggest that firms facing limitations in respect to tax losses and credits are not more likely to be acquired but are somewhat more likely to acquire other firms. Moreover, changes in leverage associated with mergers did not vary significantly from what would have occurred in the absence of the mergers. When Auerbach and Reishus move from simple comparisons to a model of merger activity, they confirm that tax considerations may be motivating tax-constrained firms to acquire taxable firms. This potential tax advantage of mergers and takeovers was not reduced by the Tax Reform Act of 1986. But their results suggest that its economic importance was relatively small, leading perhaps to a 1.5 percent increase in the number of mergers occurring over the period studied.

For most shareholders, cash received through share repurchases and acquisitions of shares in another firm has a tax advantage over dividends. Shoven and Simon analyze what motivated firms to participate in share acquisition programs in 1976 and 1984. They find that the firm's cash flow and its clientele agreements are the most consistently significant and important factors.

In their paper, Golbe and White first discuss the available historical data on mergers and acquisitions and offer a historical perspective on the current wave of mergers. They then develop a set of specific hypotheses that should apply to mergers. Specifically, they argue that the volume of mergers should be negatively related to Tobin's q and to the real cost of capital and positively related to the size of the economy, to changes in economic conditions, to divergences of opinion about future economic prospects, and to changes in tax regime. Finally, they test these propositions but do not find strong support for most of them.

Ruback studies the performance of 33 unsuccessful targets of takeovers. He finds that the initial announcement of the contest for control is associated with a significant abnormal increase in the price of the target's stock of about 30 percent. Between the initial offer announcement and the termination announcement, there is a decline in price, but it is statistically insignificant. At the time of the termination announcement, the price of the stock of these 33 firms declined statistically significantly by about -10 percent. However, the price declines at the termination announcement do not completely offset the gains from the initial announcement. Also, no significant abnormal declines occur in the three years following the termination of the offer. The declines upon termination announcement indicate that the failure of a control contest is costly to the stockholders of target firms. In other words, opposition to tender offers is a gamble. But Ruback's evidence does not indicate whether the gamble maximizes value for the stockholders of target firms. Instead, he shows that losing the gamble imposes costs on target stockholders.

In the roundtable discussion, four present and former government officials involved with issues of mergers and acquisitions discussed several policy issues of current interest. These included: how to define insider trading and the appropriate policy response to it; the effects of financial deregulation on mergers in the financial sector and on industrial mergers in general; and the impact of recent changes in antitrust policy on industrial competition.

The next paper, by Mørck, Shleifer, and Vishny, reveals that hostile targets are smaller, older, have lower Tobin's q s, more debt, and invest less of their income than *Fortune* 500 firms do. The low q seems to be an industry-specific, rather than a firm-specific, effect. In addition, hostile targets are less likely to be run by a member of the founding family, and have lower officer ownership, than the average firm. Low q , low market value, low investment, and the absence of a founder, make a firm a likely target of a hostile bid.

Friendly targets, on the other hand, are smaller and younger than *Fortune* 500 firms but have comparable Tobin's q s and other financial characteristics. Friendly targets are also more likely to be run by a member of the founding family and have higher officer ownership than the average firm. A CEO's decision to retire with a large stake, and/or the CEO's relationship to a founder, often precipitates a friendly acquisition. Finally,

high officer ownership is the most important attribute in predicting friendly acquisitions.

Franks, Harris, and Mayer analyze a large set of acquisitions and find striking changes in the form of finance that has been employed in acquisitions in the United States. At the beginning of the 1960s, equity was the dominant means of payment; by the beginning of the 1980s, cash acquisitions had become much more widespread. There have not been similar changes in the United Kingdom: both cash and equity have been used for much of the period. The authors also observe much larger "bid premiums" for cash than for equity-financed acquisitions. Differences in bid premiums have been recorded previously for alternative types of acquisition—tender versus nontender offers, revised versus unrevised bids—but the authors contend that these differences may be attributable in large part to the forms of finance used.

This paper sheds much light on contending hypotheses of corporate finance. Share price responses to seasoned equity offers are thought to support signaling theories: that is, that the announcement of new issues conveys information to the market. However, the results of this paper cast doubt on that thesis. Likewise, a widely cited tax theory of acquisitions—that equity "trapped" in the corporate sector can be distributed tax-efficiently via acquisitions—finds little support from their examination of a series of cash acquisitions. However, their results are consistent with the view that asset "mispricing" affects corporate finance decisions.

Conference Calendar

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

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also provide a short (fewer than fifty words) description of the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Summer 1987 issue of

the *Reporter* is May 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-9163.

May 18, 1987

Conference on Misalignment of Exchange Rates, NBER

May 29, 1987

Conference on International Trade, NBER

June 3-5, 1987

3rd International Conference, Institute for Monetary and Economic Studies-Bank of Japan

June 11-12, 1987

International Seminar on Macroeconomics, NBER

June 16-17, 1987

Conference: The Economics of Inventory Management, Wesleyan University-International Society for Inventory Research

July 6-8, 1987

Exchange Rate Regimes, Money GDP Targets, and Macroeconomic Policy, Center for Economic Policy Research

July 7-11, 1987

Annual Conference, Western Economic Association

July 10, 1987

Research Meeting: Economic Fluctuations, NBER

August 2-5, 1987

Annual Meeting, American Agricultural Economics Association*

August 10, 1987

Conference on International Macroeconomics, NBER

August 14, 1987

Conference on International Trade, NBER

August 17-20, 1987

Annual Meeting, American Statistical Association*

August 24-28, 1987

43rd Congress: Public Finance and Performances of Enterprises, International Institute of Public Finance

September 3-6, 1987

Annual National Conference, Atlantic Economic Society*

September 4-6, 1987

Employment Strategies, Enterprise Management, and Industrial Relations, Center for Economic Policy Research

September 9-12, 1987

18th Bi-Annual Conference, Center for International Research on Economic Tendency*

September 11-12, 1987

Conference on International Migration, NBER

September 21-23, 1987

Conference on Developing Country Debt Policy, NBER

September 29-October 2, 1987

Annual Meeting, International Monetary Fund

October 4-7, 1987

Annual Meeting, National Association of Business Economists*

October 16, 1987

Conference on International Migration, NBER

October 22-23, 1987

Economic Policy Panel, Center for Economic Policy Research

November 6-7, 1987

Conference on Political Economy, NBER

November 8-11, 1987

80th Annual Conference, National Tax Association-Tax Institute of America*

November 13, 1987

Program Meeting: Economic Fluctuations, NBER

November 17, 1987

Tax Policy and the Economy, NBER

November 20-22, 1987

Conference, Carnegie-Mellon University-University of Rochester

November 22-24, 1987

Annual Meeting, Southern Economic Association*

December 3-4, 1987

Universities Research Conference on Financial Markets and Monetary Economics, NBER

December 3-4, 1987

Special Meeting of Brookings Panel on Economic Activity, Brookings Institution

March 11-12, 1988

Annual Conference on Macroeconomics, NBER

April 21-24, 1988

The Economics of Aging, NBER

August 8-11, 1988

Annual Meeting, American Statistical Association*

September 25-28, 1988

81st Annual Conference, National Tax Association-Tax Institute of America*

September 25-28, 1988

Annual Meeting, National Association of Business Economists*

November 20-22, 1988

Annual Meeting, Southern Economic Association*

August 14-17, 1989

Joint Statistical Meetings, American Statistical Association*

September 17-20, 1989

Annual Meeting, National Association of Business Economists*

October 8-11, 1989

82nd Annual Conference, National Tax Association-Tax Institute of America*

November 19-21, 1989

Annual Meeting, Southern Economic Association*

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

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Macroeconomists Meet in California

Nearly 100 members and guests of NBER's Program in Economic Fluctuations met at the Bureau's Palo Alto office on January 30 to discuss their research. The day-long meeting was organized by Research Associate Frederic S. Mishkin of Columbia University and Faculty Research Fellow James H. Stock of Stanford University. The agenda was:

Knut Mork and V. Kerry Smith, Vanderbilt University, "Here We Go Again: Another Test of the Life-Cycle Hypothesis, but with Much Improved Panel Data"
Discussant: Stephen P. Zeldes, NBER and University of Pennsylvania

Lawrence Christiano, Federal Reserve Bank of Minneapolis; Martin S. Eichenbaum, NBER and Carnegie-Mellon University; and David Marshall, Carnegie-Mellon University, "The Permanent-Income Hypothesis Revisited"

Discussant: Lars Peter Hansen, University of Chicago
George A. Akerlof, University of California, Berkeley; and Lawrence F. Katz, NBER and Harvard University, "Do Deferred Wages Dominate Involuntary Unemployment as a Worker Discipline Device?" (NBER Working Paper No. 2025)

Discussant: Lawrence H. Summers, NBER and Harvard University

Joe Matthey and Richard Meese, University of California, Berkeley, "Empirical Assessment of Present-Value Relations"

Discussant: Robert Engle, University of California, San Diego

Robert G. King, NBER and University of Rochester; Charles I. Plosser, University of Rochester; James H. Stock; and Mark W. Watson, NBER and Northwestern University, "Stochastic Trends and Economic Fluctuations"

Discussant: Ben S. Bernanke, NBER and Princeton University

Danny Quah, MIT, "Estimating the Slippery Side of the Laffer Curve: Deficits and Runaway Inflation"
Discussant: Robert E. Hall, Director of NBER's Program in Economic Fluctuations and Stanford University

Mork and Smith use a detailed panel set of 418 Norwegian households to test the life-cycle theory of consumption. Each household in the sample was interviewed twice between 1975 and 1977, and detailed

diaries were kept by participants in the study. This allowed the authors to control for the effects of relative prices and demographics. For most categories of commodities, the life-cycle hypothesis seemed to hold: that is, there was little covariance between current changes in consumption and lagged changes in income. The one notable exception, however, was automobile purchases. This suggests that there are either adjustment costs or liquidity constraints on the consumption of durables.

Christiano, Eichenbaum, and Marshall attempt to explain the general empirical failure of random walk models of consumption as a failure of modeling rather than of theory. In particular, the authors demonstrate that when agents derive utility from leisure, and when labor production requirements are stochastic and autocorrelated, then consumption will not follow a random walk. Second, if the utility maximization problem occurs in continuous time, then analyzing discrete data will lead to temporal aggregation bias that distorts the tests. In their empirical analysis, the authors find statistically significant evidence against discrete-time models. Furthermore, they find that continuous-time models generate little evidence against the permanent-income hypothesis.

Akerlof and Katz ask whether upward-sloping wage profiles can generate sufficient incentives for workers to avoid shirking. An upward-sloping wage profile is thought to bond workers to firms because it links compensation to long employment. In that way, it eliminates the involuntary unemployment generated by the need to pay efficiency wages (wages set above market-clearing levels) to ensure hard work when there is not sufficient monitoring of performance. Akerlof and Katz demonstrate that efficiency wages, not deferred wages, maximize firm profits when workers have finite lives, when monitoring worker performance is costly, and when firms have reputations for honesty. Upward-sloping wage profiles do not create sufficient incentives to avoid shirking on the part of young workers because the costs of being caught are low (in present discounted value). As a result, profit-maximizing firms still have an incentive to pay nonmarket clearing wages that generate unemployment.

Matthey and Meese survey and analyze the empirical literature on the estimation and testing of present-value models of asset prices. They explore the small sample properties of tests of various theories of asset price determination—in particular, tests for the presence or absence of asset price bubbles. Many of the standard tests of asset volatility and of cross-equation restrictions in asset price models are quite poor. However, comparing a number of present-value tests of asset prices with finite sample distributions indicates that a number of tests that had previously rejected fundamental determination of asset prices are consistent with these models when the discount rate is stochastic. On the other hand, empirical support for speculative bubbles appears weak.

King, Plosser, Stock, and Watson analyze the cointegration properties of several macroeconomic time series. They explore the relationship between the nonstationary, unit root components of different variables on both theoretical and empirical levels. They first develop a dynamic, stochastic, general equilibrium macro-model in which permanent productivity shocks generate a common stochastic trend across real variables. These permanent productivity disturbances are also capable of generating complicated dynamics in individual series. Second, the authors examine several time series to see whether they have common integrated components.

They conclude that a single stochastic trend underlies the behavior of output, consumption, and investment. When the money supply, the price level, and a measure of fiscal policy are included, the six time series appear to have three common trends. Attempts to link explicitly the real common trend to productivity shocks suggest that one-half to two-thirds of the forecast error variance of GNP for a two-year horizon can be explained. Normal shocks do not appear to generate real long-term effects.

Finally, Quah considers issues of seigniorage and money creation. He analyzes inflation in a number of countries to determine whether various national seigniorage strategies are choosing the minimum inflation paths consistent with the creation of real revenue. He finds that the United States, United Kingdom, Italy, and Mexico have chosen paths that minimize inflation relative to their financing needs. Israel, Brazil, and Argentina, however, have generated inflation rates in excess of levels needed for seigniorage.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-785 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others there is a charge of \$2.00 per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than \$10.00. Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

786. "Supply Shocks, Wage Indexation, and Monetary Accommodation," by Joshua Aizenman and Jacob A. Frenkel, 1986 (NBER Working Paper No. 1609)

787. "More on the Speed of Adjustment in Inventory Models," by Alan S. Blinder, 1986 (NBER Working Paper No. 1913)

788. "Is the Strong Dollar Sustainable?" by Paul R. Krugman, 1985 (NBER Working Paper No. 1644)

789. "The Cyclical Behavior of Prices and Quantities: The Case of the Automobile Market," by Olivier J. Blanchard and Angelo Melino, 1986 (NBER Working Paper No. 1325)

790. "Debt and Default in the 1930s: Causes and Consequences," by Barry J. Eichengreen and Richard Portes, 1986 (NBER Working Paper No. 1772)

791. "Debt and Taxes in the Theory of Public Finance," by Martin Feldstein, 1985 (NBER Working Paper No. 1433)

792. "Floating Exchange Rates: Experience and Prospects," by Maurice Obstfeld, 1985

793. "The Pure Theory of Country Risk," by Jonathan Eaton, Mark Gersovitz, and Joseph E. Stiglitz, 1986 (NBER Working Paper No. 1894)

794. "Reputation in a Model of Monetary Policy with Incomplete Information," by Robert J. Barro, 1986 (NBER Working Paper No. 1794)

795. "Supply-Side Economics: Old Truths and New Claims," by Martin Feldstein, 1986 (NBER Working Paper No. 1792)

796. "U.S. Budget Deficits and the European Economies: Resolving the Political Economy Puzzle," by Martin Feldstein, 1986 (NBER Working Paper No. 1790)

797. "U.S. Deficits since World War I," by Robert J. Barro, 1986 (NBER Working Paper No. 1309)

798. "A Theory of Dual Labor Markets with Application to Industrial Policy, Discrimination, and Keynesian Unemployment," by Jeremy I. Bulow and Lawrence H. Summers, 1986 (NBER Working Paper No. 1666)

799. "Recent Developments in the Theory of Rules versus Discretion," by Robert J. Barro, 1985 (NBER Working Paper No. 1473)

800. "Money, Credit, and Interest Rates in the Business Cycle," by Benjamin M. Friedman, 1986 (NBER Working Paper No. 1482)

801. "Education, Welfare, and the 'New' Federalism: State Budgeting in a Federalist Public Economy," by Steven G. Craig and Robert P. Inman, 1986 (NBER Working Paper No. 1562)

802. "Multiple Exchange Rates for Commercial Transactions," by Rudiger Dornbusch, 1986 (NBER Working Paper No. 1659)

803. "Issues in the Measurement and Interpretation of Effective Tax Rates," by David F. Bradford and Charles Stuart, 1986 (NBER Working Paper No. 1975)

804. "International Capital Mobility and Crowding Out in the U.S. Economy: Imperfect Integration of Financial Markets or of Goods Markets?" by Jeffrey A. Frankel, 1986 (NBER Working Paper No. 1773)
805. "Unemployment, Disequilibrium, and the Short-Run Phillips Curve: An Econometric Approach," by Richard E. Quandt and Harvey S. Rosen, 1986 (NBER Working Paper No. 1648)
806. "Tax Aversion and the Laffer Curve," by Roger N. Waud, 1986 (NBER Working Paper No. 1533)
807. "Inflation, Exchange Rates, and Stabilization," by Rudiger Dornbusch, 1986 (NBER Working Paper No. 1739)
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809. "Are Devaluations Contractionary?" by Sebastian Edwards, 1986 (NBER Working Paper No. 1676)
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823. "Short-Term and Long-Term Interest Rates in a Monetary Model of a Small Open Economy," by Stephen J. Turnovsky, 1986 (NBER Working Paper No. 1716)
824. "Supply-Side Macroeconomics," by John F. Hellwell, 1986 (NBER Working Paper No. 1995)
825. "A Tax-Based Test for Normal Rigidities," by James M. Poterba, Julio J. Rotemberg, and Lawrence H. Summers, 1986 (NBER Working Paper No. 1627)

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.

Issues in Pension Economics

Issues in Pension Economics, edited by Zvi Bodie, John B. Shoven, and David A. Wise, is now available from the University of Chicago Press for \$45.00. This collection of papers is the third volume to result from

the Bureau's Project on Pensions which began work in 1980.

While the earlier books focused on the financial and labor market aspects of pensions, this work examines a broader range of issues and is based on newer data. The areas examined in this volume are: (1) the interaction between pension funding decisions and corporate finance; (2) the role of pensions in the provision of adequate retirement income; (3) how pension plans affect saving; (4) the effects of pension plans on the labor market; and (5) how the size of pensions varies by sex or race.

This book should be useful both to pension practitioners and to academics. Its editors, all research associates of the NBER, codirected the Bureau's Project on Pensions. In addition, Bodie is professor of finance at Boston University, Shoven is professor of economics at Stanford University, and Wise is the John F. Stambaugh Professor of Political Economy at Harvard University.

Trade and Structural Change in Pacific Asia

Trade and Structural Change in Pacific Asia, edited by Colin I. Bradford, Jr., and William H. Branson, may be purchased from the University of Chicago Press for \$58.00. This NBER conference report includes studies of Korea, Indonesia, Taiwan, Hong Kong, Singapore, Malaysia, Thailand, and the Philippines.

The economies of Pacific Asia have developed rapidly over the last 20 years and its growth has been led by exports. This volume explores the impact of these exports on the rest of the world and their relationship to the growth of the region itself. One of the questions raised in the volume is how other newly industrializing countries can use Pacific Asia as a model for their own economic growth. Therefore, this book should assist those interested either in empirical patterns of international trade or in the process of economic development.

Bradford is a research economist in, and Branson directs, NBER's Program in International Studies. In addition, Bradford is associate director of the Yale University Center for International and Area Studies and Branson is professor of economics at Princeton University's Woodrow Wilson School of Public and International Affairs.

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 December 1986 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.

International Evidence on the Demand for Money

Ray C. Fair
Working Paper No. 2106
December 1986

One of the current questions in the literature on the demand for money is whether the adjustment of actual to desired money holdings is in nominal or real terms. This paper describes a simple procedure that can be used to test the nominal against the real hypothesis. It carries out the test for 27 countries, and it also tests the structural stability of the demand-for-money equations and the correctness of the dynamic specification.

The results are strongly in favor of the nominal adjustment hypothesis. The estimated equations are quite good in terms of the number of coefficient estimates that are of the right sign and that are significant. The equations also stand up well when tested against a more general dynamic specification. However, there is some evidence of structural instability before and after 1973, although the instability is generally moderate. The instability does not affect the conclusion that the nominal adjustment hypothesis dominates the real adjustment hypothesis.

Regional Effects of Taxes in Canada: An Applied General Equilibrium Approach

Rich Jones and John Whalley

Working Paper No. 2107

December 1986

This paper reports on an applied general equilibrium regional model for Canada that I use to investigate the regional effects of taxes. First we review the literature on regional tax effects and then we describe briefly the main features of the model. Existing literature on regional tax effects is largely nonquantitative and does not discuss several important features (for example, that they fall predominantly on products or industries located in particular regions). Our results suggest that the regional effects of taxes can be significant and, in the Canadian case at least, they do not tend to counterbalance one another. In general, richer regions tend to lose and poorer regions gain from federal taxes, but other regional characteristics such as manufacturing/nonmanufacturing, or resource/nonresource, can also be important.

Unions and Job Security in the Public Sector

Steven G. Allen

Working Paper No. 2108

December 1986

This study examines the effect of unions on job security in the public and private sectors. Despite much lower unemployment rates for workers in the public than in the private sector, the odds for nonunion workers being unemployed are identical once one controls for differences in worker and job characteristics. The picture is quite different for union workers: they face greater odds of becoming unemployed than nonunion workers do in private sector jobs but much lower chances of becoming unemployed than nonunion workers do in the public sector. The ability of unions to reduce lay-off and unemployment rates in the public sector seems to be attributable to their political power to prevent budget cuts and to the absence of Unemployment Insurance subsidies or supplemental unemployment benefits in the public sector.

Real Business Cycles and the Lucas Paradigm

Richard T. Froyen and Roger N. Waud

Working Paper No. 2109

December 1986

JEL Nos. 023, 131, 300

When the Lucas paradigm is generalized to include real effects, the effects of real and monetary factors on

the business cycle are always interrelated. Furthermore, in such models monetary factors can affect long-run behavior, or real output, contrary to the commonly held view that they cannot affect it. Real business cycle models and Lucas-type models are different paradigms not because they consider real versus monetary effects, but because of the interrelationships between real and monetary factors that are intrinsic to the Lucas paradigm as opposed to the dichotomy between real and monetary factors implied by the literature on real business cycles.

Terms of Trade, Exchange Rates, and Labor Market Adjustment in Developing Countries

Sebastian Edwards

Working Paper No. 2110

December 1986

JEL Nos. 410, 420, 431

This paper uses three models of a small open economy to analyze the effects of terms of trade and changes in the exchange rate (that is, devaluations) on labor market adjustment. First, I develop a model with three goods (exportables, importables, and nontradables) and four factors and investigate how an exogenous worsening of the international terms of trade can affect labor allocation and wages. Second, I use a more traditional three-goods, two-factors model and compare my results to the first case. The analysis includes alternative assumptions about wage flexibility: full flexibility, economywide (real) wage rigidity, and sector-specific real wage rigidity. Finally, I use a model with three final goods and imported intermediate inputs to investigate the effects of devaluations on aggregate and sectorial employment. Here I determine the conditions under which a devaluation will be contractionary (that is, will result in a reduction of employment).

The Other Side of the Trade Imbalance: What Will Japan Do?

Ryuzo Sato and John A. Rizzo

Working Paper No. 2111

December 1986

JEL No. 420

With the U.S. trade deficit mounting, much attention has been paid to U.S. macroeconomic policy and economic structure as contributing factors. This paper contends that the economic structure and policies of Japan have also contributed significantly to the trade

imbalance. In this paper, we discuss institutional features of Japan's macroeconomy and industrial structure that have promoted her large trade surplus. We also evaluate Japan's industrial policies.

Given the nature and magnitude of the role played by Japan in causing the bilateral trade imbalance, we ask how Japan might best act to alleviate this imbalance. We examine fiscal, monetary, and other policy initiatives that Japan might take to reduce the trade imbalance. The evidence stresses the desirability of expanding Japan's services industries, particularly leisure-related services.

Sources of Output and Variability in a Macroeconomic Model

Ray C. Fair

Working Paper No. 2112
December 1986

There has been much discussion recently about the ultimate sources of macroeconomic variability. A number of authors attribute most of this variability to only a few sources, sometimes to only one. Although there may be only a few important sources, this is far from obvious since economies seem complicated. The purpose of this paper is to provide quantitative estimates of various sources of variability using my U.S. econometric model. I use stochastic simulation to estimate how much the overall variances of real GNP and the GNP deflator are reduced when various shocks are suppressed in the model.

The results show two things. First, the contribution of a given shock to the variance can vary considerably as the length ahead of the prediction varies. What is important for the one-quarter-ahead prediction may not be important for the eight-quarter-ahead prediction, and vice-versa. Second, the results imply that there are many important sources of variability for real GNP. It is not the case that one or two sources dominate. This is less true for the GNP deflator, however, where there are two very important sources: shocks to the price and wage equations and shocks to the price of imports—and one moderately important one: shocks to the government exogenous variables.

A Guide to Target Zones

Jacob A. Frenkel and Morris Goldstein

Working Paper No. 2113
December 1986
JEL No. 430

This paper identifies key issues surrounding the advisability and practicality of adopting "target zones"

for the exchange rates of major currencies. We address four fundamental questions concerning the definition of and the rationale for target zones. First, what is generally meant by a "target zone" approach to exchange rate management and how can "hard" and "soft" versions of this approach be defined? Second, what are the perceived deficiencies in the existing exchange rate system of managed floating that motivate the call for the adoption of target zones? Third, how might target zones remedy these deficiencies? And fourth, what factors are behind much of the skepticism over and opposition to target zones?

In addition, the paper deals with a series of operational questions of a more technical nature that weigh heavily on the practicality of implementing a target zone approach. The issues discussed include: how the target zones would be calculated; what currencies would be included in the system of target zones; how wide the target zones should be and how frequently they should be revised; and, what policy instruments would be employed to keep actual exchange rates within the target zones, and with what consequences for other policy objectives.

The purpose of the paper is not to make the case either for or against the adoption of target zones. Rather, the intention is to raise and discuss factors that should be considered in any serious discussion of the topic.

A Note on Optimal Public Enforcement with Settlements and Litigation Costs

A. Mitchell Polinsky and Daniel L. Rubinfeld

Working Paper No. 2114
December 1986

This note reexamines the theory of optimal public enforcement when litigation costs are incurred if the defendant is prosecuted at trial, and when an out-of-court settlement is possible. Using a numerical example, we show that settlements and litigation costs can alter the optimal system of public enforcement substantially. We also show that failing to take these considerations into account can lower the achievable level of social welfare significantly.

Market Structure and Cyclical Fluctuations in U.S. Manufacturing

**Ian Domowitz, R. Glenn Hubbard,
and Bruce C. Petersen**

Working Paper No. 2115
December 1986

The relevance of imperfect competition for models of aggregate economic fluctuations has received in-

creased attention from researchers in both macroeconomics and industrial organization. Properly measuring the size of industry markups of price over marginal cost is important both for assessing the role of market structure and for determining the extent to which excess capacity is a significant feature accompanying imperfect competition in American industry. Using a panel data set on four-digit manufacturing industries in the U.S. Census, this paper expands recent work by Robert Hall on the importance of market structure for understanding cyclical fluctuations.

We outline a methodology for estimating industry markups of price over cost and the influence of market structure on cyclical movements in total factor productivity. While we find evidence to support the proposition that price exceeds marginal cost in U.S. manufacturing, our results offer only limited support for the notion that markups are importantly related to differences in industry concentration, although the effect of unionization is important. Concentration effects are important only in industries that produce durable goods or differentiated consumer goods. In addition, much of the estimated markup of price over marginal cost is accounted for by fixed costs related to overhead labor, advertising, and central office expenses; we do not find compelling evidence of substantial excess capacity in most industries.

Testing for Real Effects of Monetary Policy Regime Shifts

Carl E. Walsh
Working Paper No. 2116
January 1987
JEL No. 311

Huizinga and Mishkin (1986) proposed a simple method for testing whether changes in monetary policy regimes have affected the ex ante real rate of interest. This paper shows that the set of variables on which to project the ex post real rate must be chosen carefully if inferences about the ex ante real rate are to be drawn. I show that Huizinga and Mishkin's tests cannot distinguish between shifts in the real rate process and shifts in the inflation process.

Social Security and the American Family

Michael J. Boskin and Douglas J. Puffert
Working Paper No. 2117
January 1987
JEL Nos. 915, 320

This paper presents the results of a computer simulation of the expected present value of benefits, taxes,

and transfers, rates of return, and the marginal linkage of benefits and taxes for persons of different income levels and family status. We treat a number of important issues associated with the "deal" and incentives projected to be offered by the current Social Security system for different family situations: married versus single persons, number of earners in the family and the division of earnings among them, and the special situation of widows and divorcees. The results show tremendous variation for different family situations and often dwarf the amounts at stake for most families in the recent debates over income tax reform.

We pay particular attention to such items as marriage penalties and subsidies, incentives to postpone divorce, and low marginal linkage of expected benefits to incremental taxes paid by women, whether as second earners in a family, divorcees, or widows.

Why Have Corporate Tax Revenues Declined?

Alan J. Auerbach and James M. Poterba
Working Paper No. 2118
January 1987
JEL Nos. 323, 520

This paper examines the source of changes in corporate tax revenues during the last 25 years. It finds that legislative changes explain less than half of the decline in revenue during this period. Falling corporate profits have had a larger influence on revenue collections than all legislative changes taken together—a result that is often obscured in studies that focus solely on the average corporate tax rate. Changes in capital recovery provisions are the most important legislative factor influencing corporate tax revenues, especially in the last five years.

The paper also considers the impact of the Tax Reform Act of 1986. The new law will increase the average tax rate on corporate profits by approximately 10 percent. By 1990, the average tax rate will reach its level of the late 1970s, although it will remain substantially below its level of the 1960s and the early 1970s.

Tax Evasion and Capital Gains Taxation

James M. Poterba
Working Paper No. 2119
January 1987
JEL Nos. 323, 916

This paper uses time-series data to investigate how changes in capital gains tax rates affect taxpayer compliance. It finds that a 1 percent increase in the marginal tax rate reduces voluntary compliance by between

0.5 and 1 percent. These results confirm the findings of previous studies that were based on individual household data. They also suggest that at least one-quarter of the observed response of capital gain realizations to changes in marginal tax rates is caused by changes in reporting behavior, rather than changes in portfolio behavior.

Household Behavior and the Tax Reform Act of 1986

Jerry A. Hausman and James M. Poterba

Working Paper No. 2120

January 1987

JEL No. 323

This paper evaluates the effects of the 1986 Tax Reform Act on household labor supply and saving. It describes the tax bill's effects on incentives to work and to save and uses recent econometric estimates of labor supply and saving elasticities to describe the reform's impact on household behavior. Two factors lead us to conclude that the new law will have small aggregate effects. First, most households experience only small changes in their marginal tax rates. Forty-one percent of the taxpaying population will face marginal tax rates as high, or higher, under the new law as under the previous tax code. Only 11 percent of taxpayers receive marginal tax rate reductions of ten percentage points or more. Second, plausible estimates of both the labor supply and saving elasticities suggest that even for those households that receive rate reductions, behavioral changes will be small. Our analysis suggests that the tax reform will increase labor supply by about 1 percent and will reduce private saving slightly.

Labor Supply Preferences, Hours Constraints, and Hours-Wage Trade-Offs

Joseph G. Altonji and Christina H. Paxson

Working Paper No. 2121

January 1987

JEL Nos. 823, 824

In a labor market in which firms offer tied hours-wage packages and there is substantial dispersion in the wage offers associated with a particular type of job, the best job available to a worker at a particular time may pay well but may require an hours level that is far from the worker's labor supply schedule; or the job may pay poorly but may offer desirable hours. Intuitively, one would expect hours constraints to influence the pattern of wage-hours trade-offs that occurs when office workers quit to begin new jobs. Constrained workers may be willing to sacrifice wage gains for better

hours. Likewise, workers may accept jobs offering undesirable hours only if the associated wage gains are large.

We investigate this issue empirically by examining whether, for those who quit, overemployment (underemployment) on the initial job increases (reduces) the partial effect on the wage gain of a positive change in hours. We also examine whether overemployment (underemployment) on the new job increases (reduces) the partial effect on the wage gain of a positive change in hours. Despite the limitations imposed by small sample sizes and lack of information on the magnitude of hours constraints, our results support the view that an individual requires compensation to work in jobs that, given the individual's particular preferences, offer unattractive hours.

How Far Has the Dollar Fallen?

Martin Feldstein and Philippe Bacchetta

Working Paper No. 2122

January 1987

JEL No. 430

This paper introduces a new index of the real value of the dollar relative to 80 other currencies. Individual exchange rates are combined with weights that reflect the recent (1984) multilateral pattern of trade. This new index confirms that the dollar rose very sharply between January 1980 and February 1985 and that about two-thirds of that appreciation was reversed by July 1986. This is true for both our multilateral and bilateral real indexes. The analysis also shows that any index that fails to adjust for differences in inflation rates will give a very misleading impression of the dollar's evolution in the 1980s.

Alternative Modes of Deficit Financing and Endogenous Monetary and Fiscal Policy, 1923-1982

Stephen J. Turnovsky and Mark E. Wohar

Working Paper No. 2123

January 1987

JEL No. 311

This paper first investigates the effects of alternative modes of deficit financing on the unemployment rate, inflation rate, and the real interest rate, within the framework of a small complete macroeconomic model. Second, it examines the nature of monetary and fiscal reaction functions. We consider the two periods, 1923-60

and 1961–82, and show that there are substantial differences in behavior and policy between them. The most important conclusion is that long-run monetary neutrality properties shown to exist over the latter period are not intrinsic to the economy but rather are the result of the stabilization policies being conducted over that period.

The Adjustment of Expectations to a Change in Regime: A Study of the Founding of the Federal Reserve

N. Gregory Mankiw, Jeffrey A. Miron, and David A. Weil
Working Paper No. 2124
January 1987
JEL No. 311

The founding of the Federal Reserve System in 1914 led to a substantial change in the behavior of nominal interest rates. We examine the timing of this change and the speed with which it was effected. We then use data on the term structure of interest rates to determine how expectations responded. Our results indicate that the change in policy regime was rapid and that individuals understood quickly the new environment they were facing.

The Response of Interest Rates to the Federal Reserve's Weekly Money Announcements: The "Puzzle" of Anticipated Money

Richard Deaves, Angelo Melino, and James E. Pesando
Working Paper No. 2125
January 1987
JEL No. 311

Using the survey conducted by Money Market Services, Inc., researchers have found that the anticipated component in the Federal Reserve's weekly money supply announcement is negatively correlated with the post-announcement change in market yields. We prove that eliminating a (downward) bias in the measure of anticipated money in theory can eliminate this puzzle, but that improving the efficiency of an already unbiased measure cannot. Using Canadian as well as U.S. interest rate data, we find that correcting the downward bias in the survey measure reduces, but does not eliminate, the role of anticipated money.

The Anatomy of Financial Crises

Barry J. Eichengreen and Richard Portes
Working Paper No. 2126
January 1987
JEL Nos. 041, 131, 430

A financial crisis is a disturbance to financial markets, typically associated with falling asset prices and insolvency among debtors and intermediaries, which spreads through the financial system and disrupts the market's capacity to allocate capital. In this paper we analyze the generation and propagation of financial crises in an international setting. We provide a perspective on the danger of a serious disruption to the global financial system by comparing the last full-fledged financial crisis—that of the 1930s—with conditions prevailing today.

Our definition of a financial crisis implies a distinction between generalized financial crises on the one hand and isolated bank failures, debt defaults, and foreign exchange market disturbances on the other. We represent this distinction in three sets of linkages: between debt defaults and between exchange market disturbances and bank failures.

In both the 1930s and the 1980s, the institutional environment was drastically altered by rapid change in foreign exchange markets, in international capital markets, and in the structure of domestic banking systems. Our comparative analysis underscores the critical role played by institutional arrangements in financial markets as a determinant of the system's vulnerability to destabilizing shocks.

Neoclassical and Sociological Perspectives on Segmented Labor Markets

Kevin Lang and William T. Dickens
Working Paper No. 2127
January 1987
JEL No. 800

Neoclassical theory has been misrepresented in the literature of the segmented economy. Consequently, most tests of "structural" versus "neoclassical" models are inadequate. Moreover, theorists of the segmented economy have concentrated on the least significant departures of segmented models from neoclassical economics. In fact, neoclassical economists have developed elements of a segmented labor market model that are similar to the segmented economy theories. We sketch this model and argue that the neoclassical model gives a precise meaning to the concept of *dual* or *segmented* labor markets but does not suggest that a classification system for job characteristics must rely on a single dimension.

Tax Policy, Asset Prices, and Growth: A General Equilibrium Analysis

Lawrence H. Goulder and Lawrence H. Summers
Working Paper No. 2128
January 1987

This paper presents a multisector general equilibrium model that is capable of providing integrated assessments of the economy's short and long-run responses to tax policy changes. The model contains an explicit treatment of firms' investment decisions according to which producers exhibit forward-looking behavior and take account of adjustment costs inherent in the installation of new capital. This permits an examination of both the short-run effects of tax policy on industry profits and asset prices and the long-term effects of tax policy on capital accumulation. The model contains considerable detail on U.S. industry, corporate financial policies, and the U.S. tax system.

Simulation results reveal that the effects of tax policy differ significantly depending on whether the policy is oriented toward new or old capital. Measures such as the investment tax credit stimulate investment without conferring significant windfall gains on corporate shareholders. Corporate tax rate reductions with the same revenue cost, on the other hand, yield large windfalls to shareholders while providing only a modest stimulus to investment in plant and equipment.

Ultimate Sources of Aggregate Variability

Robert J. Shiller
Working Paper No. 2129
January 1987
JEL No. 131

Ultimately, what is different from quarter to quarter or year to year that accounts for the fact that macroeconomic variables change over these intervals? That is, which are the biggest ultimate sources of this variability in terms of tastes, technology, endowments, government policy, industrial organization, labor-management relations, speculative behavior, or the like?

There is a bewildering variety of claims in the literature for such ultimate sources of variability. Far fewer efforts have been made to give a breakdown of the variance of macroeconomic aggregates by source. Two notable breakdowns to date are by Pigou (1929) and Fair (1987).

This paper discusses the nature of the evidence for such breakdowns and puts forth the possibility that a partial breakdown may be well determined. I also make an unsuccessful attempt to detect a component of macroeconomic fluctuations that is caused by the weather.

Fiscal Deficits, Exchange Rate Crises, and Inflation

Sweder van Wijnbergen
Working Paper No. 2130
January 1987

This analysis focuses on the government budget constraint and the resolution of inconsistent implications of different policy instruments under that constraint. I show how, under floating exchange rates, external shocks or internal structural reforms may cause jumps in inflation and the exchange rate through their impact on the government budget. In order to achieve a sustainable reduction in inflation, an exchange rate freeze or crawling peg requires restrictions not only on domestic credit but also on the rate of increase in interest-bearing public debt. I endogenize regime collapse by introducing rational speculation against the central bank and show that if an exchange rate freeze collapses, post-collapse inflation will exceed the rate that prevailed before the freeze started.

New Estimates of State and Local Government Tangible Capital and Net Investment

Michael J. Boskin, Marc Robinson, and Alan M. Huber
Working Paper No. 2131
January 1987
JEL Nos. 324, 224

Measures of the state and local government capital stock and investment are necessary inputs in several areas of economic analysis, including the measurement of national wealth and its growth. In this paper, we estimate net investment and depreciation of state and local government nonresidential capital. In the aggregate, we estimate that the net state and local nonresidential capital stock was \$1.8 trillion in 1985—17 percent larger than the estimate of the Bureau of Economic Analysis.

Net state and local government investment has exceeded the state and local deficit annually for the last 45 years. While the fraction of state and local purchases of goods and services devoted to net investment has fallen, it has exceeded federal government net capital formation each year except during defense buildups, and has averaged more than 40 percent of private fixed nonresidential net investment since 1951. Similar comparisons reveal that the state and local government net capital stock substantially exceeds state and local debt, and is about twice the size of the federal government's capital stock.

Should Tax Reform Level the Playing Field?

Lawrence H. Summers
Working Paper No. 2132
January 1987

While frequently invoked, the ideal of the level playing field and its practical embodiment in tax legislation have received relatively little analysis. This paper examines the economic arguments surrounding the doctrine of the level playing field. I conclude that leveling the playing field is an issue of little economic importance and that efforts to level the playing field, such as those recently enacted, are likely to create more important nonneutralities than those they eliminate. However, they may contribute to the perceived fairness of the tax system.

Monetary Growth, Inflation, and Economic Activity in a Dynamic Macro Model

Stephen J. Turnovsky
Working Paper No. 2133
January 1987

This paper analyzes the effects of an increase in the rate of monetary growth within a dynamic optimizing macroeconomic model. Both the short-run and the long-run effects, and therefore the adjustments along the transitional path, depend critically on the tax structure and the firm's corresponding optimal financial decisions. With all bond financing, the effects depend upon the extent to which interest payments are tax deductible for corporations. If this is sufficiently high, the effects of an increase in the rate of monetary growth are generally expansionary. With low interest deductibility, or if the tax structure induces equity financing, the effects are generally contractionary.

Is Consumption Too Smooth?

John Y. Campbell and Angus Deaton
Working Paper No. 2134
January 1987
JEL Nos. 131, 132

For 30 years, it has been accepted that consumption is smooth because permanent income is smoother than measured income. This paper considers the evidence for the contrary position: that permanent income is in fact *less* smooth than measured income, so that the smoothness of consumption cannot be explained straightforwardly by permanent income theory.

Quarterly first differences of labor income in the United States are well described by an AR(1) with a positive autoregressive parameter. Innovations to such a process are "more than permanent"; there is no deterministic trend to which the series must eventually return, and good or bad fortune in one period can be expected to be at least partially repeated in the next. Changes to permanent income should therefore be greater than the innovations to measured income, and changes in consumption should be more variable than innovations to measured income. In fact, changes in consumption are much less variable than income innovations are.

We consider two possible explanations for this paradox: first, that innovations to labor income are in reality much less persistent than appears from an AR(1); and second, that consumers have more information than econometricians do, so that only a fraction of the estimated innovations is actually unexpected by consumers. The univariate time-series results are less than decisive, but the balance of the evidence, whether from fitting ARMA models or from examining the spectral density, is more favorable to the view that innovations are persistent than to the opposite view that there is slow reversion to trend.

We take up the information question within a bivariate model of income and savings that can accommodate the feedback from saving to income predicted by the permanent income theory if consumers have superior information. Nevertheless, our results are the same. Changes in consumption are typically smaller than those warranted by the change in permanent income. We show that our finding of "excess smoothness" is consistent with the earlier findings of "excess sensitivity" of consumption to income. Our analysis is conducted within a "logarithmic" version of the permanent income hypothesis, a formulation that recognizes that rates of growth of income and saving ratios have greater claim to stationarity than changes in income and saving flows do.

Why Do Fixed-Effects Models Perform So Poorly? The Case of Academic Salaries

Daniel S. Hamermesh
Working Paper No. 2135
January 1987
JEL Nos. 824, 211

A large and growing line of research uses longitudinal data to eliminate unobservable individual effects that may bias estimates of cross-section parameters. The resulting estimates are generally quite imprecise, but unbiased. This study shows that the imprecision can arise from the measurement error that is common in the data used to represent the dependent variable. An anal-

ysis of economists' salaries, which are administrative data and free of measurement error, demonstrates that estimates based on changes in longitudinal data can be precise. The results indicate the importance of improving the measurement of the variables to which are applied the increasingly high-powered techniques designed to analyze panel data. The estimates also indicate that the payoff to citations to scholarly work is not an artifact of unmeasured individual effects that could be biasing previous estimates of the determinants of academic salaries.

Optimal Monetary Growth

Andrew B. Abel

Working Paper No. 2136

January 1987

JEL No. 023

In the absence of monetary superneutrality, inflation affects capital accumulation and the demand for real balances. This paper derives the combination of monetary and lump-sum fiscal policy that maximizes the sum of discounted utilities of representative consumers in present and future generations. Under the optimal policy package, the steady state has a zero nominal interest rate and has monetary contraction at the rate of intergenerational discount. As the rate of intergenerational discount approaches zero, optimal policy maximizes steady-state utility of the representative consumer. In this case, the optimal steady state is characterized by a constant nominal money supply.

Collective Bargaining and the Division of the Value of the Enterprise

John M. Abowd

Working Paper No. 2137

January 1987

This paper models the enterprise (firm) as a collection of formal and informal contracts providing various factors of production with claims on the income stream in consideration of assets or services supplied to the enterprise. The strongly efficient bargaining model implies that the division of the quasi-rents will result in dollar-for-dollar exchanges of wealth between the union members and the shareholders. The leading inefficient bargaining models in general do not imply such trade-offs. I test the model by considering contract settlements during 1976-82 as recorded by the Bureau of National Affairs in *Collective Bargaining Negotiations and Contracts*. I merge data on security prices for the firms with these data on bargaining unit level settlements. The tests provide substantial confirmation of the dollar-for-dollar wealth trade-off between union members and shareholders.

Our LDC Debts

Rudiger Dornbusch

Working Paper No. 2138

January 1987

JEL No. 440

The United States has a significant interest in the world debt problem. The debt problem affects the profitability and even the stability of our banking system but also matters because debt service requires trade surpluses for debtors. Debtor countries who have made their goods extra competitive are selling in our market and are competing with our exports. Therefore, the debt problem is a part, although perhaps a small part, of the U.S. trade crisis. Finally, we have a major foreign policy stake in the debt crisis in that debt collection brings about social and political instability.

This paper sets out facts about LDC debt, followed by a brief look at the origins of the debt problem. The general framework in which we discuss the problem of debt service for the debtor countries is the "transfer problem." It then discusses bank exposure and the quality of debts. Finally, the paper addresses the trade implications of debt service and concludes with an overview of alternative proposals for solving the debt problem.

Divergent Expectations as a Cause of Disagreement in Bargaining: Evidence from a Comparison of Arbitration Schemes

Max H. Bazerman and Henry S. Farber

Working Paper No. 2139

January 1987

One prominent explanation for disagreement in bargaining is that the parties have divergent and relatively optimistic expectations about what the ultimate outcome will be if they fail to agree. We use the fact that settlement rates are much higher where final-offer arbitration, rather than conventional arbitration, is the dispute settlement procedure to test the role of divergent expectations in causing disagreement in negotiations. Using existing estimates of models of arbitrator behavior, we calculate that identical-expectations contract zones are larger in conventional arbitration than in final-offer arbitration. This evidence clearly suggests that divergent expectations alone do not adequately explain disagreement in labor-management negotiations. We then suggest and evaluate a number of alternative explanations for disagreement.

The Real Effects of Foreign Inflation in the Presence of Currency Substitution

Charles M. Engel

Working Paper No. 2140

February 1987

JEL No. 431

This paper explores optimizing models of small open economies that hold foreign money balances. It pays particular attention to the impact of foreign inflation on the real exchange rate and other real variables. At first, I explore an environment in which foreign money is the only traded asset. I compare this to a more general setting in which many assets can be traded. The effect of foreign inflation on domestic real variables depends on: (1) the degree to which it causes a substitution out of traded assets as a whole and into nontraded assets; and (2) the change in real returns on the portfolio of traded assets held by domestic residents.

Saving and Investment in an Open Economy with Nontraded Goods

Charles M. Engel and Kenneth Kletzer

Working Paper No. 2141

February 1987

JEL Nos. 431, 433, 111

We examine a model of a small open economy in which there is free international mobility of financial capital, investment in capital goods, and a nontraded good. Such an environment is rich enough to explain several phenomena that cannot be explained in more barren models. We suggest an explanation of why saving and investment may be correlated even with no restrictions on trade in assets. We explain why a high-saving country nonetheless may borrow from abroad to finance investment. We also provide an optimizing model of stages in the balance of payments.

Brazil's Tropical Plan

Eliana A. Cardoso and Rudiger Dornbusch

Working Paper No. 2142

February 1987

JEL No. 310

This paper highlights the institutional features of the inflation process and contrasts two stabilization efforts in 1964-6 and in 1986. The inflation process in Brazil is highly institutional. It does not resemble hyperinflations in which pricing and wage setting are geared to the exchange rate by the hour, making it possible to stop inflation simply by containing money creation and fixing the exchange rate.

The two stabilization programs demonstrate that an incomes policy is an essential ingredient to nonrecessionary stabilization. But they also show that demand restraint is inevitable if disinflation is to be viable. The 1964 program was gradualist and two-handed, relying on the supply side on wage repression. The 1986 plan was a heterodox shock treatment centered around an uncompromising price freeze and paying insufficient attention to the need for fiscal restraint.

Money and the Consumption Goods Market in China

Richard Portes and Anita Santorum

Working Paper No. 2143

February 1987

JEL Nos. 124, 130, 311

This paper studies the relationships between money and other macroeconomic variables as well as excess demand in the consumption goods market for China in 1954 to 1983. We explicitly recognize the endogeneity of money in the CPE and do not impose (but instead test) some common restrictive assumptions. We assess the extent of excess aggregate demand (supply) in a macroeconomic disequilibrium model, and we make provision at the macro level for the possible coexistence of micro markets in different states of excess demand or supply (shortages or slacks). We find bidirectional causality between money and income. M_0 behaves in a manner more suited to building simple, conventional models than does M_2 . Finally, there has been a mixed pattern of excess supplies and demands over the three decades.

Recent U.S. Evidence on Budget Deficits and National Saving

James M. Poterba and Lawrence H. Summers

Working Paper No. 2144

February 1987

This paper examines the recent U.S. experience with sustained budget deficits and concludes that the events of the last five years cast significant doubt on the proposition that the timing of taxes does not affect national saving. Rather than raising private saving, if anything the recent deficits have coincided with reduced saving and increased consumption. These findings suggest that realistic analysis of fiscal policies must recognize that consumers are liquidity constrained and/or myopic.

Compensation and Firm Performance

Ronald G. Ehrenberg and George T. Milkovich

Working Paper No. 2145

February 1987

The relationship between the compensation policies a firm pursues and the firm's economic performance is of central importance to both researchers and practitioners. Yet, while many theories exist about the effects of various compensation policies, surprisingly little evidence exists on the extent to which compensation policies vary across firms and, more importantly, on the effects of pursuing alternative compensation strategies. This paper attempts to summarize the available evidence, drawing on research from the economics, finance, and personnel literatures. It also lays out an agenda for future research.

Supply Shocks in Macroeconomics

Matthew D. Shapiro

Working Paper No. 2146

February 1987

JEL Nos. 131, 311, 321

Supply shocks played an important role in macroeconomic fluctuations during the 1970s and are increasingly important in Keynesian and neoclassical models of the business cycle. This paper is a short survey of these theoretical models. It also discusses the history of supply shocks in recent business cycles.

Are Cyclical Fluctuations in Productivity Due More to Supply Shocks or Demand Shocks?

Matthew D. Shapiro

Working Paper No. 2147

February 1987

JEL Nos. 131, 110

Measured productivity is strongly procyclical. Real business cycle theories suggest that actual fluctuations in productivity are the source of fluctuations in aggregate output. Keynesian theories maintain that fluctuations in aggregate output come from shocks to aggregate demand. The Keynesian theories also appeal to labor hoarding or off-the-production-function behavior to explain the procyclicality of productivity. If observed productivity shocks are true productivity shocks, then a function of factor prices should covary exactly with productivity. In annual data for U.S. industries, that function of factor prices and conventionally measured productivity move together very closely. Moreover, their difference is uncorrelated with aggregate output.

Incentive Effects of Price Rises and Payment System Changes on Chinese Agricultural Productivity Growth

John McMillan, Zhu Li Jing, and John Whalley

Working Paper No. 2148

February 1987

This paper analyzes the relative importance of the major factors underlying the post-1978 increase in China's agricultural productivity. We present a method for assessing the role of price increases and strengthened individual incentives caused by the introduction of the responsibility system. We use data on pre- and post-1978 Chinese agricultural performance to calculate incentive indexes, giving the fraction of their marginal product that peasants received under the pre-1978 regime.

The Life-Cycle, Permanent-Income Model and Consumer Durables

Avner Bar-Ilan and Alan S. Blinder

Working Paper No. 2149

February 1987

JEL No. 023

This paper presents an extension of the life-cycle, permanent-income model of consumption to the case of a durable good whose purchase involves lumpy transactions costs. In terms of individual behavior, the implications of the model are different in some respects from those of standard consumption theory. Specifically, rather than choose an optimal path for the service flow from durables, the optimizing consumer will choose an optimal range and try to keep his service flow inside that range. The dynamics implied by this behavior are different from those of the stock adjustment model. We derive properties of aggregate consumption of durables by explicit aggregation. In particular, we show that expenditures on durables display very large short-run elasticity to changes in permanent income. Empirical tests of the sort suggested by Hall (1978) generally produce results that are in line with the predictions of the theory.

Optimal Choices of Monetary Policy Instruments in a Macroeconometric Model

Ray C. Fair

Working Paper No. 2150

February 1987

This paper uses stochastic simulation and my econometric model of the United States to examine the opti-

mal choice of monetary policy instruments. It asks whether the variances, covariances, and parameters in the model favor one instrument over the other, in particular the interest rate over the money supply.

The results show that the interest rate and the money supply are about equal as policy instruments in terms of minimizing the variance of real GNP. However, the variances of some of the components of GNP are much larger when the money supply is the policy instrument, as is the variance of the change in stock prices. Therefore, if one's loss function is expanded beyond the variance of real GNP alone to the variances of other variables, the interest rate policy does better. The results thus provide some support for what seems to be the Fed's current choice: using the interest rate as its primary instrument.

I also use stochastic simulation to estimate how much of the variance of real GNP is caused by error terms in the demand-for-money equations. The results show that the contribution is not very great, even when the money supply is the policy instrument.

The Dollar and Real Interest Rates

John Y. Campbell and Richard H. Clarida

Working Paper No. 2151

February 1987

JEL No. 431

In this paper, we investigate the link since 1979 between the real foreign exchange value of the dollar and real interest rates. We argue that it is important to consider the possibility that real exchange rate movements reflect movements of the long-run equilibrium exchange rate as well as real interest differentials. We use a state-space approach to estimate the importance of shifts in the long-run equilibrium exchange rate, the persistence of the ex ante short-term real interest differential, and the effect of this differential on the exchange rate. Using U.S., Canadian, British, German, and Japanese data from October 1979 to March 1986, we find that movements in the dollar real exchange rate have been dominated by unanticipated shifts in the expected long-run real exchange rate. Ex ante real interest differentials have not been persistent or variable enough to account for a major part of exchange rate variation. We use Mussa's (1984) rational expectations model of the real exchange rate and the current account to interpret our results.

Monopolistic Competition and Labor Market Adjustment in the Open Economy

Joshua Aizenman

Working Paper No. 2152

February 1987

JEL No. 430

This paper explains the adjustment of prices, output, and employment in an open economy characterized by a monopolistic competitive market structure. Goods prices are flexible, while wages are determined by contracts that preset the wage path for several periods. I first estimate the rational expectations equilibrium in an economy characterized by staggered, unsynchronized wage negotiation in which the degree of contract staggering is determined endogenously. I then investigate the adjustment of output, exchange rates, and prices to nominal and real shocks, and I ask to what extent that adjustment depends on the market power enjoyed by each producer and the substitutability between domestic and foreign goods. I also study the potential role of indexation clauses, such as wage indexation, to nominal income.

The analysis shows that unexpected monetary shocks can generate persistent aggregate output and relative price shocks, the nature of which are determined by the degree of substitutability between domestic and foreign goods. Greater substitutability induces a greater output and employment effect, and smaller price effects, in the short and the intermediate run. On the other hand, greater substitutability reduces the persistence and duration of the adjustment. If the income elasticity of the demand for money is less than one, the presence of nominal wage contracts tends to magnify the responsiveness of the economy to real shocks, and a larger degree of substitutability will magnify the short-run and the intermediate-run adjustment of prices and output to real shocks and reduce the needed adjustment of relative prices.

Inflation Stabilization with Incomes Policy Support: A Review of the Experience in Argentina, Brazil, and Israel

Rudiger Dornbusch and Mario Henrique Simonsen

Working Paper No. 2153

February 1987

In 1985-6 Argentina, Brazil, and Israel initiated programs of stabilization after episodes of high and sharply accelerating inflation. Among the key features of each stabilization program were the use of wage-price controls, a fixed exchange rate, and fiscal correction, as well as a significant expansion in the nominal quantity

of money. The combination of fiscal correction and incomes policy has come to be known as "heterodox" stabilization policy, in contrast to the conventional IMF programs that emphasize tight monetary and fiscal policies as the exclusive instrument of stabilization.

The stabilization programs in Argentina and Israel have now been in force for over a year and the more recent one in Brazil for half a year. Accordingly, there is enough evidence to make a first judgment on the success and the limitations of these new schemes. At the same time, it is worthwhile to spell out some of the special features of stabilization and the resulting intellectual case for heterodox programs.

This paper focuses on the conceptual issues related to the use of incomes policy in the context of stabilization when inertia is a central feature. The analysis includes the relationship between deficits and inflation, inertial inflation, and the basics of monetary reform. We also review the actual stabilization experience in Argentina, Brazil, and Israel. The paper concludes with a discussion of the political dimension of stabilization, showing the extraordinary political popularity of the new programs.

Specification of the Joy of Giving: Insights from Altruism

Andrew B. Abel and Mark Warshawsky

Working Paper No. 2154

February 1987

JEL No. 022

This paper analyzes the joy-of-giving bequest motive in which the utility obtained from leaving a bequest depends only on the size of the bequest. It exploits the fact that this formulation can be interpreted as a reduced form of an altruistic bequest motive to derive a relationship between the value of the altruism parameter and the value of the joy-of-giving parameter. Using previous discussions of an a priori range of plausible values for the altruism parameter, we derive plausible restrictions on the joy-of-giving parameter. We demonstrate that this parameter may well be orders of magnitude larger than assumed in the existing literature.

Dynamic Factor Models of Consumption, Hours, and Income

**Joseph G. Altonji, Ana Paula Martins,
and Aloysius Siow**

Working Paper No. 2155

February 1987

JEL Nos. 820, 920, 211

This paper asks: what the key factors are that affect a consumer's lifetime budget constraint; how they evolve

over the life cycle; and how consumers respond to changes in these factors. We examine the permanent-income hypothesis and the Keynesian consumption model using a dynamic factor model of consumption, hours, wages, unemployment, and income. We show that a quarterly dynamic factor model with restrictions on the lag structure may be used with annual panel data to explain the fact that in many micro panel data sets the variables relevant to a study are measured at different time intervals and/or are aggregates for the calendar year. By using several income indicators we are able to extend the panel data studies of Hall and Mishkin and Bernanke to allow for measurement error. We are also able to study the response of income and consumption to some of the factors that determine them. In addition, we study a dynamic factor representation of a joint life-cycle model of consumption and labor supply. We provide estimates of the effect of wages, unemployment, and other income determinants on the marginal utility of income as well as estimates of the substitution effects of wage change on labor supply and consumption.

The Development of Keynesian Macroeconomics

Bennett T. McCallum

Working Paper No. 2156

February 1987

JEL Nos. 023, 130, 030

This paper provides an outline of the historical development of Keynesian macroeconomics. It argues first that the business cycle model of J. M. Keynes's *General Theory* featured analytical ingredients that were present in earlier writings and attained its theoretical precision only in contributions made later. Remaining sections of the paper focus on the key characteristic of Keynesian theory, namely a postulated stickiness of nominal prices that enables aggregate demand to play a greater role in output determination than it does in flexible-price Classical analysis. Three approaches that have been historically important rely on equilibriums conditional on given prices; algebraic Phillips-type price adjustment relationships; and equilibrium analysis with incomplete information. This paper reviews difficulties with each of these approaches and concludes with a discussion of today's relevant issues.

Money: Theoretical Analysis of the Demand for Money

Bennett T. McCallum and Marvin S. Goodfriend

Working Paper No. 2157

February 1987

JEL Nos. 311, 023

This paper attempts to summarize current mainstream views concerning the theory of money demand.

We sketch a model in which a representative household seeks to maximize utility over an infinite planning horizon, with each period's consumption and leisure appearing as arguments of the utility function. The household chooses to hold noninterest-bearing money, even in the presence of assets with positive pecuniary yields, because it facilitates transactions and thereby reduces the amount of time and/or energy required in the process of "shopping," that is, acquiring goods to be consumed. We derive two distinct types of implied money demand functions: a "proper" demand function with arguments exogenous to the household; and a "portfolio-balance" relationship that is more similar in specification to the type of equation that normally appears in the money demand literature. One section of the paper briefly reviews the historical evolution of ideas pertaining to money demand theory and suggests that major contributors have included Marshall, Hicks, and Sidrauski. A final section considers ongoing controversies concerning the role of uncertainty, the use of overlapping-generations and cash-in-advance approaches, and the interpretation of empirical results apparently suggestive of extremely slow portfolio adjustments.

Finite Lifetimes, Borrowing Constraints, and Short-Run Fiscal Policy

R. Glenn Hubbard and Kenneth L. Judd

Working Paper No. 2158
February 1987

Recent developments in public finance on the analysis of dynamic government debt policies have emphasized effects on the distribution of real resources across generations. At the same time, macroeconomists have emphasized the importance of the length of the time horizon over which agents optimize their decisions about consumption for judging the effects of fiscal policy on aggregate demand. Much of the discussion of these issues has focused on whether linkages among generations are sufficient to give consumers infinite horizons. To the extent that horizons are infinite, debt burdens can be shifted to future generations, and substitutions of debt for taxes have real effects.

This paper argues that, as a matter of quantitative significance, theoretical and empirical emphasis on the importance of finite horizons for the analysis of many fiscal policies is misplaced. Studies of the role of finite horizons in determining the effects of short-run fiscal policies on consumption have been conducted largely under the assumption of perfect capital markets. We show that while the marginal propensity to consume (MPC) out of temporary tax changes is nonzero in finite-horizon models, it is not very large. We demonstrate that the MPC is, however, quite sensitive to the importance of restrictions on borrowing in the economy. The

clear implication is that shifting emphasis from the length of the planning horizon to the structure of capital markets is an important step for empirical research.

Infant Industry Protection Reconsidered: The Case of Informational Barriers to Entry

Gene M. Grossman and Henrik Horn

Working Paper No. 2159
February 1987
JEL Nos. 422, 611, 112

In industries with imperfect consumer information, the lack of a reputation puts latecomers at a competitive disadvantage vis-à-vis established firms. We consider whether the existence of such informational barriers to entry provides a valid reason for temporarily protecting infant producers of experience goods and services. Our model incorporates both moral hazard in an individual firm's choice of quality and adverse selection among potential entrants into the industry. We find that protection of infant industries often exacerbates the welfare loss associated with these market imperfections.

Keynesian, New Keynesian, and New Classical Economics

Bruce Greenwald and Joseph E. Stiglitz

Working Paper No. 2160
February 1987
JEL Nos. 300, 824

Much of the new theory of macroeconomics that has been built upon microeconomic models of imperfect information leads to conclusions that are surprisingly close in spirit to Keynes's original analysis. This paper summarizes the macroeconomic implications of information-based models of efficiency wages, credit rationing, and the breakdown of financial markets for securities of the equity type. It shows how these models lead to behavior by firms and interactions among economic agents that account for many of the phenomena identified by Keynes in qualitative terms that were largely lost in subsequent formalizations of the Keynesian model. These macromodels of imperfect information provide consistent theoretical explanations in the Keynesian spirit in unemployment, investment-concentrated business cycles, rigid prices, and the effectiveness of monetary and fiscal policy interventions. In doing so, they reconcile macro- and microeconomic analysis in a way that has so far been achieved neither by the traditional Keynesians, who assumed away the microdimension of the problem, nor by the new Classical economists, who assumed away the macrodimension of the problem.

Suing Solely to Extract a Settlement Offer

Lucian Arye Bebchuk
Working Paper No. 2161
February 1987

In many disputes, the plaintiff's expected value of going to trial is negative, either because the chances of winning are small or because the litigation costs are large. Although not going to trial, the plaintiff might sue in the hope of extracting a settlement offer. The defendant, if uncertain whether the plaintiff's expected value of going to trial was negative, might make such an offer. This paper seeks to identify the factors that determine: (1) whether a plaintiff who does not intend to go to trial nonetheless will succeed in extracting an offer; and (2) how much such a plaintiff will succeed in extracting.

The Liberalization of the Current Capital Accounts and the Real Exchange Rate

Sebastian Edwards
Working Paper No. 2162
February 1987

In this paper, I develop a general equilibrium intertemporal model with optimizing consumers and producers to analyze how different policies geared at liberalizing the current and capital accounts of the balance of payments affect the equilibrium real exchange rate (RER). In particular, I investigate the effects of a reduction in the level of import tariffs and a change in the tax on foreign borrowing on the equilibrium RER. In the case of import tariffs, I consider both a temporary and an anticipated liberalization. I show that in the case of tariff reduction it is not possible to know a priori whether the equilibrium RER will appreciate or depreciate. However, a liberalization of the capital account will always result in equilibrium real appreciation in the current period. I then argue that analyses of this type are essential in evaluating whether observed movements in the RER represent misalignment or are an equilibrium phenomenon. I also discuss the recent liberalization attempts in the Southern Cone.

The International Monetary System: Should It Be Reformed?

Jacob A. Frenkel
Working Paper No. 2163
February 1987
JEL No. 430

This paper addresses the issue of reform of the international monetary system. It starts by identifying the

sources of disenchantment with the performance of the present regime of floating exchange rates and by outlining the reasons for the lack of convergence of views about the characteristics of the desired system. A central theme in the discussion is that a reform of the monetary system without a fundamental change in macroeconomic policies may be harmful. The analysis proceeds by examining the broader issues and principles relevant for an evaluation of reform. The key questions are: *what* should be reformed, what are the costs of reform, and *when* should the reform occur? In this context, I give special attention to the "target zones" proposal for exchange rate management. The paper concludes with the observation that a reform of the system should not be viewed as an instrument for crisis management dominated by short-term considerations but rather should be guided by a long-term perspective. I argue that if the root causes of the current economic difficulties are fiscal imbalances in the world economy, then a drastic reform of the international monetary system (if one is needed) might better wait until nations restore a more sustainable course of fiscal management.

Macroeconomic Equilibrium and Credit Rationing

Joseph E. Stiglitz and Andrew Weiss
Working Paper No. 2164
February 1987
JEL No. 023

In this paper we investigate the macroeconomic equilibria of an economy in which credit contracts have adverse effects on both selection and incentive. The terms of credit contracts include both an interest rate and a collateral requirement. We show that in this richer model all types of borrowers may be rationed. Interest rates charged borrowers may move either pro- or countercyclically. If procyclical shocks have a greater effect on the success probabilities of risky techniques than on safe ones, then the interest rate offered depositors may also move countercyclically. Finally, we show that the impact of monetary policy on the macroeconomic equilibrium is affected by whether or not the economy is in a regime in which credit is rationed.

Project Appraisal and Foreign Exchange Constraints: A Simple Exposition

**Charles R. Blitzer, Partha Dasgupta,
and Joseph E. Stiglitz**
Working Paper No. 2165
February 1987

In an earlier paper, we showed that the value of shadow prices depends on how the government contemplates

reequilibrating the economy to the perturbation associated with any project except in the extreme case in which the government has chosen all policy instruments optimally. Only under restrictive conditions will relative shadow prices for traded goods equal relative international prices. We develop a general methodology for calculating shadow prices, which expresses the prices as a weighted average of domestic and international prices. The formulas provide the conditions under which the border price rule is valid. For instance, so long as there are nontraded goods, even if the government leaves tariffs unchanged (so that relative domestic prices of traded goods remain unchanged), unless the government completely neutralizes the induced change in domestic income there will be changes in the prices of nontraded goods. These will preclude the use of the border price rule.

Central Policies for Local Debt: The Case of Teacher Pensions

Robert P. Inman and David J. Albright
Working Paper No. 2166
February 1987

The recent debt crises in New York City and Cleveland, the deterioration of public infrastructures in certain of our states and larger cities, and the occasional bankruptcy of smaller pension plans suggest that not all of local finance stands on a sound fiscal base. This paper examines the trends in funding for one form of state and local debt—teacher pension underfunding—and asks what a central government might do to check any unwanted growth in these liabilities. The analysis concludes that this form of state-local debt is sizable and growing; that state and local governments have an implicit pay-as-you-go bias in pension financing that encourages the growth of debt; but that central government benefit and funding regulations, or debt relief policies, can slow, or even reverse, that growth.

Validating Hiring Criteria

Andrew Weiss and Henry Landau
Working Paper No. 2167
February 1987

We construct a model in which firms use the productivities of workers in determining their job assignments. A worker's productivity must exceed some lower bound to satisfy the minimum qualifications for a particular job. If the worker's productivity exceeds some upper bound, he is promoted.

Under these conditions it is possible that the better educated and more experienced individuals would be the least productive workers on every job, even though, for each worker, education and experience increase his productivity. Whether this anomalous result occurs depends on the underlying distribution of ability in the population and the job assignment policy delineated above.

One implication of our analysis is that firms that use hiring criteria that accurately predict a worker's success on the job may not be able to validate those criteria through measurements of the performance of the workers that they had hired. EEOC rules that require hiring criteria to be validated in that fashion may penalize firms with the most efficient hiring and promotion standards.

Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test

Andrew W. Lo and A. Craig MacKinlay
Working Paper No. 2168
February 1987

In this paper, we test the random walk hypothesis for weekly stock market returns by comparing variance estimators derived from data sampled at different frequencies. We strongly reject the random walk model for the entire sample period (1962–85) and for all subperiods for a variety of aggregate returns indexes and portfolios sorted by size. Although the rejections are largely caused by the behavior of small stocks, they cannot be ascribed to either the effects of infrequent trading or to volatilities that vary with time. Moreover, the rejection of the random walk cannot be interpreted as supporting a mean-reverting stationary model of asset prices but is more consistent with a specific nonstationary alternative hypothesis.

Permanent and Transitory Components in Macroeconomic Fluctuations

John Y. Campbell and N. Gregory Mankiw
Working Paper No. 2169
February 1987
JEL No. 131

Fluctuations in real GNP traditionally have been viewed as transitory deviations from a deterministic time trend. The purpose of this paper is to review some of the recent developments that have led to a new view of output fluctuations and then to provide some additional evidence. Using postwar quarterly data, we find it hard to reject the view that real GNP is as persistent as a random walk with drift.

We also consider the hypothesis that the recent finding of persistence is caused by the failure to distinguish the business cycle from other fluctuations in real GNP. We use the measured unemployment rate to decompose output fluctuations. We find no evidence for the view that business cycle fluctuations are more quickly trend-reverting.

Alternative Compensation Arrangements and Productive Efficiency in Partnerships: Evidence from Medical Group Practice

Martin Gaynor and Mark Pauly

Working Paper No. 2170

February 1987

JEL No. 913

Although the role of the services sector in the economy has grown increasingly large, and partnerships are a prevalent form of organization in this sector, relatively little is known about the behavior and performance of these firms. In this paper we attempt to fill that gap by developing and testing a model of the effect of alternative compensation arrangements on productive efficiency in medical group practices. The technique we employ is two-stage production frontier estimation. This technique provides direct estimates of productive efficiency and allows for differences across agents in ability or responsiveness to financial incentives. In the frontier literature, productive efficiency is assumed to be exogenously given. In this paper, it is determined endogenously; thus we use a simple econometric technique correcting for this endogeneity in estimating the production frontier. In addition, the measures of efficiency themselves can be made dependent variables for explicit econometric analysis of the determinants of efficiency.

Overall, the empirical results are consistent with theoretical work on internal theory of the firm, which predicts that productivity compensation schemes will work well for firms with nonjoint production and observable output. These two criteria are met by medical group practices. The treatment of measured efficiency as an endogenous variable is unique and allows some interesting insights into the determinants of productive efficiency. We find that relating compensation to productivity does increase the quantity and efficiency of production, as theory has hypothesized. The number of members in a group decreases both the quantity produced and the efficiency with which that output is produced. Experience does lead to greater productivity and efficiency. Medical groups in general are measured as being no less efficient than an average manufacturing firm, but health maintenance organizations are less efficient than average.

Are Prices Too Sticky?

Laurence Ball and David Romer

Working Paper No. 2171

February 1987

JEL No. 023

This paper shows that small costs of changing nominal prices can lead to rigidities that cause highly inefficient fluctuations in real variables. As a result, stabilization of aggregate demand can be very desirable even though the frictions that cause fluctuations in aggregate demand to have real effects are slight. Inefficient price rigidity arises because rigidity has a negative externality; rigidity in one firm's price increases the variability of real aggregate demand, which hurts all firms. The externality can be arbitrarily large relative to the private costs of rigidity.

Public Debt Guarantees and Private Capital Flight

Jonathan S. Eaton

Working Paper No. 2172

March 1987

JEL No. 433

Significant amounts of private capital have flowed out of several of the more heavily indebted developing countries. This outflow, often called "capital flight," largely escapes taxation by the government of the borrowing country and has generated concern about the prospects for future servicing of the debt. Imperfect enforcement of contracts may lead to implicit or explicit government guarantee of foreign debt. The model that I develop demonstrates that a government policy of guaranteeing private debt can generate more than one outcome. One outcome replicates the allocation under perfect contract enforcement: national saving is invested domestically and foreign debt is repaid. However, the tax obligation implied by potential nationalization of private debt can lead to another outcome in which national capital flees and foreign debt may not be repaid.

Measuring the Effect of Subsidized Training Programs on Movements In and Out of Employment

David Card and Daniel Sullivan

Working Paper No. 2173

February 1987

JEL No. 811

We present a variety of alternative estimates of the effect of training on the probability of employment for

adult male participants in the 1976 Comprehensive Employment and Training Act (CETA) program. Our results suggest that CETA participation increased the probability of employment by two to five percentage points in the three years after training. Classroom training programs appear to have had significantly larger effects than on-the-job programs, although the estimated effects of both kinds of programs are consistently positive. We also find that movements in and out of employment for the trainees and for a control group of nonparticipants are reasonably well described by a first-order Markov process, conditional on individual heterogeneity. In the context of this model, CETA participation appears to have increased both the probability of moving into employment and the probability of continuing employment.

Optimal Liability When the Injurer's Information About the Victim's Loss Is Imperfect

A. Mitchell Polinsky
Working Paper No. 2174
March 1987

One central result in the economic theory of liability is that if an injurer's liability equals the victim's loss, then either the rule of strict liability or the rule of negligence can induce the injurer to behave properly. However, for this result to hold, the injurer must know the victim's loss *before* he or she decides whether to engage in the harmful activity and, a fortiori, before any harm has occurred.

This paper reevaluates the rules of strict liability and negligence when the injurer's information is imperfect. It addresses two questions: Under each rule, should the level of liability imposed on the injurer still equal the victim's loss? Are the rules of strict liability and negligence still equally desirable?

With respect to the first question, I demonstrate that the optimal level of liability generally is *not* equal to the victim's loss. In answer to the second question, I show that if the injurer's liability equals the victim's loss, then the two rules are equivalent, but if liability is set optimally under each rule, then strict liability generally induces the injurer to behave in a more appropriate way.

Tariffs, Terms of Trade, and the Real Exchange Rate in an Intertemporal Optimizing Model of the Current Account

Sebastian Edwards
Working Paper No. 2175
March 1987
JEL Nos 400, 410

In this paper I develop a minimum general equilibri-

um, intertemporal model with optimizing consumers and producers in order to analyze the process of determining real exchange rates. The model is completely real and considers a small open economy that produces and consumes three goods in each period. I also use the model to analyze how the current account responds to several shocks. I apply the model to two specific disturbances: the imposition of import tariffs; and shocks in the external terms of trade. In the case of import tariffs, there is a distinction among temporary, anticipated, and permanent changes. Without imposing rigidities or adjustment costs, the model can generate interesting paths for the equilibrium real exchange rate. In particular, there can be overshooting and movements in opposite directions in periods one and two. I then derive the precise conditions under which temporary import tariffs will improve the current account. Finally, I discuss in detail several ways in which the model can be extended to take into account other issues, such as changes in the fiscal deficit and financial deregulation.

Carrots and Sticks: Pay, Supervision, and Turnover

Jonathan S. Leonard
Working Paper No. 2176
March 1987
JEL No. 820

Large and persistent differences across industries in the wages paid for given occupations are common. Recently, the efficiency wage model (EWM) has been advanced to explain these wage differentials. The shirking version of the EWM assumes that there is a trade-off between self-supervision and external supervision. The turnover version of the EWM assumes that turnover is costly to the firm. Therefore, variation across firms in the cost of monitoring/shirking or turnover may explain wage variation across firms for homogeneous workers.

This paper presents empirical evidence of the trade-off of wage premiums for supervisory intensity and turnover. I analyze a new sample of 200 firms in one sector in one state in 1982 and find little evidence to support either version of the EWM. The substantial variation in wages for narrowly defined occupations across firms remains largely unexplained.

Currency Inconvertibility, Trade Taxes, and Smuggling

Jorge Braga de Macedo
Working Paper No. 2177
March 1987
JEL Nos. 422, 431

In the classic analysis of smuggling, importers choose the optimal mix of legal and illegal trade, given taxes

on trade and the technology of detection. This paper introduces an inconvertible currency into the framework, so that illegal trade is valued at a rate higher than the (fixed) official exchange rate. Sections 1 and 2 of the paper show how the smuggling ratio and the domestic price markup for the import and export good are determined simultaneously.

With balanced legal and illegal trade, changes in the (long-run) black market premium are a weighted average of changes in trade taxes, whereas changes in the smuggling ratios depend on the ratio of trade taxes. Thus, an import tariff and an export subsidy rising at the same time would keep smuggling ratios constant but would imply a rising black market premium (as shown in Sections 3 and 4).

To determine the quantity of exports and imports, I present a model of the economy (in Section 5) that features the production of exports and nontraded goods and the consumption of imports and nontraded goods, as well as a government confiscating the amounts of traded goods that are smuggled unsuccessfully. Export production may fall, and welfare may rise, if trade taxes have a negative effect on the relative price of exports and imports that is stronger than the positive effect on smuggled exports and imports (which always reduces welfare).

In Section 6 I introduce the short-run determination of the black market premium via portfolio balance. In this case, rising trade taxes may be associated with a premium rising even faster if there is unreported capital flight, and the converse is also true.

The Theory and the Facts of How Markets Clear: Is Industrial Organization Valuable for Understanding Macroeconomics?

Dennis W. Carlton
Working Paper No. 2178
March 1987

This paper examines what industrial organization economists do and do not know about how markets clear. It reviews the empirical evidence that shows that, at least for some industries, price behavior is peculiar in that prices fail to adjust over long periods of time. The paper discusses several existing theoretical explanations for the peculiar behavior, such as fixed cost to changing price information asymmetries and theories of dynamic oligopoly. The paper goes on to develop some new theories to explain the observed behavior. The new explanations rely heavily on the importance of a seller's knowledge of his customers and on the optimality of nonprice rationing. The paper discusses what relationship, if any, macroeconomics has to industrial organization.

Economic Liberalization and the Equilibrium Real Exchange Rate in Developing Countries

Sebastian Edwards
Working Paper No. 2179
March 1987
JEL Nos. 400, 420

This paper deals with the relationship between commercial policy and "the" equilibrium real exchange rate. The paper clarifies the meaning of real exchange rate by comparing five different definitions that are currently found in the literature. The analysis focuses on the effects of an economic liberalization program that reduces import tariffs on the equilibrium real exchange rate under a number of alternative assumptions about capital mobility. From a policy perspective, this is an important issue, since countries that embark on liberalization are usually concerned with avoiding real exchange rate misalignment and overvaluation. I also investigate the effects of terms-of-trade shocks on the equilibrium real exchange rate.

The Revenues-Expenditures Nexus: Evidence from Local Government Data

Douglas Holtz-Eakin, Whitney K. Newey,
and **Harvey S. Rosen**
Working Paper No. 2180
March 1987
JEL Nos. 324, 325

This paper examines the intertemporal linkages between local government expenditures and revenues. In the terminology that has become standard in the literature on vector autoregression analysis, the issue is whether revenues Granger-cause expenditures, or expenditures Granger-cause revenues. The main results that emerge from an analysis of fiscal data from 171 municipal governments over 1972-80 are that: (1) one or two years are sufficient to summarize the relevant dynamic interrelationships; (2) there are important intertemporal linkages among expenditures, taxes, and grants; and (3) past revenues help predict current expenditures, but past expenditures do not alter the future path of revenues. This last finding is contrary to results that have emerged from previous analyses of federal fiscal data and hence suggests the need for additional research on the differences in the processes that generate local and federal decisions.

Estimating Models with Intertemporal Substitution Using Aggregate Time-Series Data

Martin S. Eichenbaum and Lars Peter Hansen
Working Paper No. 2181
March 1987
JEL No. 131

In conducting empirical investigations of the permanent-income model of consumption and the consumption-based intertemporal asset pricing model, various authors have imposed restrictions on the nature of the substitutability of consumption across goods and over time. In this paper, we suggest a method for testing some of these restrictions and present empirical results using this approach. Our empirical analyses focus on three questions: (1) Can the services from durable and nondurable goods be treated as perfect substitutes? (2) Are preferences completely separable between durable and nondurable goods? (3) What is the nature of intertemporal substitutability of nondurable consumption? When consumers' preferences are quadratic, there is very little evidence against the hypothesis that the services from durable goods and nondurable goods are perfect substitutes. These results call into question the practice of testing quadratic models of aggregate consumption using data on nondurables and services only. When we consider S-branch specifications, we find more evidence against perfect substitutability between service flows, but less evidence against strict separability across durable and nondurable consumption goods. Among other things, these findings suggest that the empirical shortcomings of the intertemporal asset pricing model cannot be attributed to the neglect of durable goods.

High Tech Trade Policy

Kala Krishna
Working Paper No. 2182
March 1987
JEL No. 422

This paper analyzes the role of network externalities, and expectations about them, in the formulation of trade policy. I study duopoly situations when products are compatible, when they are incompatible, and when multimarket effects are possible.

Network externalities and expectations about the size of the network affect optimal trade policy in three ways. First, the presence of expectations' effects creates a role for policy if there are differences between the way the externalities operate and expectations about how they operate. Second, when goods are compatible, the existence of network externalities can make goods complementary, which reverses the direction of opti-

mal policy. Third, since multimarket effects occur naturally with network externalities and compatible products, purely domestic policies, which are legal under the GATT, can have international profit-shifting effects that may be in the national interest.

Can People Compute? An Experimental Test of the Life-Cycle Consumption Model

Stephen Johnson, Laurence J. Kotlikoff,
and **William Samuelson**
Working Paper No. 2183
March 1987
JEL No. 011

This paper presents the results of an experimental study of the life-cycle model in which subjects are asked to make consumption choices under hypothetical economic conditions. The questions in the experiment are designed to test the model's assumption of rational choice and to elicit information about preferences. The subjects' responses suggest a widespread inability to make coherent and consistent decisions on consumption. Errors in decisionmaking appear to be very substantial and, in many cases, systematic. In addition, the results of the experiment strongly reject the standard homothetic, time-separable life-cycle model.

Among the findings are that subjects display significant inconsistencies in their consumption decisions. Each of the subjects, in at least two pairs of situations that were economically identical, chose consumption values that differed by 20 percent or more. From the perspective of the standard life-cycle models, errors in decisionmaking account on average for roughly half of the variation in consumption.

Second, a sizable fraction of the subjects undervalued their future earnings relative to their present assets. That is, they systematically overdiscounted future earnings. Furthermore, almost all of the subjects oversaved, apparently because they underestimated the power of compound interest.

Finally, we strongly reject the hypothesis that intertemporal consumption preferences are uniform across individuals. Indeed, the demographic characteristics of subjects are significant determinants of consumption choice in this experiment.

Factors Affecting the Output and Quit Propensities of Production Workers

Roger Klein, Richard H. Spady, and Andrew Weiss
Working Paper No. 2184
March 1987
JEL No. 825

We use a proprietary data set of newly hired, semi-skilled production workers at one location of a large

unionized firm to investigate several issues in labor economics. These data are unique in several respects: the workers in our sample face the same wage schedules, the same promotional opportunities, the same job tenure (zero), similar working conditions, and have jobs for which we are able to record their physical output. We analyze these data by formulating a simultaneous equation model to explain wages, output, education, and a worker's decision to quit. The model is estimated by maximum likelihood and is subjected to a variety of specification tests. Such tests include a comparison of the standard error estimates that form the basis for White's information test, and White's version of a Hausman specification test.

We find that individuals who choose more education than we would expect from their observed characteristics have lower propensities to quit than expected. We argue that this low propensity to quit is one of the unmeasured (and unobserved) attributes that sorting models posit to be correlated with education; hence, this propensity distorts the usual estimates of rates of return to education.

In our sample, the performance of nonwhites was no lower than that of whites. However, on their previous jobs nonwhites received lower wages than whites did. Further, the output per hour of males in our sample was higher than that of females. However, we are unable to conclude from our data whether these productivity differences explain the higher wages received by men in their previous jobs. Moreover, this output difference may be transitory and may diminish the on-the-job learning.

We also find that the expected value of alternative wages has a positive (but statistically not very significant) effect on quit rates. Workers with better alternative opportunities are more likely to quit (all workers had the same opportunities on their current job). Finally, we find that workers with high output levels are more likely to quit than workers with average output levels are.

Hiring Procedures in the Firm: Their Economic Determinants and Outcomes

Harry J. Holzer

Working Paper No. 2185

March 1987

JEL No. 820

This paper analyzes recruitment and screening procedures chosen by firms as they hire new workers. After reviewing the relevant literature in labor economics and human resources, I outline an employer search model in which firms choose hiring procedures as well as reservation productivity levels. I also consider the outcomes determined by these choices (for example, expected durations of vacancies, expected worker

productivity and characteristics, and total resources devoted to hiring).

I then present some empirical evidence on the determinants and outcomes of hiring procedures from a survey of firms. Among other things, the results show some evidence of higher productivity and lower turnover among those hired through referrals from current employees. Total time spent on hiring when using these referrals is also lower than when other methods are used. However, those hired through referrals are less likely to be young or female than are those hired through other methods. Finally, I discuss the implications of these findings for considerations of "efficiency" and "equity."

New Directions in the Relationship between Public and Private Debt

Benjamin M. Friedman

Working Paper No. 2186

March 1987

JEL No. 311

Until the 1980s the outstanding indebtedness of government and borrowers in the private sector in the United States exhibited sufficient negative covariation that total outstanding debt remained steady relative to nonfinancial economic activity. Three hypotheses—one based on lenders' behavior, one on borrowers' behavior, and one on credit market institutional arrangements—provide potential explanations for this phenomenon. Since 1980 the U.S. debt markets have departed from these previously prevailing patterns, however, as both government and private borrowing have risen sharply.

Gross National Product, 1909-28: Existing Estimates, New Estimates, and New Interpretations of World War I and Its Aftermath

Christina D. Romer

Working Paper No. 2187

March 1987

JEL Nos. 042, 131

This paper examines the official Commerce Department estimates of gross national product (GNP) for 1909-28 and finds them far inferior to the less commonly used Kendrick estimates of GNP. It then derives a revised version of the Kendrick series that significantly alters the representation of annual movements before 1919 in the Kendrick series. This endorsement of a revised Kendrick GNP series, in place of the official Commerce Department estimates, before 1929 suggests new interpretations of the effect of World War I on the American economy and of the nature and cause of the depression of 1921.

Money, Imperfect Information, and Economic Fluctuations

Bruce Greenwald and Joseph E. Stiglitz

Working Paper No. 2188

March 1987

This paper summarizes the macroeconomic and, in particular, the monetary and financial market implications of recent developments in the microeconomic theory of imperfect information. Microeconomic models, which lead to rationing of credit on the one hand and to limitations in the availability of equity financing on the other, can account for a wide range of observed business cycle and monetary phenomena. These phenomena include: unemployment; the existence of Keynesian-type multiples; the observed lack of production-smoothing in response to cyclical fluctuations in demand; the impact of monetary policy on business activity despite the absence of significant changes in real interest rates; and price rigidities that arise from rational firm decisions (not as an a priori assumption).

Pareto-Efficient and Optimal Taxation and the New "New Welfare Economics"

Joseph E. Stiglitz

Working Paper No. 2189

March 1987

JEL No. 320

This paper surveys recent developments in the theory of Pareto-efficient taxation. This literature attempts to characterize those tax structures that, given the limitations on the government's information and on its ability to impose taxes, maximize the welfare of one individual (or group of individuals) subject to the government obtaining a level of revenue and subject to other (groups of) individuals attaining certain specified levels of utility. Then, utilitarian (or other) social welfare functions can be used to select among these Pareto-efficient tax structures. While the original goal of this line of research, which was to provide a "scientific" basis for arguing for a progressive tax structure, has not been achieved and does not seem achievable, important insights have been gleaned that should enable governments to make better choices of tax policies in the future. On the other hand, this research has cast serious doubt on the relevance of many long-standing results, including those of Ramsey concerning the structure of commodity taxes.

International Competition in the Products of U.S. Basic Industries

Barry J. Eichengreen

Working Paper No. 2190

March 1987

JEL No. 400

This paper provides an overview of recent trends in U.S. basic industries. First, it documents the dramatic fall in their shares of domestic employment and global production. Then, it considers explanations for these industries' relative—and, in some instances, absolute—decline. Those explanations fall into two categories: domestic explanations, which focus on the decisions of labor, management, and government; and international explanations, which focus on the tendency of the product cycle to continually shift the production of established products and standardized processes to newly industrializing countries.

This review suggests that the recent difficulties of the U.S. basic industries have resulted not from one or the other of these factors but from their interplay. Insofar as product-cycle-based shifts in the international pattern of comparative advantage have contributed to recent difficulties, some decline in U.S. basic industries is both inevitable—barring increased protection—and justifiable on efficiency grounds. Insofar as labor, management, and government decisions share responsibility, the recent difficulties of U.S. basic industries may be at least partially reversible.

The Effect of Takeover Activity on Corporate Research and Development

Bronwyn H. Hall

Working Paper No. 2191

March 1987

It is widely thought that increases in corporate mergers and acquisitions of the sort the United States has experienced in the recent past lead to a reduction in such long-term investment activities as R and D because of managers' shortened horizon. This paper uses a newly created data set containing all acquisitions of publicly traded firms in the manufacturing sector in the last ten years to answer some basic questions that pertain to this issue. I find that the firms involved in acquisitions and mergers in which both partners are in the manufacturing sector have roughly the same pattern of R and D spending as the sector as a whole, and that the acquisition itself does not cause a reduction in these firms' R and D activity. Moreover, the R and D capital thus acquired is valued more highly by the acquiring firm than by the stock market. On the other hand, I also find that the substantial increase in the number and size of acquisitions made by privately held firms in the 1980s is concentrated primarily on firms with low R and D in-

tensity that also are in non-R and D-intensive industries. Because the pattern of low investment in R and D is long-standing, and because the firms taken over have less rather than more R and D capital than in the industry as a whole, it seems unlikely that the recent increase in takeover activity has had a significantly negative effect on R and D spending in these industries.

The Effects of Taxation on the Merger Decision

Alan J. Auerbach and David Reishus
Working Paper No. 2192
March 1987

This paper presents estimates of the tax benefits generated by a sample of U.S. mergers and acquisitions involving two public corporations over 1968-83. It also estimates a "marriage model," based on differences between these mergers and another sample of "pseudomergers" that did not occur, to determine the impact of these tax benefits on the probability of two firms combining.

Our findings reject the hypothesis that leverage played a large role in fostering these transactions, and that the tax losses and credits of acquired firms likewise exerted no impact on merger activity. Although the use of tax benefits by acquiring firms to shield profits of other firms did increase the level of activity, the impact was quite small.

On the whole, our results suggest that the changes in tax provisions with respect to mergers introduced by the Tax Reform Act of 1986 will have a small impact on U.S. mergers and acquisitions.

Hegemonic Stability Theories of the International Monetary System

Barry J. Eichengreen
Working Paper No. 2193
March 1987
JEL No. 400

Specialists in international relations have argued that international regimes operate smoothly and exhibit stability only when dominated by a single, exceptionally powerful national economy. In particular, this "theory of hegemonic stability" has been applied to the international monetary system. The maintenance of the Bretton Woods System for a quarter of a century through 1971 is ascribed to the singular power of the United States in the postwar world, while the persistence of the classical gold standard is similarly ascribed to Britain's dominance of the 19th-century international economy. In contrast, the instability of the interwar gold exchange standard is attributed to the absence of a hegemonic power.

This paper assesses the applicability of hegemonic

stability theory to international monetary relations, approaching the question from both theoretical and empirical vantage points. While that theory is of some help in understanding the relatively smooth operation of the classical gold standard and early Bretton Woods System as well as some of the difficulties of the interwar years, much of the evidence proves to be difficult to reconcile with the hegemonic stability view.

Incentives and Worker Behavior: Some Evidence

Andrew Weiss
Working Paper No. 2194
March 1987
JEL No. 825

This paper is concerned with three types of incentive programs: (1) individual wage incentives that cause a worker's efforts to have a major effect on his pay; (2) group incentives, in which the pay of an individual is determined by the output of a group of workers, as small as a four-member work team or as large as the whole firm; and (3) seniority-based payment schemes in which the pay of a worker rises rapidly with his tenure with the firm. I show that these payment schemes have the effects in practice that we would predict from theories of optimizing behavior by workers.

I find that group incentives tend to compress the productivity distribution of workers. This is because the relative performance of the most productive workers tends to fall, and the most and least productive workers have relatively high quit rates when workers are paid on group incentives. I also present evidence that suggests that the low quit rates in large Japanese firms may be caused by steep wage-tenure profiles in those firms.

The Importance of Economic Policy in Development: Contrasts between Korea and Turkey

Anne O. Krueger
Working Paper No. 2195
March 1987

In the mid-1950s, Turkey was a much richer country than Korea. Even though the two countries had about the same population, Turkish GNP was about three times that of Korea, Turkish exports were 15 times those of Korea, and the Turkish saving rate was much higher than the Korean rate.

By 1980, the situation was dramatically reversed. Turkish income was 40 percent below Korea's, Turkish exports were less than one-fourth those of Korea, and the Turkish saving rate was about two-thirds of Korea's.

This paper examines the variables that affected economic growth and shows the critical importance of the different policy choices in the two countries.

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