

National Bureau of Economic Research (NBER) (Ed.)

Periodical Part

NBER Reporter Online, Volume 1993

NBER Reporter Online

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Suggested Citation: National Bureau of Economic Research (NBER) (Ed.) (1993) : NBER Reporter Online, Volume 1993, NBER Reporter Online, National Bureau of Economic Research (NBER), Cambridge, MA

This Version is available at:

<https://hdl.handle.net/10419/62104>

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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

WINTER 1993/4

Program Report

International Finance and Macroeconomics

Jeffrey A. Frankel

This report on the activities of the Bureau's program in International Finance and Macroeconomics (IFM) is the first since the original program in International Studies was divided into IFM and International Trade and Investment two years ago. It discusses the program's research in six areas: the international integration of financial markets; the determination of exchange rates; open economy macroeconomics; European monetary integration; the world monetary system in historical perspective; and international aspects of economic reform and growth.

The International Integration of Financial Markets

The increasing integration of financial markets across national boundaries has been a central aspect of the Bureau's international research. We have approached the subject of integration from a number of directions.

One common approach is to examine the ability of international capital flows to eliminate differences in expected rates of return across countries. This process is known as *arbitrage*. In his work, IFM associate Richard C. Marston has continued to test interest rate parity, focusing on Japan-U.S. differentials in one study, and on the pre- and post-1973 periods in another.¹

¹R. C. Marston, "Determinants of Short-Term Real Interest Differentials Between Japan and the United States," NBER Working Paper No. 4167, September 1992, and "Interest Differentials Under Fixed and Flexible Exchange Rates: The Effects of Capital Controls and Exchange Risk," NBER Working Paper No. 4053, April 1992. Also J. A. Frankel, "Quantifying International Capital Mobility in the 1980s," in *National Saving and Economic Performance*, B. D. Bernheim and J. B. Shoven, eds., Chicago: University of Chicago Press, 1991, pp. 227-260; reprinted in J. A. Frankel, *On Exchange Rates*, Cambridge, MA: MIT Press, 1993.

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This issue of the *Reporter* highlights the Bureau's Program in International Finance and Macroeconomics. Next, Olivier J. Blanchard describes his research on European unemployment. After biographical sketches, news of NBER conferences, and other NBER news and reports, the *Reporter* concludes with short summaries of recent Working Papers.

An alternative approach is to look at the extent to which "representative agents" residing in different countries are able to smooth the variability of consumption over time, by taking advantage of the ability to borrow and lend internationally. This approach was pursued recently by Maurice Obstfeld, and by Andrew K. Rose and Assaf Razin.²

Stock markets, too, are becoming increasingly important as a vehicle for international financial integration. Work by Bernard Dumas has considered the implications of various empirical regularities in international equi-

²M. Obstfeld, "The Adjustment Mechanism," NBER Reprint No. 1766, January 1993, and in *A Retrospective on the Bretton Woods System*, M. D. Bordo and B. Eichengreen, eds. Chicago: University of Chicago Press, 1993, "Risktaking, Global Diversification, and Growth," NBER Working Paper No. 4093, June 1992, and in *American Economic Review*, forthcoming, and "Are Industrial Country Consumption Risks Globally Diversified?" NBER Working Paper No. 4308, March 1993, and in *Capital Mobility: Smoothing or Volatizing?* L. Leiderman and A. Razin, eds., Cambridge, England: Cambridge University Press, forthcoming; and A. K. Rose and A. Razin, "Business Cycle Volatility and Openness: An Exploratory Cross-Section Analysis," NBER Working Paper No. 4208, November 1992, and in *ibid.*, forthcoming.

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Preparation of the *NBER Reporter* is under the supervision of Donna Zerwitz.

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ty markets for the choice between two models that describe those markets: the idealized representative agent model, in which all investors are the same; and an international version of the Capital Asset Pricing Model (CAPM).³

One of those empirical regularities is the tendency for investors in every country to hold far more domestic than foreign equities, despite the degree of internationalization that has taken place in recent years. Linda L. Tesar and Ingrid M. Werner document this phenomenon, which is known as *home country bias*.⁴ To some degree, home country bias is created by the risk of exchange rate fluctuations. But that risk can be hedged easily in the forward exchange market. Kenneth A. Froot recently has shed new light on this strategy for the case of equities, and Richard M. Levich and Lee R. Thomas have done the same for the case of bonds.⁵

Logically, investors should pay a price for hedging, which would show up as a discrepancy between the forward exchange rate and the expected future spot rate. Three recent NBER papers by Bennett T. McCallum, Martin D. D. Evans and Karen K. Lewis, and Richard H. Clarida and Mark P. Taylor, have examined the well-known failure of the forward rate to forecast the future spot rate.⁶ In related work, Dumas and Bruno Solnik show how to implement the international CAPM empirically with an allowance for exchange risk and hedging.⁷ Tesar and Warner, however, argue that home country bias is too great to be explained by exchange risk.

Another possible explanation for the failure of investors to diversify fully is the existence of remaining restrictions on cross-border investment. René M. Stulz and Walter Wasserfallen explore such restrictions, looking specifically at Switzerland.⁸ The ultimate test of inter-

³B. Dumas, "Partial- Versus General-Equilibrium Models of the International Capital Market," NBER Working Paper No. 4446, September 1993.

⁴L. L. Tesar and I. M. Werner, "Home Bias and the Globalization of Securities Markets," NBER Working Paper No. 4218, November 1992.

⁵K. A. Froot, "Currency Hedging Over Long Horizons," NBER Working Paper No. 4355, May 1993, and R. M. Levich and L. R. Thomas, "Internationally Diversified Bond Portfolios: The Merits of Active Currency Risk Management," NBER Working Paper No. 4340, April 1993.

⁶B. T. McCallum, "A Reconsideration of the Uncovered Interest Parity Relationship," NBER Working Paper No. 4113, July 1992; M. D. D. Evans and K. K. Lewis, "Trends in Expected Returns in Currency and Bond Markets," NBER Working Paper No. 4116, July 1992; and R. H. Clarida and M. P. Taylor, "The Term Structure of Forward Exchange Premiums and the Forecastability of Spot Exchange Rates: Correcting the Errors," NBER Working Paper No. 4442, August 1993.

⁷B. Dumas and B. Solnik, "The World Price of Foreign Exchange Risk," NBER Working Paper No. 4459, September 1993.

⁸R. M. Stulz and W. Wasserfallen, "Foreign Equity Investment Restrictions and Shareholder Wealth Maximization," NBER Working Paper No. 4217, November 1992.

market frictions is to study prices of shares in the same company, in cases where they are cross-listed, as Alan W. Kleidon and Werner have done.⁹

The Bureau recently held a conference on "The Internationalization of Equity Markets," which examined many of these issues in depth. A summary of the conference appears in the Fall 1993 issue of the *NBER Reporter*. Many of the papers, including an editor's introduction, will appear soon as NBER Working Papers, and the volume should be published next year by the University of Chicago Press.

The Determination of Exchange Rates

Some Bureau economists recently have studied the empirical aspects of exchange rate determination. Martin S. Eichenbaum and Charles Evans focused on those changes in the money supply that can be identified specifically as the result of policy changes, and found a significant (lagged) effect on the exchange rate.¹⁰ Vittorio U. Grilli and Nouriel Roubini extend this approach to include monetary policy in other major industrialized countries.¹¹ Michael Dooley, Peter Isard, and Mark Taylor found some predictive ability from gold prices, as well.¹²

A number of Bureau researchers also have examined intervention in the foreign exchange markets by central banks, since it became more common with the 1985 Plaza Accord. The conventional wisdom is that—precisely because international financial markets are well developed, highly integrated, and subject to diversification—central bank purchases or sales of foreign exchange are unlikely to be large enough to have much of an effect on the exchange rate, except to the extent that they change money supplies, in which case they are simply a variety of monetary policy. Some years ago, however, Michael L. Mussa—an IFM program member currently on leave at the International Monetary Fund as Director of the Research Department and Economic Counsellor—suggested the *signaling* effect of intervention. This channel requires that intervention is reported to market participants and that they then interpret it as conveying information on future monetary policy. Michael W. Klein offers evidence relevant to the first proposition,

⁹A. W. Kleidon and I. M. Werner, "Round-the-Clock Trading: Evidence from U.K. Cross-Listed Securities," NBER Working Paper No. 4410, July 1993.

¹⁰M. S. Eichenbaum and C. Evans, "Some Empirical Evidence on the Effects of Monetary Policy Shocks on Exchange Rates," NBER Working Paper No. 4271, February 1993.

¹¹V. U. Grilli and N. Roubini, "Liquidity and Exchange Rates: Puzzling Evidence from the G-7 Countries," presented August 1993.

¹²M. Dooley, P. Isard, and M. Taylor, "Exchange Rates, Country Preferences, and Gold," NBER Working Paper No. 4183, October 1992.

and Graciela L. Kaminsky and Lewis offer evidence relevant to the second.¹³ Kathryn M. Dominguez and I have found evidence of intervention effects through both the signaling channels and the traditional portfolio channel.¹⁴

Still, the overall empirical track record for macroeconomic models of exchange rate determination remains poor, despite the isolated examples of success with regard to specific aspects. Recently, Robert P. Flood and Rose have shown that the failure of the macro models transcends particular problems of parameter estimation.¹⁵ Charles M. Engel, too, has found yet another example of the surprising difficulty in forecasting exchange rates better than a "random walk."¹⁶

Such findings are persuading some IFM members to turn to an entirely different sort of approach: microstructure models of the foreign exchange market that include variables, such as trading volume, bid-ask spreads, and trader heterogeneity, that the macro models omit. Richard K. Lyons, in particular, has made progress with this approach.¹⁷ The Bureau is planning a conference on the new topic of "Foreign Exchange Microstructure" next June, cosponsored with the Bank of Italy and the Centre for Economic Policy Research.

Open Economy Macroeconomics

International financial markets have implications for the real economy. Razin recently reviewed a popular theory of the current account measure of the balance of payments, in which it is determined by optimization on the part of consumers across time.¹⁸ Reuven Glick and

¹³M. W. Klein, "The Accuracy of Reports of Foreign Exchange Intervention," NBER Working Paper No. 4165, September 1992; G. L. Kaminsky and K. K. Lewis, "Does Foreign Exchange Intervention Signal Future Monetary Policy?" NBER Working Paper No. 4298, March 1993; and K. K. Lewis, "Are Foreign Exchange Intervention and Monetary Policy Related and Does It Really Matter?" NBER Working Paper No. 4377, June 1993.

¹⁴K. M. Dominguez and J. A. Frankel, "Does Foreign Exchange Intervention Matter? Disentangling the Portfolio and Expectation Effects," *American Economic Review* (December 1993).

¹⁵R. P. Flood and A. K. Rose, "Fixing Exchange Rates: A Virtual Quest for Fundamentals," NBER Working Paper No. 4503, October 1993.

¹⁶C. M. Engel, "Can the Markov Switching Model Forecast Exchange Rates?" NBER Working Paper No. 4210, November 1992.

¹⁷R. K. Lyons, "Optimal Transparency in a Dealership Market with an Application to Foreign Exchange," NBER Working Paper No. 4467, September 1993, and "Tests of Microstructural Hypotheses in the Foreign Exchange Market," NBER Working Paper No. 4471, September 1993.

¹⁸A. Razin, "The Dynamic-Optimizing Approach to the Current Account: Theory and Evidence," NBER Working Paper No. 4334, April 1993.

Kenneth Rogoff have examined the implications of productivity shocks in this model, while David K. Backus, Patrick J. Kehoe, and Fynn E. Kydland have examined its implications for the business cycle and the terms of trade.¹⁹

The real exchange rate often is defined as the price of internationally traded goods in terms of the price of goods and services that stay at home, such as ice cream (which is perishable), or haircuts. Rogoff used such a framework to examine the long-run real appreciation of the yen; as the Japanese grow richer, golf-club memberships increase steadily in price relative to automobiles.²⁰ José de Gregorio and Alberto Giovannini used it to examine inflation, and Philip Brock and Stephen J. Turnovsky to examine the role of capital goods.²¹

Several Bureau researchers have taken a more microeconomic approach to examining exchange rates and prices. Engel has found a striking empirical fact: the consumer price of a good (for example, television sets, relative to bananas) within a country tends to be much less variable than the price of that good relative to similar goods in other major countries.²² Robert C. Feenstra, Joseph E. Gagnon, and Michael M. Knetter have continued to explore pricing-to-market. This is a phenomenon whereby exporters, for example in Japan, when faced with a change in the exchange rate, pass it through only partially to dollar import prices in the United States.²³

¹⁹R. Glick and K. Rogoff, "Global Versus Country-Specific Productivity Shocks and the Current Account," NBER Working Paper No. 4140, August 1992; D. K. Backus, P. J. Kehoe, and F. E. Kydland, "International Business Cycles: Theory and Evidence," NBER Working Paper No. 4493, October 1993, and "Dynamics of the Trade Balance and the Terms of Trade: The S-Curve," NBER Working Paper No. 4242, December 1992.

²⁰K. Rogoff, "Traded Goods, Consumption Smoothing, and the Random Walk Behavior of the Real Exchange Rate," NBER Working Paper No. 4119, July 1992, and *Bank of Japan, Monetary and Economic Studies* (November 1992), pp. 1–30.

²¹J. de Gregorio, A. Giovannini, and H. C. Wolf, "International Evidence on Tradables and Nontradables Inflation," NBER Working Paper No. 4438, August 1993; and P. Brock and S. J. Turnovsky, "The Dependent Economy Model with Both Traded and Nontraded Capital Goods," NBER Working Paper No. 4500, October 1993.

²²C. M. Engel, "Real Exchange Rates and Relative Prices: An Empirical Investigation," NBER Working Paper No. 4231, December 1992, and *Journal of Monetary Economics* 32, pp. 35–50.

²³R. C. Feenstra, J. E. Gagnon, and M. M. Knetter, "Market Share and Exchange Rate Pass-Through in World Automobile Trade," NBER Working Paper No. 4399, July 1993; J. E. Gagnon and M. M. Knetter, "Markup Adjustment and Exchange Rate Fluctuations: Evidence from Panel Data on Automobile Exports," NBER Working Paper No. 4123, July 1992; and M. M. Knetter, "Exchange Rates and Corporate Pricing Strategies," NBER Working Paper No. 4151, August 1992, "Is Price Adjustment Asymmetric? Evaluating the Market Share and Marketing Bottlenecks Hypothesis," NBER Working Paper No. 4170, September 1992, and "Market Share and Exchange Rate Pass-Through in World Automobile Trade," NBER Working Paper No. 4399, July 1993.

Another aspect of firms' reactions to exchange rate changes is the decision of where to invest in plant and equipment. Klein and Eric Rosengren test competing hypotheses regarding foreign direct investment into the United States, while Jose Campa and Linda S. Goldberg study investment by U.S. firms, and Joshua Aizenman looks at the effect of exchange rate volatility on both sorts of investment.²⁴ Froot organized a conference on this subject for the Bureau in May 1992.²⁵

European Monetary Integration

Developments in Europe continue to provide ample subject matter for Bureau researchers. David Folkerts-Landau and Peter M. Garber have looked at the role of the ECU (European Currency Unit) and at the design of the planned European Central Bank.²⁶ Barry Eichengreen has studied what the historical U.S. federation of states can tell Europe about prospects for successful monetary union and the design of a unified central bank.²⁷ Alessandra Casella has studied some of the theoretical issues.²⁸

The collapse of the European Exchange Rate Mechanism in a sense is not surprising, in light of standard international monetary theory. Standard theory says that national monetary independence is incompatible with truly fixed exchange rates and open financial markets. Many Bureau researchers studied the track record of the European Monetary System, and concluded that the possibility of realignment of the exchange rates always has been important, regardless of what policymakers

²⁴M. W. Klein and E. Rosengren, "The Real Exchange Rate and Foreign Direct Investment in the United States: Relative Wealth Versus Relative Wage Effects," NBER Working Paper No. 4192, October 1992; J. Campa and L. S. Goldberg, "Investment in Manufacturing, Exchange Rates, and External Exposure," NBER Working Paper No. 4378, June 1993; and J. Aizenman, "Exchange Rate Flexibility, Volatility, and Domestic and Foreign Direct Investment," NBER Reprint No. 1787, May 1993.

²⁵K. A. Froot, *Foreign Direct Investment*, Chicago: University of Chicago Press, 1993.

²⁶D. Folkerts-Landau and P. M. Garber, "The Private ECU: A Currency Floating on Gossamer Wings," NBER Working Paper No. 4017, March 1992, and "The European Central Bank: A Bank or a Monetary Policy Rule," NBER Working Paper No. 4016, March 1992.

²⁷For example, B. Eichengreen, "Designing a Central Bank for Europe: A Cautionary Tale from the Early Years of the Federal Reserve System," in *Establishing a Central Bank: Issues in Europe and Lessons from the United States*, M. Canzoneri, V. U. Grilli, and P. R. Masson, eds. Cambridge, England: Cambridge University Press, 1992.

²⁸A. Casella, "Participation in a Currency Union," *American Economic Review* (September 1992), pp. 847–863.

said ahead of time.²⁹ Nevertheless, the collapse caught most people by surprise, as Rose and Lars E. O. Svensson have documented.³⁰ Svensson argues that the ability of European countries to bring down their inflation rates by means of exchange rate stabilization had been overestimated.³¹

In the wake of the crisis in which Italy and the United Kingdom were forced to drop out of the Exchange Rate Mechanism, Grilli and Alberto Alesina consider the suggestion that it might be more practical for the European countries to approach monetary union at different speeds.^{32,33}

The World Monetary System in Historical Perspective

Several recent NBER projects have sought to place international monetary developments in a broader historical and political context. In 1993, the University of Chicago Press published *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform*, edited by Bordo and Eichengreen. These proceedings of an earlier NBER conference included overviews of the period by both editors, and a look at the origins of

the system by Giovannini.³⁴ Dominguez analyzed the theory behind the creation of the International Monetary Fund and World Bank at the famous 1944 meeting.³⁵ Alan C. Stockman studied international transmission among industrialized economies during 1944–71, and Sebastian Edwards and Julio A. Santaella considered devaluations among less developed countries.³⁶

Some of these same themes, regarding the history of differing international monetary regimes, have been pursued further by these and other authors.³⁷ For example, McCallum has studied the use of multicountry simulations in evaluating proposed international policy regimes.³⁸

A new book, edited by NBER President Martin Feldstein, examines the history and politics behind U.S. economic policymaking during the Reagan administration. It includes, among many other topics, my review of exchange rate policymaking during the decade, as well as recollections on the subject by Paul A. Volcker, C. Fred Bergsten, Mussa, and Feldstein himself.³⁹

Some observers believe that the world is breaking into three currency blocs: a yen bloc, a dollar bloc, and a mark bloc. A third just-released NBER book examines the question of whether Japan is forming a yen bloc in East Asia, and related questions concerning the political economy of that region. I, like several of the authors represented, look at data on bilateral trade and financial

²⁹S. M. Collins, "The Expected Timing of EMS Realignment: 1979–83," NBER Working Paper No. 4068, May 1992; L. E. O. Svensson, "Assessing Target Zone Credibility: Mean Reversion and Devaluation Expectations in the EMS, 1979–92," NBER Working Paper No. 3795, July 1991, and *European Economic Review* (May 1993); Z. Chen and A. Giovannini, "Estimating Expected Exchange Rates Under Target Zones," NBER Working Paper No. 3955, January 1992, and "The Determinants of Realignment Expectations Under the EMS: Some Empirical Regularities," NBER Working Paper No. 4291, March 1993; A. Drazen and P. R. Masson, "Credibility of Policies Versus Credibility of Policymakers," NBER Working Paper No. 4448, September 1993; and B. Dumas, L. P. Jennergren, and B. Näslund, "Realignment Risk and Currency Option Pricing in Target Zones," NBER Working Paper No. 4458, September 1993. Many of these papers are modifications of the seminal theory developed by Paul R. Krugman in "Target Zones and Exchange Rate Dynamics," formerly an NBER Working Paper, reprinted in *Currencies and Crises*, Cambridge, MA: MIT Press, 1992.

³⁰A. K. Rose and L. E. O. Svensson, "European Exchange Rate Credibility Before the Fall," NBER Working Paper No. 4495, October 1993. Also, J. A. Frankel and S. Phillips, "The European Monetary System: Credible at Last?" NBER Working Paper No. 3819, August 1991, and *Oxford Economic Papers* 44 (April 1992).

³¹L. E. O. Svensson, "Fixed Exchange Rates as a Means to Price Stability: What Have We Learned?" NBER Working Paper No. 4504, October 1993.

³²A. Alesina and V. U. Grilli, "On the Feasibility of a One- or Multi-Speed European Monetary Union," NBER Working Paper No. 4350, April 1993.

³³See also, J. Von Hagen, "Monetary Union, Money Demand, and Money Supply: A Review of the German Monetary Union," *European Economic Review* (May 1993).

³⁴M. B. Bordo, "The Bretton Woods International Monetary System: A Historical Overview," NBER Reprint No. 1774, March 1993; B. Eichengreen, "Three Perspectives on the Bretton Woods System," NBER Working Paper No. 4141, August 1992; and A. Giovannini, "Bretton Woods and Its Precursors: Rules Versus Discretion in the History of International Monetary Regimes," in the conference volume.

³⁵K. M. Dominguez, "The Role of International Organizations in the Bretton Woods System," NBER Working Paper No. 3951, January 1992.

³⁶A. C. Stockman, "International Transmission Under Bretton Woods," NBER Working Paper No. 4127, July 1992; and S. Edwards and J. A. Santaella, "Devaluation Controversies in the Developing Countries: Lessons from the Bretton Woods Era," NBER Working Paper No. 4047, April 1992.

³⁷M. B. Bordo, "Gold Standard, Bretton Woods, and Other Monetary Regimes: A Historical Appraisal," NBER Reprint No. 1818, October 1993; B. Eichengreen, "The Endogeneity of Exchange Rate Regimes," NBER Working Paper No. 4361, May 1993; T. Bayoumi and B. Eichengreen, "Macroeconomic Adjustment Under Bretton Woods Float: An Impulse-Response Analysis," NBER Working Paper No. 4169, September 1992.

³⁸B. T. McCallum, "Specification of Policy Rules and Performance Measures in Multicountry Simulation Studies," NBER Working Paper No. 4233, December 1992.

³⁹J. A. Frankel, "The Making of Exchange Rate Policy in the 1980s," and M. Feldstein, "The Dollar and the Trade Deficit in the 1980s: A Personal View," NBER Working Paper No. 4325, April 1993, both in *American Economic Policy in the 1980s*, M. Feldstein, ed. Chicago: University of Chicago Press, 1993.

influences to see if there is indeed a trend toward regional blocs; Froot and David Yoffie look at the implications of foreign direct investment for the trading bloc question; Takatoshi Ito looks at U.S. influence in the region.⁴⁰

With Shang-Jin Wei, I have extended the study of bilateral trade and currency blocs, as have Eichengreen and Douglas A. Irwin.⁴¹ One of these papers was presented at the May 1993 meeting of the InterAmerican Seminar in Macroeconomics (IASE), in Caracas.⁴² IASE meets annually in Latin America, and is organized by Sebastian Edwards of the NBER and Edmar Bacha of the Pontificia Universidad Católica in Rio De Janeiro. Joining Edwards as local coorganizer for the sixth meeting this year was Gustavo Marquez of the Instituto de Estudios Superiores de Administracion in Caracas.

International Aspects of Economic Reform and Growth

Economic reform has swept many parts of the world where it would have been thought unlikely. A number of Bureau economists—including Jeffrey D. Sachs and Andrei Shleifer—have participated actively in currency reform and other aspects of the economic transition to a market economy on the part of countries in Eastern Europe and the Former Soviet Union (FSU). *The Transition in Eastern Europe*, edited by Olivier J. Blanchard, Froot, and Sachs—the fruits of a large-scale research project and conference on this subject—will be published in two volumes by the University of Chicago Press in early 1994.

For some topics, datasets are too short and events too fast-breaking to allow serious research. But one topic in which the data already accumulate fast enough to permit meaningful statistics is the foreign exchange market: the data are daily and many countries have not one but several foreign exchange markets. Linda S. Gold-

berg has studied black markets in Russia, recent currency reforms, and the prospects for a wider ruble zone in the FSU.⁴³

When a country experiencing a high inflation rate undertakes monetary stabilization, fixing the exchange rate is considered a useful component of the plan. Edwards has analyzed the advisability of this approach with empirical applications to some highly indexed economies: Chile, Mexico, and Yugoslavia in one paper, and Venezuela in another. He finds that fixing the exchange rate, on its own, will not reduce the degree of inflation inertia.⁴⁴ Federico Sturzenegger also examines hyperinflation and indexation, in economies where U.S. dollars circulate side-by-side with the local currency. This phenomenon is known as “currency substitution” and also has been studied recently by Giovannini and Bart Turtelboom.⁴⁵ Casella and Eichengreen have studied the precedent of stabilization in Europe in 1947–8.⁴⁶

Rudiger Dornbusch has just published a collection of his papers of the preceding five years on the topic of monetary stabilization and economic reform in developing and transition economies; many of these originally appeared as NBER Working Papers.⁴⁷ Michael Bruno’s work identified a 20-year cycle of disinflation and recovery, which he considers applicable to many countries in Latin America and elsewhere.⁴⁸

Some countries undertake trade liberalization at the same time as monetary stabilization; Dani Rodrik studies the combination of the two.⁴⁹ Edwards studies the connection to economic growth, and the political econo-

⁴³L. S. Goldberg, “Moscow Black Markets and Official Markets for Foreign Exchange: How Much Flexibility in Flexible Rates?” NBER Working Paper No. 4040, March 1992; and L. S. Goldberg and I. Karimov, “Black Markets for Currency, Hoarding Activity, and Currency Reform,” NBER Working Paper No. 4153, August 1992.

⁴⁴S. Edwards, “Exchange Rates as Nominal Anchors,” NBER Working Paper No. 4246, December 1992, and “Exchange Rates, Inflation, and Disinflation: Latin American Experiences,” NBER Working Paper No. 4320, April 1993.

⁴⁵F. Sturzenegger, “Hyperinflation with Currency Substitution: Introducing an Indexed Currency,” NBER Working Paper No. 4184, October 1992; and A. Giovannini and B. Turtelboom, “Currency Substitution,” NBER Working Paper No. 4232, December 1992.

⁴⁶A. Casella and B. Eichengreen, “Halting Inflation in Italy and France After World War II,” in *Monetary Regimes in Transition*, M. Bordo and F. Capiá, eds. Cambridge, England: Cambridge University Press, 1992.

⁴⁷R. Dornbusch, *Stabilization, Debt, and Reform*, Englewood Cliffs, NJ: Prentice-Hall, 1993.

⁴⁸M. Bruno, “Inflation and Growth in an Integrated Approach,” NBER Working Paper No. 4422, August 1993.

⁴⁹D. Rodrik, “Trade Liberalization in Disinflation,” NBER Working Paper No. 4419, August 1993.

⁴⁰J. A. Frankel, “Is Japan Creating a Yen Bloc in East Asia and the Pacific?”; K. A. Froot and D. Yoffie, “Trading Blocs and the Incentive to Protect: Implications for Japan and East Asia”; and T. Ito, “U.S. Political Pressure and Economic Liberalization in East Asia”; all in *Regionalism and Rivalry: Japan and the United States in Pacific Asia*, J. A. Frankel and M. Kahler, eds. Chicago: University of Chicago Press, 1993.

⁴¹B. Eichengreen and D. A. Irwin, “Trade Blocs, Currency Blocs, and the Disintegration of World Trade in the 1930s,” NBER Working Paper No. 4445, August 1993; J. A. Frankel and S.-J. Wei, “Yen Bloc or Dollar Bloc? Exchange Rate Policies of the East Asian Economies,” in *Macroeconomic Linkages*, T. Ito and A. B. Krueger, eds., Chicago: University of Chicago Press, forthcoming, and “Trade Blocs and Currency Blocs,” NBER Working Paper No. 4335, April 1993.

⁴²J. A. Frankel, E. Stein, and S.-J. Wei, “Trading Blocs: The Natural, the Unnatural, and the Supernatural,” NBER Working Paper No. 4588, December 1993.

my of inflation and stabilization.⁵⁰ He and Dornbusch also organized a Bureau conference on "Stabilization, Economic Reform, and Growth," in Washington, in December 1992.

IFM members also have been intrigued by the question of why some countries grow faster than others. Alesina, Sule Özler, Roubini, and Phillip Swagel have studied the connection between political instability and growth across countries.⁵¹ Rodrik has shown that a poor country might be able to get a capital-intensive, high-tech sector growing, through a high-wage policy.⁵² Clarida; Razin and Chi-Wa Yuen; and Alesina, Grilli, and Gian Maria Milesi-Ferretti all have been studying government regulation of international capital flows and the implications for growth.⁵³ John F. Helliwell has studied factors including international openness, which may be more important for economic growth in East Asia than among countries that industrialized earlier.⁵⁴ The NBER also has an annual conference series on East Asia, the East Asian Seminar on Economics (EASE), organized by Ito and Anne O. Krueger. This year's meeting, which was held in June, focused on economic growth. Faculty Research Fellows Wei and Alwyn Young were among the authors seeking to explain growth in specific East Asian countries.⁵⁵ The preceding meeting of EASE was held in Sapporo, Japan; the proceedings are forthcoming from the University of Chicago Press.

⁵⁰S. Edwards, "Trade Policy, Exchange Rates, and Growth," NBER Working Paper No. 4511, October 1993, and "The Political Economy of Inflation and Stabilization in Developing Countries," NBER Working Paper No. 4319, April 1993.

⁵¹A. Alesina, S. Özler, N. Roubini, and P. Swagel, "Political Instability and Economic Growth," NBER Working Paper No. 4173, September 1992.

⁵²D. Rodrik, "Do Low-Income Countries Have a High-Wage Option?" NBER Working Paper No. 4451, September 1993.

⁵³R. H. Clarida, "International Capital Mobility, Public Investment, and Economic Growth," NBER Working Paper No. 4506, October 1993; A. Razin and C.-W. Yuen, "Convergence in Growth Rates: The Role of Capital Mobility and International Taxation," NBER Working Paper No. 4214, November 1992, and "Convergence in Growth Rates: A Quantitative Assessment of the Role of Capital Mobility and International Taxation," NBER Working Paper No. 4336, April 1993; and A. Alesina, V. U. Grilli, and G. M. Milesi-Ferretti, "The Political Economy of Capital Controls," NBER Working Paper No. 4353, May 1993.

⁵⁴J. F. Helliwell, "International Growth Linkages: Evidence from Asia and the OECD," NBER Working Paper No. 4245, December 1992.

⁵⁵S.-J. Wei, "Open Door Policy and Rapid Chinese Growth: Evidence from City-Level Data"; and A. Young, "A Tale of Two Cities: Factor Accumulation and Technical Change in Hong Kong and Singapore," in NBER Macroeconomics Annual 1993, Cambridge, MA: MIT Press, 1993.

The NBER also cosponsors an annual conference in Japan with the Tokyo Center for Economic Research and the Centre for Economic Policy Research, organized by Ito and Hiroshi Yoshikawa. The theme of the January 1992 meeting was "Growth and Development: New Theory and Evidence." The proceedings were published in the December 1992 issue of the *Journal of the Japanese and International Economies*.

A number of the NBER's international researchers are currently on loan to governments and institutions. Edwards is now at the World Bank, where he is Chief Economist for Latin America. Bruno is Chief Economist of the World Bank.

IFM associate Robert E. Cumby is also on leave in Washington; he joins several other Bureau members at the President's Council of Economic Advisers. Two other IFM associates, Giovannini and Francesco Giavazzi, are currently on leave in the Italian Treasury, dealing with issues of fiscal and monetary stabilization.

The Summer Institute

Each year since 1979, the international studies program has held an intensive series of workshops and seminars in Cambridge as part of the NBER's Summer Institute. With the international studies program now divided in two, the IFM group has decided to meet in mid-July, to facilitate interaction with Monetary Economics, Asset Pricing, and Economic Fluctuations. The Summer Institute provides an especially important opportunity for the IFM group to gather, because its members are quite dispersed geographically. In 1992, I organized the meeting with the help of Froot. In 1993, Obstfeld and Rogoff were the organizers.

Research Summary

European Unemployment

Olivier J. Blanchard

The unemployment rate in the EC increased sharply in the early 1980s, rising from 5.7 percent in 1979 to 10.9 percent in 1985. Why it increased is not mysterious: it was the result of a general shift toward anti-inflation policies, adopted first in England and then a couple of years later on the Continent. Indeed, the increase in unemployment was associated with a large decrease in

inflation, from 10.7 percent in 1979 to only 5.5 percent in 1985. The mystery came later, in the second part of the 1980s, as unemployment remained high and no longer was associated with disinflation. Today, the EC unemployment rate stands close to 11 percent, and inflation remains at about 4 percent, only 1.5 percentage points down from 1985.

Lawrence H. Summers and I first took up this issue in 1986.¹ We were struck by the failure of traditional theories to explain continuing high unemployment. On the one hand, the fact that high unemployment no longer was associated with disinflation suggested an increase in the equilibrium rate of unemployment. But, reviewing the list of "usual suspects," we found little evidence of major increases in either structural change and reallocation activity, or union activity, or generosity of unemployment benefits, or explicit and implicit labor costs.² On the other hand, if continuing unemployment was caused by a continued lack of aggregate demand, and thus was far above equilibrium unemployment, why was disinflation coming to an end? To cut the Gordian knot, Summers and I suggested an alternative answer: unemployment remained high mainly because it had been high for so long. Put another way, continued high unemployment had led to high equilibrium unemployment.

Our basic theory was simple, even simplistic. We viewed wage bargaining as a process that demonstrated that employed workers cared about their own employment prospects but did not care much, if at all, about the unemployed. Thus, after a sequence of adverse shocks leading to higher unemployment, those who still had jobs chose wages low enough to keep them employed, but not so low as to create jobs for the unemployed. The implication was straightforward: once unemployment was high, it showed no tendency to decrease, and remained high until some favorable shocks came along. To capture this dependence of equilibrium unemployment on history, we called our theory a "hysteresis" theory of unemployment.³

The theory made a very relevant point, namely that the unemployed are not present at the bargaining table.⁴ But it explained too much, and it explained it too easily.

¹O. J. Blanchard and L. H. Summers, "Hysteresis and European Unemployment," in NBER Macroeconomics Annual 1986, S. Fischer, ed. Cambridge: MIT Press, 1986, pp. 15–77.

²Very useful country-by-country analyses, focusing on those factors, were presented at a conference in England in 1985, and published in *The Rise in Unemployment*, C. Bean, R. Layard, and S. Sickell, eds. Oxford: Basil Blackwell, 1987. This set of studies convinced us to look for an alternative explanation.

³Hysteresis is related in many ways to multiple equilibriums. We explored these connections in O. J. Blanchard and L. H. Summers, "Beyond the Natural Rate Hypothesis," *American Economic Review* 78, 2 (1988), pp. 182–187.

⁴This was also the central point of the work by A. Lindbeck and D. Snower, summarized in their book, *The Insider–Outsider Theory of Employment and Unemployment*, Cambridge: MIT Press, 1988.

It explained too much because, most of the time, unemployment appears to return to some stable value: the European experience of the 1980s is the exception rather than the rule. One must go back to the Great Depression to find unemployment behaving similarly.

It also explained persistence too easily, by in effect assuming away, rather than explaining away, the potential effects of unemployment on wage determination. There were many issues left unresolved. Even if the employed did not care about the welfare of the unemployed per se, shouldn't high unemployment lead them to be more careful in their wage demands, so as to decrease the probability of finding themselves unemployed? And, why didn't firms rely on the presence of a large pool of unemployed workers to extract wage concessions from their employed workers?

These questions led us to think harder about why the unemployed had so little effect on wage outcomes. In a series of papers, we explored the connection among the level of unemployment, the proportion of long-term unemployed, and wage determination. We argued that a higher unemployment rate typically is associated with a higher proportion of long-term unemployed. And, we argued that the long-term unemployed have a weaker effect on wage determination than other workers do, for two reasons: they search less as time passes, and they search less effectively. The long-term unemployed also tend to lose skills and work ethic. They become less employable, or are perceived as less employable by employers. In either case, this makes them less of a threat to those who are still employed, and thus decreases the effect of unemployment on wage determination.⁵

Our theory, so extended, lost the most striking implications of the initial model: the strict hysteresis property of unemployment. Equilibrium unemployment was no longer purely dependent on history. After a series of adverse shocks to unemployment, and thus an increase in the proportion of long-term unemployed, the pressure on wages was weak, but no longer zero. Unemployment returned, albeit slowly, to a stable long-run value. But something also was gained from the extensions. The theory now potentially could explain why the European experience of the 1980s was different from the general postwar experience. It implied that the slower the speed at which unemployment returned to normal, the longer the period of high unemployment and the higher the proportion of long-term unemployed. Thus, the theory implied, the problem of Europe in the second half of the 1980s was that it had accepted high unemployment for too long, weakening the forces that usually reduce unemployment.

⁵Two papers that discuss these channels and their implications are "Getting the Questions Right—and Some of the Answers" in *Europe's Unemployment Problem*, C. Bean and J. Dreze, eds. Cambridge: MIT Press, 1991, pp. 66–89; and "Wage Bargaining and Unemployment Persistence," *Journal of Money, Credit and Banking* 23, 3, 1 (1991), pp. 277–292.

I felt, however, that even this extended theory was still lacking in important ways. In particular, the framework was built on the assumption of collective bargaining, while many, if not most, wages actually are determined outside of collective bargaining. It did not include an explicit description of the flows between unemployment and employment, but such a description is needed to derive the relationship of the proportion of long-term unemployment to the history of the unemployment rate. These were some of the motivations for the research I then undertook with Peter Diamond. That research was not aimed primarily at explaining European unemployment. Rather, its purpose was to take a fresh look at unemployment and wage dynamics, starting from an explicit description of job creation, job destruction, and of the process by which workers and jobs meet and match. In a series of papers, we explored, both analytically and empirically: the implications of fluctuations in job creation and destruction for fluctuations in unemployment and vacancies; the relationship of the flows of workers among unemployment, employment, and nonparticipation in the labor force to the level of aggregate unemployment; the efficiency of the matching process; and, the relationship of wages to both unemployment and vacancies.⁶

More importantly for the topic at hand, we used this framework to return to the issue I had first tackled with Summers: the relationships among unemployment, long-term unemployment, and wage determination. We explored the implications of an assumption we called "ranking": that, other things equal, employers prefer to hire those unemployed workers who have been unemployed for the least amount of time.⁷ We showed that, under that assumption, the proportion of long-term unemployed increases rapidly with the level of unemployment: the higher the unemployment rate, the higher the chance that a long-term unemployed worker will be the job applicant with the shortest duration, and thus the lower the chance that the worker is hired. We also show that, as a result, the effect of high unemployment on wages is reduced. In bargaining for wages with firms, those who are employed realize that, if they were to become unemployed, they would be hired ahead of those currently unemployed. The long-term unemployed are no competition, and thus are no threat to the employed workers.

⁶O. J. Blanchard and P. Diamond, "The Beveridge Curve," *Brookings Papers on Economic Activity 1* (1989), pp. 1-76, "The Cyclical Behavior of the Gross Flows of U.S. Workers," *Brookings Papers on Economic Activity 2* (1990), pp. 85-143, and "The Aggregate Matching Function" in *Productivity, Growth, and Unemployment*, P. Diamond, ed. Cambridge: MIT Press, 1990, pp. 159-201.

⁷O. J. Blanchard and P. Diamond, "Ranking, Unemployment Duration, and Wage Determination," *Review of Economic Studies*, forthcoming.

Do I feel I have uncovered *the* key to European unemployment? No. There are clearly other reasons why unemployment in Europe cannot return to the levels of the 1960s, when high growth was consistent with high levels of workers' protection. I feel, however, that this line of research has uncovered a key. Going beyond the specific mechanisms I have described, economies will adapt to high unemployment. The unemployed workers adapt in various ways: returning to live at home, finding occasional undeclared employment, and so on. The political system responds by providing the unemployed with enough to live on. Unemployment in Spain would not be above 20 percent today if many of the unemployed had starved. But, while this adjustment is socially desirable, it also weakens the forces that would naturally return the economy to lower unemployment. My research suggests two major conclusions for Europe today: first is the scope for a large decrease in unemployment. Some of the factors I have identified, such as the disenfranchising of the young, may be hard to reverse; but most, including the decrease in search intensity, are likely to disappear as labor market conditions improve. Second, market forces alone would take a very long time to increase employment unless there is an explicit change in policies aimed at increasing employment.⁸

⁸O. J. Blanchard and P. A. Muet, "Competitiveness Through Disinflation: An Assessment of French Macroeconomic Policy Since 1983," *Economic Policy 16* (April 1993), pp. 12-56.

Profiles

Olivier J. Blanchard

Olivier J. Blanchard, a professor at MIT, has been an NBER Research Associate since 1982.

Blanchard received his Ph.D. from MIT in 1977, taught at Harvard University until 1983, and has been at MIT since. He is a fellow and a member of the Council of the Econometric Society, and a member of the American Academy of Arts and Sciences. He also has been a coeditor of the *Quarterly Journal of Economics* since 1984.

Blanchard is the author, with Stanley Fischer, of *Lectures on Economics*, published by the MIT Press. Apart from his work on unemployment, he has spent much of his time in the past few years working on transition in Central Europe, and is a coauthor of three recent books, *Reform in Eastern Europe*, *East-West Migration*, and *Post Communist Reform: Pain and Progress*, all published by the MIT Press.



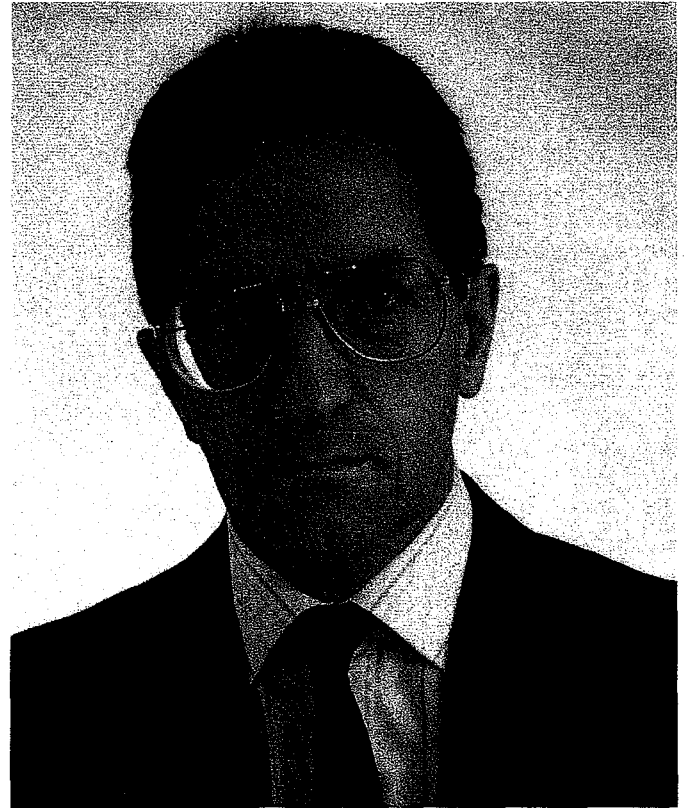
Blanchard and his wife, Noelle, live in Cambridge and have three children. They have remained true to their roots, and spend their summers in France. Blanchard's athletic goal is to one day beat Larry Summers at tennis.

Marcel Boyer

Marcel Boyer is the Stephen A. Jarislowsky Professor of Economics and Industrial Engineering at the Ecole Polytechnique de Montréal and professor of economics at the University of Montreal. He has represented the Canadian Economics Association, of which he was president in 1990–1, on the NBER's Board of Directors since 1991.

Boyer holds a Ph.D. in economics from Carnegie–Mellon University. He taught at York University in 1971–3, and at the University of Quebec in 1973–4, before joining the University of Montreal faculty. He is a member of the Royal Society of Canada and the National Statistics Committee of Canada.

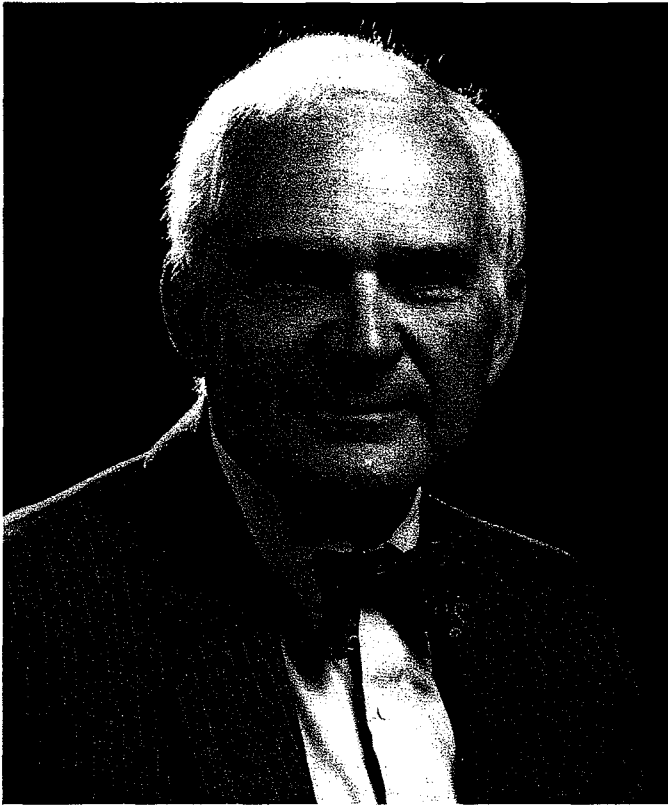
Boyer is also vice president and scientific director of the Center for Interuniversity Research on the Analysis of Organizations, a new research center created by six universities, four corporations, and the government of Quebec. In his limited free time, he enjoys cross-country skiing, oldtimer hockey, and canoeing.



Boyer and his wife, Nicole Lavigne, have three children: Martin, 24, a Ph.D. student at the Wharton School of the University of Pennsylvania; François, 22, who spent six months with the Canadian Army in Cyprus and is now working in Montreal; and Julie, 20, who is a third-year medical student at the University of Montreal.

Don R. Conlan

Don R. Conlan is president and a director of The Capital Group, Inc., a large Los Angeles-based investment management organization that has been serving individuals, corporations, and institutions worldwide for over half a century. He has been an at-large member of the NBER's Board of Directors since 1991.



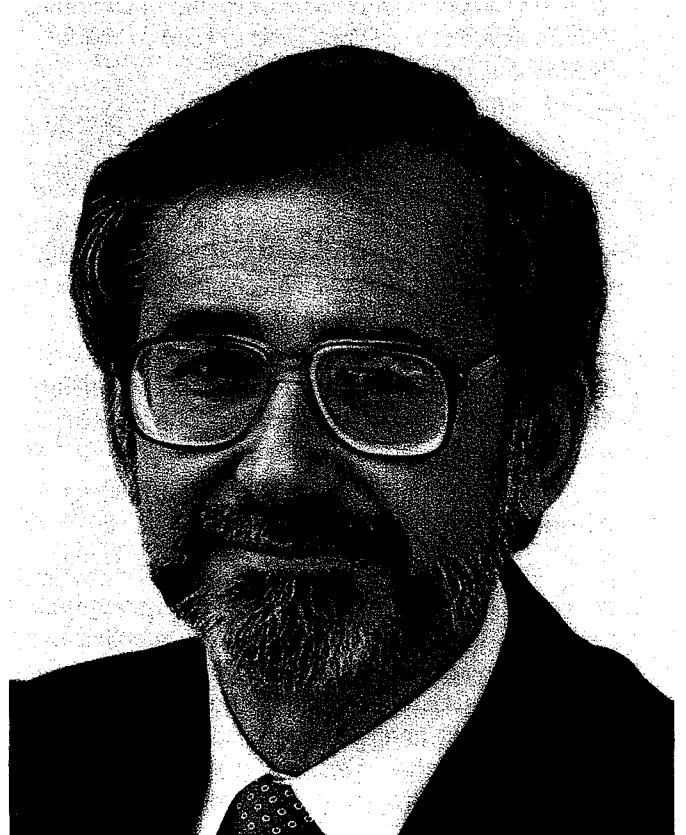
Conlan holds B.B.A. and M.B.A. degrees in finance and business economics, respectively, from the University of Michigan. He began his career in 1958 at the Detroit branch of the Federal Reserve Bank of Chicago. In 1963, Conlan relocated to New York and spent the next six years at Chemical Bank, becoming vice president and chief economist, followed by four years with the same title at Dean Witter & Co. In 1973, Conlan served as associate director and chief economist of the Nixon administration's Cost of Living Council, in Washington. He moved to the West Coast when he joined The Capital Group in 1974 as chief economist.

Conlan is past chairman of the Conference of Business Economists (Washington, D.C.) and a former president and director of the National Association of Business Economists. From 1980 to 1988, he was a member of the *Los Angeles Times* Board of Economists. A resident of South Pasadena, Conlan is married with three children.

Charles A. Lave

Charles A. Lave, a professor of economics at the University of California, Irvine, has represented the Ameri-

can Economic Association on the NBER's Board of Directors since 1991. His primary research is in transportation economics. He has studied, on the automobile side, models of auto choice, the 55 MPH speed limit, road pricing, environmental impacts, and the effects of auto saturation. On the transit side, he has written about comparative energy efficiency, labor unions, performance measurement, and privatization. Lave received the Transportation Research Board's prize for the outstanding paper at their 65th Annual Meeting; he serves on the editorial advisory boards of *Transport Policy* and *Transportation Research*.



Lave received his B.A. from Reed College and his Ph.D. from Stanford University. He joined the economics department at Irvine in 1966, but has also taught at Hampshire College, Stanford, MIT, and University of California, Berkeley. He also served as chair of the Irvine economics department for eight years, and chairs the Board of Directors of a nonprofit corporation that has built 500 homes on the Irvine campus.

Lave's wife, Bethany, is associate librarian at the Getty Center for Art and the Humanities. They are collectors of oriental rugs, and are currently organizing a major conference of U.S. collectors. Their daughter, Rebecca, graduated from college in June.

Conferences

Tax Policy and the Economy

The NBER's eighth annual conference on "Tax Policy and the Economy" was held in Washington on November 16. James M. Poterba, of NBER and MIT, organized this program:

Janet Currie, NBER and University of California, Los Angeles, "Welfare and the Well-Being of Children: The Effectiveness of Cash and In-Kind Transfers" (NBER Working Paper No. 4539)

Gilbert E. Metcalf, NBER and Princeton University, Life-Cycle Versus Annual Perspectives on the Incidence of a Value-Added Tax" (NBER Working Paper No. 4387)

James R. Hines, Jr., NBER and Harvard University, "Taxation and the R and D Activities of Multinational Firms"

Lawrence H. Goulder, NBER and Stanford University, "Energy Taxes: Traditional Efficiency Effects and Environmental Implications" (NBER Working Paper No. 4582)

Julio J. Rotemberg, NBER and MIT, and **Michael Woodford**, NBER and University of Chicago, "Energy Taxes and Aggregate Economic Activity"

Currie compares the relative impact of cash transfers to parents, and in-kind transfers targeted at children, on several measures of children's well-being. She finds that targeted transfers have larger net effects on indicators of both health status and educational attainment.

Metcalf considers two methods of evaluating the distributional burdens of a value-added tax (VAT): the standard method, which uses annual income to allocate households to income categories; and a modified approach based on total household consumption outlays. When the incidence of the tax is measured relative to total household consumption, the VAT is much less regressive than standard calculations suggest.

Hines summarizes the influence of U.S. corporate tax policy on the level and location of R and D expenditures. He reports that tax incentives significantly influence R and D activity: a 10 percent R and D credit leads to a 10–15 percent rise in R and D expenditures. The Tax Reform Act of 1986 encouraged some American multinational firms to move their R and D offshore, while encouraging others to strengthen their R and D activity at home.

Goulder examines the efficiency cost of BTU taxes, gasoline taxes, and other broad-based tax policies, such

as personal income taxes. He also presents new evidence on the environmental consequences of raising revenue with each of these taxes.

Rotemberg and **Woodford** focus on the macroeconomic effects of energy taxation. They show that when energy markets are imperfectly competitive, there can be important differences between energy taxes levied on consumers and those levied on intermediate goods. This suggests that previous estimates of the reduction in output associated with higher energy taxes may understate the actual effects.

These papers will be published by the MIT Press in a single volume. Its availability will be announced in a future issue of the *NBER Reporter*.

International Trade Rules and Institutions

An NBER–Universities Research Conference on international trade, organized by Robert W. Staiger of the University of Wisconsin, took place on December 3 and 4 in Cambridge. The program was:

Jonathan Eaton, NBER and Boston University, and **Maxim Engers**, NBER and University of Virginia, "Threats and Promises"

Discussants: **B. Peter Rosendorff**, University of Southern California, and **Marie C. Thursby**, NBER and Purdue University

James A. Brander, NBER and University of British Columbia, "Trade Actions and Renewable Resource Management"

Discussants: **Esteban M. Jadresic**, Banco Central de Chile, and **Scott Taylor**, University of British Columbia

Daniel E. Coates, U.S. General Accounting Office, and **Rodney D. Ludema**, University of Western Ontario, "Unilateral Tariff Reduction, MFN, and the Political Economy of Trade Negotiations"

Discussant: **Robert E. Baldwin**, NBER and University of Wisconsin

John McLaren, Columbia University, "Size, Sunk Costs, and Judge Bowker's Objection to Free Trade"

Discussants: **Brian Copeland**, University of British Columbia, and **Sang-Seung Yi**, Dartmouth College

Florencio Lopez-de-Silanes, Harvard University; **James R. Markusen**, NBER and University of Colorado; and **Thomas F. Rutherford**, University of Colorado, "Anticompetitive and Rent-Shifting Aspects of Domestic-Content Provisions in Regional Trade Blocks"

Discussants: **Mary Lovely**, Syracuse University, and **Maria Muniagurria**, University of Wisconsin

Pravin Krishna, Columbia University, "Regionalism and Multilateralism"

Discussants: **Carsten Kowalczyk**, NBER and Dartmouth College, and **J. David Richardson**, NBER and Syracuse University

Kyle Bagwell, Northwestern University, and **Robert W. Staiger**, "Multilateral Tariff Cooperation During the Formation of Customs Unions"

Discussant: **Wilfred Ethier**, University of Pennsylvania

Carlo Perroni, University of Western Ontario, and **John Whalley**, NBER and University of Western Ontario, "The New Regionalism: Trade Liberalization or Insurance?" (NBER Working Paper No. 4626)

Discussants: **Jon Haveman**, Purdue University, and **Hiro Lee**, University of California, Irvine

Kala Krishna, NBER and Pennsylvania State University, and **Ling Hui Tan**, McGill University, "Implementation in the MFA: The Effects of Rules on Outcomes"

Discussants: **James Anderson**, Boston College, and **Alan Deardorff**, University of Michigan

Keith Maskus, University of Colorado, and **Mohan Penubarti**, Harvard University, "Patents and International Trade: An Empirical Study"

Discussants: **K. C. Fung**, University of California, Santa Cruz, and **Tom Prusa**, State University of New York, Stony Brook

Global environmental concerns have increased the extent to which governments perceive their national interests to be affected by the policies of other governments. Governments have tried to influence other governments both by promising rewards for desired behavior and by punishing undesired behavior. **Eaton and Engers** compare various methods of seeking influence, looking in particular at bluffing: taking actions to mislead the other party about the cost or benefit of an action. They find that in a number of situations, if a government cannot commit itself to a long-run policy, its attempts to influence the actions of others actually can encourage the action that it is trying to discourage.

Brander asks whether it is reasonable for one country to impose trade sanctions on the imports from another country if the exporting country manages renewable resources (such as forest stocks, or fish stocks) inappropriately. He develops a simple model in which one country is relatively well endowed with a renewable resource, and trades it to the other country for a certain good. Labor is the only underlying factor, and can be used to produce the good, or to harvest the resource. The exporting country manages the resource "poorly," in the sense that it is treated as "common property." In

this context, a tariff on the resource good typically results in a decline in short-run harvests, preventing long-run decline of the underlying stock, and thus raising the long-run level of harvests. In extreme cases, such a tariff can save an otherwise doomed resource from extinction and can increase the welfare of both countries.

Coates and Ludema offer an explanation for why large countries (for example, Britain in the 1840s and the United States in the early GATT years) unilaterally may pursue liberal trade policies. They also offer a theory of how international negotiations and domestic politics combine to form trade policy. The core idea is that changes in trade policy originate from international negotiation but, to be implemented, they must first pass through a special-interest-driven domestic political process, which is costly and uncertain. The authors show that a country may wish to adopt a policy of unilaterally reducing its tariff whenever political opposition in other countries stalls negotiations toward free trade, because such a policy weakens the political opposition in those countries and expedites the liberalization process. This argument for unilateral tariff reduction may be stronger for larger countries. They also show that a trade rule barring regions from eliminating intraregional tariffs without also eliminating interregional tariffs may raise both regional and world welfare.

McLaren generalizes the familiar model of trade negotiations between a large and a small country in two minor ways. First, future production requires an irreversible investment now. Second, there is the possibility of *future* trade negotiations. These petty changes in timing, which address arguments that have been used in the political arena, produce results radically different from the familiar ones. Most strikingly, *anticipated* trade negotiations are likely to make the small country strictly *worse* off than a fully anticipated trade war. Private agents, anticipating liberal trade, will invest in the export sector, making the small country dependent on trade with the large one, and thus ruining its bargaining power. The small country can improve matters somewhat by subsidizing or protecting its import sector in the period leading up to negotiations.

Regional trade agreements must specify domestic-content rules (rules of origin) that define the conditions under which a good qualifies as "domestic" and may be freely traded within the bloc. **Lopez-de-Silanes, Markusen, and Rutherford** analyze such rules, focusing in particular on industries in which foreign multinationals producing within the bloc rely much more on imported intermediate inputs than do domestic firms. In such a situation, domestic content provisions are anti-competitive, reducing overall final output of the industry, and shifting rents (in the absence of free entry) to domestic firms. The anticompetitive aspect of the rules may be strong enough for total industry profits to rise and the equilibrium demand for the substitute domestic input to

fall (the scale effect of reduced output outweighs a substitution effect in favor of domestic intermediates).

Pravin Krishna asks how preferential trade arrangements affect multilateral liberalization. For this impact to be understood, it is necessary to look at conditions under which countries negotiate the preferential arrangements in the first place. Krishna shows that preferential arrangements that divert trade more are more likely to be supported politically. He then demonstrates that preferential arrangements can undermine multilateral liberalization; that is, multilateral liberalization that initially is politically feasible becomes infeasible once the preferential arrangement is in place. The larger the trade diversion following the preferential arrangement, the more likely it is that multilateral liberalization will be undermined.

Bagwell and **Staiger** study the implications of customs unions for multilateral tariff cooperation. Cooperation in multilateral trade policy is self-enforcing in that it involves balancing the current gains from deviating unilaterally from an agreed-upon trade policy against the future losses from forfeiting the benefits of multilateral cooperation that such a unilateral defection would imply. The early stages of customs union formation alter this constraint in a way that leads to a temporary "honeymoon" for liberal multilateral trade policies. However, the harmony between customs unions and multilateral liberalization is temporary: as the full impact of the emerging customs union becomes felt, a less favorable balance between current and future conditions reemerges, and the liberal multilateral policies cannot be sustained. This is compatible with the implications of the formation of the European Community customs union for the ability to sustain liberal multilateral trade policies under the General Agreement on Tariffs and Trade.

Several of the recently negotiated regional trade agreements (including NAFTA) contain significantly fewer concessions by the large countries to smaller countries than vice versa. Yet, it is small countries that have sought them and see themselves as the main beneficiaries. **Perroni** and **Whalley** interpret such agreements as insurance arrangements for smaller countries, which partially protect them against the consequences of a global trade war. What they offer to the large countries in return is largely nontrade benefits (such as restraints on domestic policies in the smaller countries, firmer intellectual property protection, and firmer guarantees of royalty arrangements affecting resources on state-owned lands). Perroni and Whalley confirm that without side payments, large-small country regional agreements will not occur.

Kala Krishna and **Tan** examine quota schemes used by developing countries to implement the Multi-Fibre Arrangement (MFA). They argue that the effects of many seemingly innocuous rules are often quite different from what is commonly expected. For example, they show that the price of a license with transferability will tend to

be higher than its price without transferability only if the quota is quite restrictive. They also look at some common schemes for increasing foreign exchange earnings. They argue that the schemes are not "first best" except in very special cases.

Maskus and **Penubarti** consider a simple model of firms competing in an economy in which the government is considering strengthening its patent laws. They demonstrate that a foreign firm with market power may choose to either raise or lower its exports into the market after an increase in patent protection. Further, increasing patent protection has a positive impact on bilateral manufacturing imports into both small and large developing economies.

International Taxation

The NBER held a conference on "International Taxation" organized by Bureau President Martin Feldstein, James R. Hines, Jr., NBER and Harvard University, and R. Glenn Hubbard, NBER and Columbia University, in Cambridge on January 14-15. The program was:

Robert E. Lipsey, NBER and Queens College,
"Outward Direct Investment and the U.S.
Economy"

Discussant: **S. Lael Brainard**, NBER and MIT

Martin Feldstein, "The Effects of Outbound Foreign
Direct Investment on the Domestic Capital Stock"
Discussant: **Kenneth A. Froot**, NBER and Harvard
University

Joosung Jun, NBER and Yale University, "The
Impact of International Tax Rules on the Cost of
Capital"

Discussant: **Joel B. Slemrod**, NBER and University
of Michigan

Jason G. Cummins, Columbia University, and
R. Glenn Hubbard, "The Tax Sensitivity of Foreign
Direct Investment: Evidence from Firm-Level Panel
Data"

Discussant: **David G. Hartman**, DRI/McGraw-Hill

Andrew B. Lyon, NBER and University of Maryland,
and **Gerald Silverstein**, U.S. Department of the
Treasury, "The Alternative Minimum Tax and the
Behavior of Multinational Corporations"

Discussant: **Alan J. Auerbach**, NBER and University
of Pennsylvania

Jason G. Cummins; **Trevor Harris**, Columbia
University; and **Kevin A. Hassett**, Federal Reserve
Board of Governors, "Accounting Standards,
Information Flow, and Firm Investment Behavior"
Discussant: **G. Peter Wilson**, Harvard University

James R. Hines, Jr., "Taxes, Technology Transfer, and the R and D Activities of Multinational Firms"
Discussant: **Adam B. Jaffe**, NBER and Harvard University

Kenneth A. Froot and **James R. Hines, Jr.**, "Losing Interest: Interest Allocation Rules and the Cost of Debt Finance"
Discussant: **Julie H. Collins**, University of North Carolina

Rosanne Altshuler, NBER and Rutgers University, and **T. Scott Newlon** and **William C. Randolph**, U.S. Department of the Treasury, "Do Reparation Taxes Matter? Evidence from the Tax Returns of the U.S. Multinationals"
Discussant: **William M. Gentry**, NBER and Duke University

Roger H. Gordon and **Jeffrey K. MacKie-Mason**, NBER and University of Michigan, "Why Is There Corporate Taxation in a Small Open Economy? The Role of Transfer Pricing and Income Shifting"
Discussant: **T. Scott Newlon**

According to **Lipsey**, U.S. firms raise their shares in foreign markets, and defend them against foreign rivals from the host and other countries, by investing in production outside the United States. These firms exploit their proprietary technologies, patents, or skills in advertising or marketing; the opportunity to produce abroad raises the value of these assets, and encourages firms to invest in them. Overseas production has allowed American multinationals

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to retain their shares of the world market in the face of a long-term decline in the U.S. share as a whole, and of short-term changes, such as exchange rate fluctuations. **Lipsey** also finds that U.S. multinationals with higher overseas production relative to home production have higher employment at home. This may be because foreign production requires larger numbers of employees in headquarters activities, such as R and D, and supervision.

Feldstein discusses the effect of outbound foreign direct investment (FDI) on the domestic capital stock. His analysis shows that only about 20 percent of the value of the assets owned by U.S. affiliates abroad was financed by cross-border transfers from the United States. A separate analysis of data for OECD countries indicates that each dollar of outbound FDI reduces domestic investment by about one dollar. Taken together, these estimates imply that each dollar of assets ac-

quired by U.S. foreign affiliates reduces the U.S. domestic capital stock by approximately 20 cents.

Jun suggests that corporate tax rules governing international investment may raise the cost of capital significantly for firms operating in foreign markets: on average U.S. firms operating in major foreign markets face about a 20 percent higher cost of capital than domestic firms in the United States when U.S.-source equity capital is the marginal source of investment funds. As a result, U.S. firms may face a higher cost of capital than local firms in foreign markets. In addition, U.S. firms may have a

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disadvantage vis-à-vis firms from other countries in a given foreign market, because of the absence of a dividend imputation scheme in the United States, and the relatively strict U.S. rules regarding the exemption or deferral of home country tax on foreign source income and the utilization of foreign tax credits. Local borrowing may be a particularly attractive source of funds for foreign investment, since the tax cost of *not* using debt capital is much higher for foreign than for domestic investment.

Cummins and **Hubbard** examine the effects of taxation on FDI using data on subsidiaries of U.S. multinational firms. These firm-level data contain information on new capital investment overseas, enabling the authors to measure tax influences on FDI more precisely, and to focus on subsidiaries' investment decisions. Their results cast doubt on the simplest notion that "taxes don't matter" for U.S. firms' FDI decisions. They also support use of the "tax capitalization" model in the study of dividend repatriation and FDI decisions.

Lyon and **Silverstein** examine the extent to which U.S.-based multinational corporations are affected by the alternative minimum tax (AMT). More than half of all foreign-source income received by corporations in 1990 was earned by corporations subject to the AMT. The AMT rules potentially affect multinational corporations differently from domestic corporations. The authors analyze tax return data of U.S.-based multinationals to determine the differential incentives of the AMT for locating investment domestically or abroad, and for the repatriation of foreign-source income.

Cummins, **Harris**, and **Bassett** describe two different accounting regimes that govern reporting practices in most developed countries. "One-book" countries use their tax books as a basis for financial reporting; "two-book" countries, such as the United States, keep the books largely separate. Firms in one-book countries

may be reluctant to claim some tax benefits if reductions in taxable income could be misinterpreted by financial market participants as signals of lower profitability. The authors suggest that cross-country differences in accounting regimes may play an important role in determining the relative sensitivity of investment to tax policy.

Multinational firms that use domestic technologies in foreign locations are required to pay royalties from foreign users to domestic owners. Foreign governments often tax these royalty payments, and high tax rates make imported technology more expensive. **Hines** examines the effect of royalty taxes on the local R and D intensities of foreign affiliates of multinational corporations, looking both at foreign-owned affiliates in the United States and at American-owned affiliates in other countries. He finds that higher royalty taxes are associated with greater R and D intensity on the part of affiliates, suggesting that local R and D is a substitute for imported technology.

Froot and **Hines** argue that multinationals' investment and financing patterns may be affected by recent changes in interest allocation rules. These rules reduce the tax deductibility of interest expenses, especially for firms in excess foreign tax credit positions. The resulting increase in the cost of debt finance gives firms an incentive to use other forms of financing. Furthermore, to the extent that perfect substitutes are not available, the overall cost of capital rises. The authors find that the loss in the tax deductibility of parent-company interest expenses has significantly reduced both borrowing and investment by firms with excess foreign tax credit. Firms substitute away from debt when debt becomes more expensive, and the loss of tax shields on interest increase a firm's cost of capital.

Altshuler, **Newlon**, and **Randolph** use information about cross-country differences in tax rates to estimate the influence of permanent tax changes, as would occur because of changes in statutory tax rates, and transitory tax changes on dividend repatriations. Their data contain tax return information for a large sample of U.S. corporations and their foreign subsidiaries. They find that the permanent tax price effect is significantly different from the transitory price effect, and is not significantly different from zero. The transitory price effect is negative and significant, though. This suggests that repatriation taxes *do* affect dividend repatriation behavior, but only to the extent that they vary over time.

Several recent papers argue that corporate income taxes should not be used by small, open economies. With capital mobility, the burden of the tax falls on fixed factors (such as labor), and the tax system is more efficient if labor is taxed directly. However, not only do corporate taxes exist, but rates also are roughly comparable with the top personal tax rates. Past models also forecast that multinationals should not invest in countries with low corporate tax rates, since the surtax they

owe when profits are repatriated puts them at a competitive disadvantage. Yet such FDI is substantial. **Gordon** and **MacKie-Mason** suggest that shifting, both domestic (between the personal and corporate tax bases) and cross-border (through transfer pricing), may resolve those puzzles. Countries need cash-flow corporate taxes as a backstop to labor taxes to discourage individuals from converting their labor income into otherwise untaxed corporate income. The authors explore how these taxes can best be modified to deal with cross-border shifting as well.

A Bureau conference volume, containing selected papers and their discussion, will be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

Industrial Organization and Regulation of the Securities Industry

Academics, practitioners, and regulators came together on January 20–22 for an NBER conference on "The Industrial Organization and Regulation of the Securities Industry." The program, organized by Research Associate Andrew W. Lo of MIT, was:

William P. Albrecht, University of Iowa; **Corinne Bronfman**, University of Arizona; and **Harold C. Messenheimer**, "Regulatory Regimes: The Interdependence of Rules and Regulatory Structure"

Discussants: **Peter Kyle**, Duke University, and **Edward H. Fleischman**, Rosenman & Colin

Kathleen Hagerty, Northwestern University, and **Robert L. McDonald**, NBER and Northwestern University, "Fragmentation and Securities Market Regulation"

Discussants: **Lawrence Harris**, University of Southern California, and **Geoffrey P. Miller**, University of Chicago

Ian Domowitz, Northwestern University, "An Exchange Is a Many-Splendored Thing: The Classification and Regulation of Automated Trading Systems"

Discussants: **Ananth Madhavan**, University of Pennsylvania, and **Chris Hynes**, State Street Brokerage Services, Inc.

Robert Neal, University of Washington, and **David Reiffen**, Federal Trade Commission, "The Effect of Integration Between Broker/Dealers and Specialists"

Discussants: **Philip Dybvig**, Washington University, and **Michael D. Robbins**, Independent Floor Broker, NYSE

Lawrence White, New York University, "International Regulation of Securities Markets: Harmonization or Competition?"

Discussants: **John Y. Campbell**, NBER and Princeton University, and **MaryAnn Gadjiala**, Securities and Exchange Commission

Robert A. Wood and **Thomas McInish**, Memphis State University, "Competition, Fragmentation, and Market Quality"

Discussants: **Harold Mulherin**, Dartmouth College, and **John C. Coffee, Jr.**, Columbia University

Stephen W. Pruitt, Memphis State University, and **K. S. Maurice Tse**, Indiana University, "The Price, Volatility, Volume, and Liquidity Effects of Changes in Federal Reserve Margin Requirements on Both Marginable and Nonmarginable OTC Stocks"

Discussants: **A. Craig MacKinlay**, NBER and University of Pennsylvania, and **Paul H. Kupiec**, Federal Reserve Board of Governors

Peter C. Reiss, Stanford University, and **Ingrid M. Werner**, NBER and Stanford University, "Transacting Costs in Multiple Dealer Markets: Evidence from the London Stock Exchange"

Discussants: **F. Douglas Foster**, University of Iowa, and **Bernard S. Black**, Columbia University

Kenneth J. Singleton, NBER and Stanford University, "Institutional and Regulatory Influences on Price Discovery in Cash and Futures Bond Markets"

Discussants: **William P. Albrecht**, and **Thomas E. Kilcollin**, Chicago Mercantile Exchange

Bruce N. Lehmann, University of California, San Diego, and **David M. Modest**, University of California, Berkeley, "Market Structure and Liquidity on the Tokyo Stock Exchange"

Discussants: **Peter Kyle**, and **Kazuhisa Okomoto**, Wells Fargo Nikko Investment Advisors

Albrecht, Bronfman, and Messenheimer ask how the regulatory structure can encourage regulators to act efficiently, and how the number of regulators affects the level of regulation. They conclude that, when substitute products are involved, regulatory competition likely leads to a more efficient level of regulation than will occur with a single regulator. The opposite is true when products are complements, though. Thus, the desirability of combining the CFTC and the SEC depends in part upon whether the products they regulate are substitutes or complements.

When order flow for a security arises because of broker activity, the broker knows the information characteristics of the flow. Thus, there is an incentive for the broker to serve as a counterparty to the trade rather than

just as a brokerage conduit. **Hagerty** and **McDonald** find that, in this setting, market fragmentation may reflect increased price competition, and that the fragmented and competitive system provides better prices for customers than a less-fragmented, monopolistic broker. Order-flow intermediaries foster competition at the brokerage level, but raise the bid-ask spread in the central market.

The definition of an exchange is currently at the core of SEC regulatory policies with respect to automated trading systems. **Domowitz** examines issues that arise in maintaining this definition as a basis for regulation through a comparison of the language of the law, the precedents set in place by regulatory authorities, and the nature of automated trade. He emphasizes the price discovery function, membership, market liquidity requirements, and competition for securities market services. He also suggests a classification of trading systems consistent with the notion of functional regulation, and explores its implications for current trading systems and registered exchanges.

Neal and **Reiffen** examine the effects of broker/dealers acquiring specialist units on the NYSE and two regional exchanges. In particular, they ask whether previous restrictions against integration served the best interests of investors. Two models suggest that integrations may harm investors: an agency model, based on the premise that it is costlier for investors to monitor execution quality than commissions; and a foreclosure model. Their results do not support either model. In general, they find, integrations have not increased trading costs. In fact, where trading costs have increased, neither model explains the mechanism.

White analyzes the international harmonization of national regulatory regimes with respect to securities markets. He finds that there are a limited number of instances in which harmonization may improve the outcomes of capital markets, but that competition—among firms, markets, and regulatory regimes—is generally the preferred direction for public policy.

Does fragmentation of NYSE order flow benefit or harm markets? **Wood** and **McInish** investigate the effects of fragmentation on spreads, premiums, and volatility. They show that spreads and volatility are reduced by competition, while volatility is essentially unchanged.

Following the passage of a 1969 amendment to the Securities and Exchange Act of 1934, selected OTC stocks became eligible for the first time for margin trading with broker/dealers, while other OTC issues remained unchanged. **Pruitt** and **Tse** compare price, volatility, volume, and liquidity of both marginable and nonmarginable OTC stocks around the time of announcement of the 1970, 1971, 1972, and 1974 margin changes. Their results show no differential security reactions between the two portfolios. As such, the findings of the study strongly suggest that changes in security market

behavior around the time of Federal Reserve margin changes are caused strictly by information effects.

Reiss and Werner use intraday quotation and transaction data from the London Stock Exchange to measure transaction costs. They find that the quality of execution is related systematically to trade size and trader type. Customers pay the full spread on small trades, while medium to large customer trades receive more favorable execution. Discounts for customers, brokers, and marketmakers all decrease with the concentration of marketmakers and increase with market depth.

Singleton asks how differences in institutional environments in the United States, Germany, and Japan affect the role of futures in the price discovery process for government bonds. The joint distributions of futures and cash prices differ substantially across countries of the different regulatory settings. Institutional frictions that inhibit price discovery manifest themselves in fatter-tailed distribution of cash prices, substantial autocorrelations of yield changes (in Japan), and interesting patterns of spillovers in volatility from cash to futures markets and vice versa.

On the Tokyo Stock Exchange (TSE), orders from the investor public, not from designated marketmakers, bridge temporal fluctuations in the demand for liquidity. **Lehmann and Modest** study the warning and special quote mechanisms of the TSE, which provide for flagging order imbalances that may be transient, and for routinely halting trade to attract orders when particular kinds of imbalances occur. Investors seldom trip the trading halt mechanisms of the TSE; when they do, they usually execute all or part of their order at the warning quote, a price known in advance. Traders are more likely to trigger indicative quote dissemination and temporary trading halts when the market is relatively volatile, particularly around the morning open and after delayed opens. The volume of trade is similar when orders do and do not result in trading halts. Substantially larger trades end special quote trading halts (which provide for price discovery through orderly quote changes).

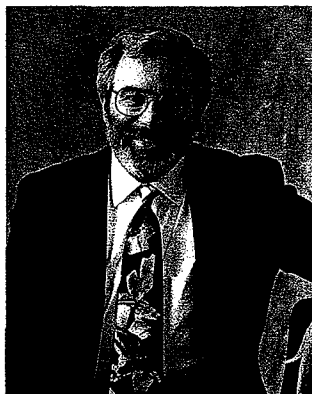
These papers, their commentary, and the authors' responses will be published in an NBER conference volume by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

Aldrich is founder and president of Aldrich, Eastman & Waltch, a Boston investment firm. A past faculty member of the Harvard Business School and the Yale University Graduate School of Management, he received both his B.A. and M.B.A. from Harvard University.

Horn has been chairman and chief executive officer of Bank One Cleveland since 1987. Prior to that, she served as president of the Federal Reserve Bank of Cleveland from 1982–7. Horn has a B.A. from Pomona College and a Ph.D. in economics from Johns Hopkins University.

Utgoff has been chief economist of Groom and Nordberg, a Washington law firm specializing in insurance, pensions, and international tax issues, since 1989. Previously, she was executive director of the federal Pension Benefit Guaranty Corporation from 1985–9, and a senior economist at the Council of Economic Advisers from 1983–5. Utgoff has a B.A. and a Ph.D. in economics, from California State University, Northridge, and U.C.L.A., respectively.

Wilson is executive vice president and chief economist of Bank of America, which he joined in 1975. He also has taught at Yale University and the University of Connecticut. Wilson holds a B.A. in mathematics from Northwestern University and a Ph.D. in economics from the University of Michigan.



Peter Aldrich



Karen N. Horn



Kathleen P. Utgoff



John O. Wilson

Bureau News

Four New Directors Elected

The NBER's Board of Directors recently elected four new directors at large: Peter Aldrich, Karen N. Horn, Kathleen P. Utgoff, and John O. Wilson.

Summers Receives Clark Medal

At the January 1994 annual meeting of the American Economic Association, Lawrence H. Summers received the John Bates Clark Award. Summers, who has been a research associate in the NBER's Program in Public Economics, is also known for his work on macroeconomics. He is currently the Under Secretary for International Affairs of the Department of the Treasury. Prior to that appointment, he was Vice President of the World Bank and a professor of economics at Harvard University.

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

Fall Meeting of Macroeconomists

The fall meeting of the NBER's Program on Economic Fluctuations, organized by Russell W. Cooper of Boston University and Steven N. Durlauf of the University of Wisconsin, took place in Cambridge on October 22 and 23. The program was:

Lawrence J. Christiano and **Martin S. Eichenbaum**, NBER and Northwestern University, and **Charles L. Evans**, Federal Reserve Bank of Chicago, "The Effects of Monetary Policy Shocks: Evidence from the Flow of Funds"

Discussant: **Roger Farmer**, University of California, Los Angeles

Robert G. King, University of Virginia, and **Mark W. Watson**, NBER and Northwestern University, "Money, Prices, Interest Rates, and the Business Cycle"

Discussant: **Kenneth D. West**, NBER and University of Wisconsin

Ben S. Bernanke, NBER and Princeton University; **Mark Gertler**, NBER and New York University; and **Simon Gilchrist**, Federal Reserve Board, "The Financial Accelerator and the Flight to Quality"

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

J. Joseph Beaulieu, Federal Reserve Board, and **Jeffrey A. Miron**, NBER and Boston University, "Macroeconomics and Seasonal Cycles"

Discussant: **John Shea**, University of Wisconsin

Phillippe Aghion, Nuffield College, and **Gilles Saint-Paul**, DELTA, "Uncovering Some Causal Relationships Between Productivity Growth and the Structure of Economic Fluctuations"

Discussant: **Allan Drazen**, NBER and University of Maryland

Laurence M. Ball, NBER and Princeton University, and **N. Gregory Mankiw**, NBER and Harvard University, "A Sticky-Price Manifesto"

Discussant: **Julio J. Rotemberg**, NBER and MIT

Russell W. Cooper, and **John C. Haltiwanger**, NBER and University of Maryland, "Evidence on Macroeconomic Complementarities"

Discussant: **Robert E. Hall**, NBER and Stanford University

Francis Diebold, University of Pennsylvania, and **Glenn Rudebusch**, Federal Reserve Board, "Measuring Business Cycles: A Modern Perspective"

Discussant: **James Hamilton**, University of California, San Diego

William Brock, University of Wisconsin, and **Blake LeBaron**, NBER and University of Wisconsin, "Using Structural Modeling in Building Statistical Models of Volatility and Volume of Stock Market Returns"

Discussant: **Nick Keifer**, Cornell University

Christiano, **Eichenbaum**, and **Evans** use the Flow of Funds accounts to assess the impact of a monetary policy shock on the borrowing and lending activities of different sectors of the economy. They find that, following a contractionary shock to monetary policy, net funds raised in financial markets by the business sector increase for roughly a year. After that, as the recession induced by the policy shock gains momentum, net funds raised by business begin to fall. Also, net funds raised by the household sector initially do not respond to a contractionary monetary policy shock.

King and **Watson** ask how well several standard macroeconomic models capture the dynamic interaction of real and nominal variables. Successful models of economic fluctuations predict a large role for persistent, but ultimately transitory, components. King and Watson investigate how well these standard models match the co-variation of money, a short-term interest rate, and the price level, with the cyclical behavior of real variables (consumption, investment, labor input, and output). They conclude that all major theories have substantial problems: real business cycle theories do poorly in explaining the cyclical behavior of interest rates and prices. Models of wage and price stickiness do better along these lines, but not very well at explaining real activity.

An adverse macroeconomic shock typically worsens conditions in the credit market, impairing the ability of some borrowers to obtain credit. The resulting declines in spending or production may exacerbate the initial downturn, an effect referred to as the financial accelerator. **Bernanke, Gertler, and Gilchrist** interpret the financial accelerator as resulting from changes over the business cycle in the agency costs of lending. The financial accelerator theory implies that, at the onset of a recession, borrowers more subject to agency costs will bear the brunt of reductions in credit extended. As a result, these borrowers should reduce spending and production earlier and more sharply than do borrowers less subject to agency problems.

Beaulieu and Miron assess what macroeconomists have learned from the study of seasonal fluctuations. They show that the seasonals in aggregate variables provide examples of the comovement of output across sectors, the absence of production smoothing, preference shifts, endogenous money, coordination failures, labor hoarding, and nominal interest smoothing. They also show that the amounts of seasonal and business cycle fluctuations are correlated strongly across industries and countries. They conclude that the known interactions between seasonal and business cycle fluctuations are most easily reconciled with models in which short-run marginal cost curves slope sharply upward, at least after some point.

Aghion and Saint-Paul focus on the effects of business cycles on economic growth. They examine two classes of models: the "learning-by-doing" models, which imply a positive long-run effect of expansions on total factor productivity; and "learning-or-doing," or opportunity cost models, which stress the role of recessions as times when the opportunity cost of productivity improvements is low, and there are associated long-run positive effects on productivity. They then analyze the interaction between the "structure" of fluctuations and long-run growth.

There are two kinds of macroeconomists: one kind believes that sticky prices play a central role in explaining short-run economic fluctuations; the other doesn't. **Ball and Mankiw** explain why they choose to be macroeconomists of the first kind: they believe that shifts in monetary policy can affect real economic activity; that sluggish price adjustment is the best explanation for the nonneutrality of money; and that monetary nonneutrality and price stickiness play central roles in macroeconomics for good reason.

Cooper and Haltiwanger provide empirical evidence on macroeconomic complementarities, a restriction on the nature of interaction between individuals in a multi-agent setting. These models imply that activities across agents will be correlated positively, that discrete decisions will be synchronized, and that disturbances will be magnified and propagated. They show that these impli-

cations are consistent with aggregate observations, as well as with some microeconomic evidence. Further, looking at certain historical episodes as well as seasonal fluctuations provides additional support for a model with macroeconomic complementarities.

In 1946, Burns and Mitchell focused on two features of the business cycle: the comovement of many individual economic series, and the differential behavior of the economy during expansions and contractions. Many subsequent business cycle models ignored both of these attributes. However, as **Diebold and Rudebusch** survey in this paper, recent theoretical and empirical research has revived interest in each attribute separately. They provide a first step toward a modern empirical representation of the business cycle.

Brock and LeBaron develop a model that can use data on asset returns and trading volume to learn whether volatility persistence is priced by, or is caused by, the trading process. In the context of their model, volatility persistence in the fundamental dampens demands by risk-averse traders too much to be consistent with the contemporaneous correlation between volume and volatility in the data.

Economics of Children and Families

A group of NBER researchers interested in a new project on "The Economics of Children and Families" met in Cambridge on October 28. Alan B. Krueger, NBER and Princeton University, who serves as program director, organized the following program:

Robert H. Haveman, University of Wisconsin, and **Barbara L. Wolfe**, NBER and University of Wisconsin, "Intergenerational Determinants of the Educational Level of Young Adults"

Kristin F. Butcher, Virginia Polytechnic and State University, and **Anne Case**, NBER and Princeton University, "The Effect of Sibling Composition on Women's Education and Earnings"

Stephen V. Cameron, University of Chicago, and **James J. Heckman**, NBER and University of Chicago, "The Dynamics of Training, Schooling, Employment, and Family Attachment of Youth"

Janet Currie, NBER and University of California, Los Angeles, and **Jonathan Gruber**, NBER and MIT, "The Medicaid Expansions and Children's Health Outcome"

Haveman and Wolfe use a sample of 1700 children born in 1968–73 to study the effects of family events

and circumstances and neighborhood characteristics on children's educational attainments. They find that both gender and race influence the number of years of schooling attained. Positive influences on educational attainment include: the amount of parental time available while growing up; being firstborn; having fewer siblings; the educational level of the parents; and the economic resources available to the family. The stresses encountered by a child while growing up—especially the number of geographic moves and the presence of a disabled family head—seem to inhibit educational progress for the child.

Butcher and Case document the impact of siblings on the education of men and women born in the United States between 1920 and 1965. They find that women raised only with brothers received significantly more education on average than women raised with any sisters, after controlling for household size. This is in direct opposition to what we know about developing countries.

Currie and Gruber use differences in states' Medicaid policies during 1979–90 to estimate the effect of changes in Medicaid eligibility on births. They find that Medicaid eligibility of pregnant women increased during that period. This in turn increased the probability of prenatal care in the first trimester; lowered the incidence of infant mortality; and reduced the incidence of low birthweight somewhat.

Cameron and Heckman analyze the transitions of students from one grade to another. Each year, students can choose among continuing school, getting a job, or entering the military. These year-by-year transitions are a function of family background, including family income, parents' education, and region of birth. Wages in local labor markets also play a critical role in determining schooling choices. A simple economic model emphasizing costs and returns can explain the schooling choices of 20th century American males.

Other participants in the conference included: Joseph G. Altonji and Bruce D. Meyer, NBER and Northwestern University; David G. Blanchflower, NBER and Dartmouth College; Michael Boozer, Yale University; David Card and Cecilia E. Rouse, NBER and Princeton University; Geoffrey Carliner and Richard Woodbury, NBER; Theresa Devine, University of Chicago; Ronald G. Ehrenberg, NBER and Cornell University; Martin Feldstein and Douglas O. Staiger, NBER and Harvard University; Harry J. Holzer, Michigan State University; Philip Levine, Wellesley College; Frank Levy and Aaron Yelowitz, MIT; Lisa M. Lynch, NBER and Tufts Univer-

sity; Marjorie B. McElroy, an NBER director from Duke University; and Richard Murnane, Anne Piehl, and Jane Waldfogel, Harvard University.

Asset Pricing Program Meeting

Members of the NBER's Program in Asset Pricing held their fall meeting at the Wharton School of the University of Pennsylvania on October 29. Kenneth R. French, NBER and University of Chicago, organized the following program:

A. Craig MacKinlay, NBER and University of Pennsylvania, "Multifactor Models Do Not Explain Deviations from the CAPM"

Discussant: **Kent Daniel**, University of Chicago

Narasimhan Jegadeesh, University of Illinois, Champaign–Urbana, and **Sheridan Titman**, University of California, Los Angeles, "Overreaction, Delayed Reaction, and Contrarian Profits"

Discussant: **A. Craig MacKinlay**

Daniel Nelson, NBER and University of Chicago, "Asymptotic Filtering and Smoothing Theory for Multivariate ARCH Models"

Discussant: **Robert J. Hodrick**, NBER and Northwestern University

Stephen J. Brown, New York University, and **William Goetzmann**, Columbia University, "Attrition and Mutual Fund Performance"

Discussant **G. William Schwert**, NBER and University of Rochester

Marianne Baxter, University of Virginia, and **Urban Jermann**, University of Geneva, "The International Diversification Puzzle Is Worse Than You Think"

Discussant: **Wayne Ferson**, University of Washington

Financial economists have uncovered disturbing evidence that the Capital Asset Pricing Model (CAPM), the basic finance model of risk and return, does not adequately describe the pattern of returns on common stocks. The CAPM says that a stock's risk is measured by its "beta" with the aggregate stock market, and that this determines the stock's average return. It appears, however, that other characteristics of a firm (such as its size and the ratio of its market value to its book value) also influence the average return on the firm's common stock. Many economists believe that this is because the movement of the aggregate stock market is not the only kind of risk; multifactor models, which allow for several sources of risk, may explain the poor performance of the CAPM. **MacKinlay** argues that this hope is misplaced.

Plausible omitted risk factors lead only to subtle deviations from the CAPM, not the gross deviations that need to be explained.

Another troubling anomaly in stock market behavior is that contrarian investment strategies are profitable. These strategies buy stocks that have declined in value recently, and sell stocks that have appreciated recently. To understand the financial success of these strategies, **Jegadeesh** and **Titman** distinguish between stocks' responses to common shocks and stocks' idiosyncratic variation. They argue that contrarian profits are caused mainly by reversals in stocks' idiosyncratic movements, but also may arise from lagged responses of some stocks (particularly small stocks) to common sources of news.

Changing volatility is a pervasive phenomenon in financial markets. Financial theorists often model this phenomenon using diffusion processes in which volatility moves continuously through time; it is not directly observable, but must be inferred from the movements of asset prices. **Nelson** shows how econometricians can choose approximate models to estimate volatility as accurately as possible, even when the movements in volatility arise from several different sources.

The mutual fund industry has been growing faster than any other major financial service industry. Accordingly, there is great interest in the evaluation of mutual fund performance. Some economists have found that mutual fund managers have "hot hands": superior performance persists, so excess returns can be earned by buying mutual funds that have recently outperformed the average mutual fund. (This is the opposite of the contrarian strategy for individual stocks.) **Brown** and **Goetzmann** argue that previous studies are flawed, because they look only at mutual funds that have survived to the end of the period of analysis. Using a sample that includes all mutual funds in existence at each date, they find much weaker evidence of persistence, which is largely attributable to continued underperformance of some funds.

Despite growing interest in investing overseas, there is still surprisingly little international diversification. U.S. investors hold the great majority of their wealth in domestic assets, and so do investors in the United Kingdom, Germany, Japan, and other large foreign countries. This behavior is puzzling, because foreign assets can reduce investors' exposure to idiosyncratic movements in domestic asset prices. **Baxter** and **Jarmann** deepen the puzzle by pointing out that domestic investors already are exposed to domestic risk through their participation in domestic labor markets. They construct simple examples in which an investor who takes account of this effect actually should "short" the domestic stock market in order to invest overseas.

In addition to the authors, discussants, and organizers, the following program members attended the meeting: Andrew B. Abel, David S. Bates, Sanford J. Gross-

man, Karen K. Lewis, and Robert F. Stambaugh, NBER and University of Pennsylvania; Marshall Blume, Frank Diebold, Janice Eberly, Bruce D. Grundy, Shmuel Kandel, and Krishna Ramaswamy, University of Pennsylvania; Tim Bollerslev, NBER and Northwestern University; John Y. Campbell, NBER and Princeton University; Robert F. Engle III, NBER and University of California, San Diego; René N. Stulz, NBER and Ohio State University; Philippe Weil, NBER and ECARE; and Stanley E. Zin, NBER and Carnegie-Mellon University. This report was prepared in part by Program Director John Y. Campbell.

Labor Economists Meet in Cambridge

A meeting of the NBER's Program in Labor Studies, organized by Henry S. Farber of Princeton University, took place at the Bureau on October 29. The following papers were discussed:

Richard B. Freeman, NBER and Harvard University, and **Morris M. Kleiner**, NBER and University of Minnesota, "Do Unions Make Enterprises Insolvent?"

Amanda Gosling, Institute for Fiscal Studies (London), and **Stephen Machin**, Harvard University, "British Unions in Decline"

James J. Heckman, NBER and University of Chicago, and **Jeffrey Smith**, University of Chicago, "Understanding What JTPA Does: An Analysis of the JTPA Program Based on Experimental and Nonexperimental Data"

Jörn-Steffen Pischke, MIT, "Assimilation and the Earnings of Guestworkers in Germany"

Freeman and **Kleiner** use a specially constructed dataset on certain enterprises and business lines to determine the union status of workers who have lost their jobs because of permanent plant closings or business failures. They find that unionization has little discernible effect on the survival of firms or business lines. Unions appear to behave in an economically rational manner, pushing wages to the point where union firms may expand less rapidly than nonunion firms, but not to the point where union firms, plants, or business lines, will close down.

Gosling and **Machin** examine the relationship between unions and the dispersion of earnings between 1980 and 1990. They find that the earnings dispersion of skilled and semiskilled workers is lower across unionized establishments than across nonunion establishments. The authors also discover a sizable widening of the gap in the dispersion of earnings between 1980 and

1990 across union and nonunion plants. For semi-skilled workers, the decline in the share of plants with recognized unions accounts for about 15 percent of the rise in earnings inequality over this time period. The decline in union recognition explains less than 10 percent of the increase in inequality between 1980 and 1984, but about 25 percent of the increase in inequality between 1984 and 1990. However, most of the rise in earnings inequality over the decade is explained by a large increase in earnings dispersion across nonunion establishments.

Heckman and **Smith** discuss the training programs financed under the Job Training Partnership Act (JTPA). They find that the controversial negative results of JTPA for male youth are quite sensitive to alternative methods of estimation, and thus the effect of JTPA training on those receiving it has been understated. The authors also find that JTPA does not have the same effect on all participants. The JTPA-eligible population is quite broad-based, including welfare participants, the long-term and short-term unemployed, and a substantial number of the working poor. Certain subsets of the eligible population, such as those who have recently lost a job, are much more likely to seek help from JTPA than others. Differences across groups, defined by recent employment experiences, explain differences in the pattern of mean earnings over time between the full eligible population and the participant population.

Germany attracted a large number of southern Europeans as temporary guestworkers in the 1960s and 1970s. Many of them stayed on, and intend to remain in Germany. **Pischke** investigates whether these workers have become integrated successfully into the German labor market, as reflected by their earnings. Analyzing data from the 1980s, he finds that guestworkers earn significantly less than Germans, and that their earnings do not increase toward the overall mean. This is because guestworkers are employed almost exclusively in blue collar occupations.

Monetary Economics Meeting

Members and guests of the NBER's Program in Monetary Economics, directed by N. Gregory Mankiw of Harvard University, met in Cambridge on November 5. Their agenda was:

Vittorio U. Grilli, NBER and Department of Treasury, Rome, and **Nouriel Roubini**, NBER and Yale University, "Liquidity and Exchange Rates: Puzzling Evidence from the G-7 Countries"
Discussant: **Stefan Oppers**, University of Michigan

Ronald I. McKinnon, Stanford University, "Dollar and Yen: The Problem of Financial Adjustment Between the United States and Japan"

Discussant: **Rudiger W. Dornbusch**, NBER and MIT

Saul Lach, NBER and Hebrew University, and **Daniel Tsiddon**, Brown University, "Staggering and Synchronization in Price Setting: Evidence from Multiproduct Firms"

Discussant: **Roland Bénabou**, NBER and MIT

Christopher A. Sims, NBER and Yale University, and **Tao Zha**, University of Saskatchewan, "Does Monetary Policy Generate Recessions? Using Less Aggregated Price Data to Identify Monetary Policy"

Discussant: **Laurence M. Ball**, NBER and Princeton University

Christina D. Romer and **David H. Romer**, NBER and University of California, Berkeley, "Credit Channel or Credit Actions? An Interpretation of the Postwar Transmission Mechanism" (NBER Working Paper No. 4485)

Discussant: **David W. Wilcox**, Federal Reserve Board

Benjamin M. Friedman, NBER and Harvard University, "Ongoing Change in the U.S. Financial Markets: Implications for the Conduct of Monetary Policy"

Discussant: **Robert E. Hall**, NBER and Stanford University

Grilli and **Roubini** study the effects of monetary policy shocks (identified by innovations in interest rates) on exchange rates. They find that positive innovations in U.S. interest rates lead to an appreciation of the U.S. dollar, but positive innovations in the interest rates of the other G-7 countries are associated with depreciation of their currencies. There are two explanations of this "exchange rate puzzle": one is based on the idea that the United States is the "leader" country in setting monetary policy for the G-7 area, while the other countries are "followers." The other explanation is that interest rate innovations in the G-7 countries other than the United States are an endogenous policy reaction to underlying inflationary shocks that cause exchange rate depreciation. After controlling for U.S. monetary policies and expected inflation, Grilli and Roubini find that the response of exchange rates to positive interest rate shocks is a persistent currency appreciation in most of the G-7 countries. Moreover, a monetary contraction is associated with an appreciation of the real exchange rate and a fall in output.

According to **McKinnon**, a sharply overvalued yen in 1993 imposed deflation on Japan and made investment unprofitable. The resulting economic slump is spilling over into other OECD countries as Japanese net imports decline. The Bank of Japan is trapped: it cannot

embark on a properly expansionary monetary policy without driving the yen down. But a vocal group of Americans see a high yen as a way to limit U.S. trade deficits and Japanese trade surpluses. If the Bank respects the political necessity of a high yen in order to avoid American protectionism, it will be forced to follow an unduly contractionary monetary policy.

Lach and **Tsiddon** observe that most of the theoretical literature on price setting deals with the special case in which there is only a single price to be changed. But at the retail store level, at least, where dozens of products are sold by a single price setter, price-setting policies are not formulated for individual products. Lach and Tsiddon use a new dataset to examine whether price setters stagger the timing of price changes; whether price changes of different products are synchronized within the store; and, if this is a result of aggregate shocks, or of the presence of a store-specific component in the cost of adjusting prices.

Monetary policy attempts to counteract inflationary tendencies. Therefore, it is easy to confound the effects of changes in monetary policy with the effects of the inflationary disturbances the policy is meant to counteract. **Sims** and **Zha** show that progress can be made in isolating the effects of monetary policy by taking account of the distinct impacts of fluctuations in inflation, disaggregated by stage of production. Apparently, policy authorities react to inflationary pressures that are visible in the disaggregated data before the aggregate inflation rate has moved.

Romer and **Romer** show that the disproportionate impact of tight monetary policy on banks' ability to lend is largely the consequence of Federal Reserve actions aimed at reducing bank loans directly, rather than an inherent feature of the monetary transmission mechanism. They examine nine postwar episodes of contractionary monetary policy and show that, while short-term interest rates always rose in response to tight policy, banks typically found ways of maintaining lending despite the falls in reserves. Banks' ability to lend was particularly affected by tight policy only when the Federal Reserve undertook actions, such as special reserve requirements, moral suasion, or explicit credit controls, to restrain bank lending directly. Further, Federal Reserve credit actions have large and significant effects on the composition of external finance between bank loans and commercial paper, and on the spread between the prime bank loan rate and the commercial paper rate. A bank credit channel of monetary transmission is not needed to explain the movements in these variables in response to tight policy.

Friedman documents the collapse in recent years of some of the familiar relationships that could play a role in guiding U.S. monetary policy. He focuses on three examples: the narrow money stock (M1), which was at the center of the Federal Reserve System's most intensive

effort to date to pursue monetary growth targets, during 1979–82; a broad credit aggregate, which he himself showed was comparable to most measures of money in its relationship to income; and the broad money stock (M2), which in recent years seems to have attracted more support as a target for U.S. monetary policy than any other such variable. With respect to M2 in particular, Friedman argues that the Federal Reserve today not only does not know the magnitude but *does not even know the sign* of the response of M2 to open market operations. Finally, he takes up the hard question of how to conduct monetary policy in an environment with chance and change. He suggests using information variables that are inclusive rather than exclusive—encompassing measures not only beyond the conventional monetary aggregates but, indeed, beyond the confines of the banking system, or even the financial markets more generally—together with a frequency of decision-making that renders even a single formal intermediate target substantially equivalent to an information variable.

Program Meeting: Public Economics

Members of the NBER's Program in Public Economics, directed by James M. Poterba of MIT, met in Cambridge on November 18 and 19. They discussed the following papers:

Don Fullerton, NBER and Carnegie–Mellon University, and **Thomas C. Kinnaman**, University of Virginia, "Household Demand for Garbage and Recycling Collection with the Start of a Price Per Bag"

Discussant: **Hilary Sigman**, University of California, Los Angeles

Timothy Besley, NBER and Princeton University, and **Ian Preston** and **Michael Ridge**, Institute for Fiscal Studies, "Fiscal Anarchy: Compliance Problems with the U.K. Poll Tax" (NBER Working Paper No. 4498)

Discussant: **Michael Rothschild**, NBER and University of California, San Diego

Julio J. Rotemberg, NBER and MIT, and **Michael Woodford**, NBER and University of Chicago, "Energy Taxes and Aggregate Economic Activity"

Discussant: **Lawrence H. Goulder**, NBER and Stanford University (See "Tax Policy and the Economy" in the Conferences section of this issue for a discussion of this paper.)

Robert P. Inman, NBER and University of Pennsylvania, "Presidential Leadership and the Reform of Fiscal Policy: Learning from Reagan's Role in TRA86" (NBER Working Paper No. 4395)

Discussant: **James M. Poterba**

John Karl Scholz, NBER and University of Wisconsin, "The Earned Income Tax Credit: Participation, Compliance, and Antipoverty Effectiveness"

Discussant: **Hilary W. Hoynes**, NBER and University of California, Berkeley

Kenneth L. Judd, NBER and Hoover Institution, "The Optimal Tax on Capital Is Negative"

Discussant: **Thomas Piketty**, MIT

John B. Shoven, NBER and Stanford University, and **Joel M. Dickson**, Stanford University, "Ranking Mutual Funds on an Aftertax Basis" (NBER Working Paper No. 4393)

Discussant: **David F. Bradford**, NBER and Princeton University

Fullerton and Kinnaman estimate households' reaction to the implementation of a volume-based pricing program for the collection of residential garbage. They gather data on weight and volume of weekly garbage and recycling from 75 households in Charlottesville, Virginia, both before and after the implementation of a program that requires an 80-cent sticker on each bag of garbage. They find that households reduced the weight of their garbage by 14 percent, reduced the volume of garbage by 37 percent, and increased the weight of their recyclable materials by 15.7 percent. Also, they estimate that additional illegal disposal accounts for around 3 percent of all household garbage.

Besley, Preston, and Ridge study nonpayment of the U.K. poll tax in 366 localities. They find that higher taxes lead to larger problems with compliance, and that attempts to enforce compliance have a positive effect. Neighborhood effects on noncompliance are less conspicuous, figuring significantly only in the final year of their study.

Inman analyzes congressional decisionmaking assuming that legislators' incentives may be contrary to fiscal efficiency, and that a strong president (one with the resources to build congressional coalitions, and a credible veto to force "all or nothing" choices between reform and the inefficient status quo) may be able to lead Congress away from inefficient budgets. Focusing on President Reagan's role in the passage of the Tax Reform Act of 1986, Inman discusses the role of executive resources, and the importance of the veto strategy to major fiscal reform.

Scholz examines the participation rate, labor market incentives, and antipoverty effectiveness of the earned income tax credit (EITC): a refundable tax credit directed primarily at low-income families with children. He estimates that 80 to 86 percent of eligible taxpayers re-

ceived the credit in 1990, which implies that fewer than 2.1 million taxpayers entitled to the credit failed to receive it. He confirms that some individuals have rational or voluntary explanations for nonparticipation. While the EITC provides incentives that discourage work for more than half its recipients, it is clearly also an important antipoverty program. By the time the August 1993 expansion of the EITC is phased in, the credit will affect more than six million working taxpayers with incomes below the poverty line, raising the incomes of over one million of them to above the poverty line.

Judd examines the problem of optimal taxation in a dynamic economy with imperfectly competitive markets. In such an economy, the optimal tax system will tend to provide subsidies for the purchase of capital goods to offset the gaps between price and marginal cost. The average tax on capital income will be negative, even if pure profits are not taxed away. Since the markups are greater for equipment than for construction, this analysis justifies the investment tax credit's discrimination in favor of equipment over structures.

Dickson and Shoven take shareholder taxes into account in determining the performance of growth, and growth and income, mutual funds between 1963 and 1992. They find that the differences between the relative ranking of funds on a before- and aftertax basis are dramatic, especially for middle- and high-income investors. For instance, one fund ranks in the 19th percentile on a pretax basis, but in the 51st percentile for an upper-income, taxable investor.

Corporate Finance Meeting

The NBER's Program in Corporate Finance, directed by Rob W. Vishny of NBER and the University of Chicago's Business School, met at the Bureau's offices on December 14. They discussed the following papers:

Lucian Bebchuk, NBER and Harvard University, "Efficient and Inefficient Sales of Corporate Control"

Discussant: **Rob Gertner**, University of Chicago

Ben S. Bernanke, NBER and Princeton University;

Mark Gertler, NBER and New York University; and

Simon Gilchrist, Federal Reserve Board, "The Financial Accelerator and the Flight to Quality"

Discussant: **David S. Scharfstein**, NBER and MIT (See "Fall Meeting of Macroeconomists" earlier in this section of the *NBER Reporter* for a discussion of this paper.)

Tim Loughran, University of Iowa, and **Jay Ritter**, University of Illinois, Urbana-Champaign, "The Timing and Subsequent Performance of New Issues"

Discussant: **Luigi Zingales**, NBER and University of Chicago

Lars Stole, University of Chicago, and **Jeff Zwiebel**, Stanford University, "Organizational Design and Technology Choice with Non-Binding Contracts"

Discussant: **Oliver Hart**, NBER and Harvard University

Mark Mitchell, University of Chicago, and **Harold Mulherin**, Dartmouth College, "Shocks and Industry Change: A Positive Analysis of Takeovers and Restructurings"

Discussant: **Krishna Palepu**, Harvard University

Bebchuk analyzes transactions in which a controlling interest in a corporation is transferred. He shows that the market rule, which is followed in the United States, is superior to the equal opportunity rule, which prevails in some other countries, in facilitating efficient transfers. However, the market rule is inferior to the equal opportunity rule in discouraging inefficient transfers. The market rule is also superior to the equal opportunity rule if the managerial ability and the ability to extract private benefits of control are the same for new and existing controllers.

Companies issuing stock, whether an initial public offering or a seasoned equity offering (SEO), successfully time their issues for periods when investors overpay. **Loughran** and **Ritter** find that during the five years after the issue, the average return is only 5 percent per year for companies going public and only 7 percent per year for companies conducting an SEO. While many of the issuing firms have low book-to-market ratios, the positive relationship between book-to-market ratios and returns during the period under study explains only a modest portion of the low returns.

Stole and **Zwiebel** study the problem of contracting within a firm's boundaries where contracts provide only a minimal commitment to wages and employment. They demonstrate that a firm with contractual incompleteness will tend to overemploy labor, distort capital, choose inefficient "frontloaded" technologies, deemphasize scale and scope economies, and inefficiently allocate labor and capital across productive projects. Their results underscore the importance of internal bargaining and contractual incompleteness as additional components of important economic phenomena.

Mitchell and **Mulherin** study takeover and restructuring activity in 51 industries during 1982-9. For the sample of 1064 firms, 56 percent are the object of a takeover attempt or experience a major restructuring during the sample period. At the industry level, the fraction of firms subject to takeover and restructuring ranges from 26 percent to 82 percent across the 51 sample industries. The interindustry patterns in the rate of takeover and restructuring activity are related directly to the economic shocks experienced by the industries. Also, the demise of the small-firm effects during the 1980s can be traced to takeover activity in these large firms.

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1818. "The Gold Standard, Bretton Woods, and Other Monetary Regimes: A Historical Appraisal," by Michael D. Bordo (NBER Working Paper No. 4310)
1819. "Enforcement Costs and the Optimal Magnitude and Probability of Fines," by A. Mitchell Polinsky and Steven Shavell (NBER Working Paper No. 3429)
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"Empirical Methodology in Macroeconomics: Explaining the Success of Friedman and Schwartz's *A Monetary History of the United States, 1867-1960*," by Jeffrey A. Miron (*Journal of Monetary Economics*, forthcoming)

"The Integration of World Capital Markets," by Martin Feldstein

"Economic Reform and Performance in Vietnam," by John Whalley and Chris Dawkins

"Participation, Capitalization, and Privatization: Report on Bolivia's Current Privatization Debate," by Gerlinde Sinn and Hans-Werner Sinn

"The Deadweight Loss of Christmas," by Joel Waldfogel (*American Economic Review*, 85, 5, December 1993)

"Global Environmental Risks," by Graciela Chichilnisky and Geoffrey Heal (*Journal of Economic Perspectives*, Fall 1993)

"Increasing Returns and the Regional Structure of Wages," by Gordon H. Hanson

"Agglomeration, Dispersion, and the Pioneer Firm," by Gordon H. Hanson

"International Trade and the U.S. Automobile Industry: Current Research, Issues, and Questions," by James A. Levinsohn

"Israel's Disinflation: Political-Economic Perspective," by Assaf Razin and Efraim Sadka

Ronald Reagan's election in 1980, partly a reaction to the high inflation and increasing taxes of the 1970s, marked a return to traditional market-oriented economic ideas. Reagan was committed to achieving low inflation, to lowering taxes, and to shrinking the role of government in the economy. In the decade that followed, some of these goals were realized, but not without a price.

According to Feldstein's preface, this volume aims to improve "our understanding of how and why economic policy developed as it did in the 1980s and to create an authoritative record that others who study this period will want to consult." It will be a valuable source of information, and the standard reference for anyone interested in the U.S. economy in the 1980s.

Focusing on determinants and description rather than policy consequences, the background papers, written by leaders in their fields, provide extensive coverage on a wide variety of topics, including: monetary policy; tax policy; budget policy; exchange rate policy; economic regulation; health and safety regulation; financial regulation; antitrust; trade policy; LDC debt; and policy toward the aged. The background papers are complemented by personal essays by "insiders," who were actually involved in the policy process, including Paul A. Volcker, David Stockman, and Russell B. Long.

In addition, an introductory chapter by Feldstein, subtitled "A Personal View," recounts decisions about inflation and monetary policy, taxes, the budget deficit, and the dollar and the trade deficit. All of those issues were of special concern to him during his turn as Chairman of the Council of Economic Advisers in 1982-4. The price of this volume is \$75.00.

Bureau Books

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628-2215. 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.

American Economic Policy in the 1980s

American Economic Policy in the 1980s, edited by NBER President Martin Feldstein, is now available from the University of Chicago Press.

Third EASE Volume Is Published

Macroeconomic Linkages: NBER-East Asia Seminar on Economics, Volume 3 is now available from the University of Chicago Press. The papers in this volume illustrate the extent of interdependence of East Asia (primarily Taiwan, Korea, and Japan) with the United States and the rest of the world. The 14 papers, presented at a conference in the summer of 1992, are organized around four themes: the overall determinants of growth and trading relations; monetary policies in relation to capital controls and capital accounts; the impact of exchange rate behavior on industrial structure; and the potential for greater regional integration. Together these papers describe the response of Asian nations to the international developments of the late 1980s, and show how the responses affected their Asian neighbors and the United States, in particular.

One of the conference organizers, co-editor Takatoshi Ito, is an NBER research associate and a professor

of economics at Hitotsubashi University. The other conference organizer and editor, Anne O. Krueger, is an NBER research associate and a professor of economics at Duke University. This volume costs \$75.00.

Empirical Studies of Strategic Trade Policy

Empirical Studies of Strategic Trade Policy, edited by Paul R. Krugman and Alasdair Smith, is available from the University of Chicago Press for \$45.00. In his introduction to this NBER Project Report, Krugman describes the development of strategic trade policy in the 1980s, and how it is intended to improve on free trade theory by accounting for imperfect competition and increasing returns in the international marketplace. The nine papers in the volume include studies of the U.S. and European auto industries, the U.S. steel industry, the commercial aircraft industry, and the airline industry in Scandinavia, and a look at labor and industrial policy in Korea and Taiwan. The volume should be of broad interest in light of the ongoing discussions of GATT, NAFTA, and related topics.

Krugman is an NBER research associate and a professor of economics at MIT. Smith is a research fellow at the Centre for Economic Policy Research in London, and a professor of economics at the University of Sussex.

Human Capital: The Third Edition

Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, by Gary S. Becker, is now available in a third edition from the University of Chicago Press. This paperback volume is priced at \$17.95.

This third edition of the Becker classic includes a new preface and four chapters written since 1986. One chapter gives a nontechnical overview of the theory of, and recent developments in, human capital. The other three on "Economy-Wide Changes," preceded by an introduction to this new section, discuss the division of labor, economic growth, and the rise and fall of families.

Becker, winner of the 1992 Nobel Prize in economics, was affiliated with the NBER for many years, and did much of his prize-winning research as an affiliate of the NBER. He is also a professor of economics at the University of Chicago.

Current Working Papers

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Journal of Economic Literature (JEL) subject codes, when available, are listed after the date of the paper, followed by the NBER program(s) of research represented by each paper. Papers not associated with an NBER program are listed as Miscellaneous. All Historical Factors in Long-Run Growth Papers are in the Development of the American Economy program.

Abstracts of all papers issued since November 1993 are presented below. For previous papers, see past issues of the *NBER Reporter*. Working Papers are intended to make results of NBER research available to other economists in preliminary form to encourage discussion and suggestions for revision before final publication. They are not reviewed by the Board of Directors of the NBER.

NBER Working Papers

Currency Option Pricing in Credible Target Zones

Bernard Dumas, L. Peter Jennergren, and Bertil Näslund

NBER Working Paper No. 4522

November 1993

JEL Nos. F31, F33, G13, G15

Asset Pricing, International Finance and Macroeconomics

We develop a model for valuing options on a currency that is maintained within a band. Our starting point is the well-known Krugman model for exchange rate behavior within a target zone. Our results provide insight into the evidence reported by other authors of mispricing currency options through extensions of the Black-Scholes model.

Growth and the Effects of Inflation

Larry E. Jones and Rodolfo E. Manuelli

NBER Working Paper No. 4523

November 1993

Growth

We analyze the effects of changes in monetary growth rates in the context of models of endogenous growth when the demand for money comes from a cash-in-advance constraint. We explore two avenues through which the rate of inflation could affect the overall long-run rate of growth of the economy: The first is through nominal rigidities in the tax code, particularly depreciation allowances that are fixed in nominal terms. The second is a distortion of the labor-leisure choice that occurs when a Lucas-style model of effective labor is used.

In both cases, we study the welfare costs and growth effects of various monetary growth rules relative to a constant money supply. We find that both the welfare costs and the growth effects of inflation are quite small at low to moderate levels of inflation. However, at rates of inflation that are high by U.S. standards, but not uncommon in developing countries, the magnitude of both the growth effects and the welfare costs of inflation depend on the specification of the model. If cash and credit goods are substitutes, there are no growth effects and moderate welfare effects. If the two goods are complements, there are sizable growth effects and large welfare effects.

A Revealed Preference Analysis of Asset Pricing Under Recursive Utility

Larry G. Epstein and Angelo Melino

NBER Working Paper No. 4524

November 1993

Asset Pricing

This paper considers a representative agent model of asset prices based on a recursive utility specification. We assume a constant elasticity of intertemporal substitution, but the risk-preference component of utility is restricted only by qualitative, nonparametric regularity conditions. Our principal contribution is determining the exhaustive implications of this semiparametric recursive utility model for the one-step-ahead joint probability distribution for consumption growth and asset returns.

On the Optimal Taxation of Capital Income

**Larry E. Jones, Rodolfo E. Manuelli,
and Peter E. Rossi**

NBER Working Paper No. 4525

November 1993

Public Economics

One of the best-known results in modern public finance, Chamley-Judd, is that the optimal tax rate on capital income is zero in the long run. We reexamine this result by analyzing a series of generalizations of the Chamley-Judd formulation. We show that in a model with human capital, if the tax code is sufficiently rich and

there are no pure profits from accumulating human capital, then all distorting taxes are zero in the long run under the optimal plan. In this sense, income from physical capital is not special. To gain a better understanding of these two conditions, we study examples in which they are not satisfied, and show that the optimal tax rate on income from physical capital does not go to zero.

In those cases in which the limiting tax rate is not zero, we calculate its value for alternative specifications of the marginal welfare cost of taxation. Our results indicate that even for conservative specifications, tax rates of 10 percent and higher are possible under the optimal code.

Entrepreneurial Decisions

and Liquidity Constraints

Douglas Holtz-Eakin, David Joulfaian,

and Harvey S. Rosen

NBER Working Paper No. 4526

November 1993

JEL No. D21

Public Economics

This paper analyzes the role of liquidity constraints in the formation of new entrepreneurial enterprises. Our basic strategy is to determine whether an individual's wealth affects the probability of becoming an entrepreneur, and the conditional amounts of depreciable assets, *ceteris paribus*. If so, liquidity constraints are likely to be present. To be successful, such a research strategy requires a measure of asset variation that is both precisely measured and exogenous to the entrepreneurial decision. Our data are uniquely well suited for this purpose. The sample consists of the 1981 and 1985 federal income tax returns of a group of people who received inheritances in 1982 and 1983, along with information on the size of those inheritances from a matched set of estate tax returns. Hence, we can examine how the exogenous receipt of capital affects the decision to become an entrepreneur, as well as important financial characteristics of new enterprises.

Our results suggest that the size of the inheritance has a substantial effect on the probability of becoming an entrepreneur, and that conditional on becoming an entrepreneur, the size of the inheritance has a statistically significant and quantitatively important effect on the amount of capital employed. These findings are consistent with the presence of liquidity constraints.

Endogenous Innovation in the Theory of Growth

Gene M. Grossman and Elhanan Helpman

NBER Working Paper No. 4527

November 1993

JEL Nos. O40, O30

Growth

This paper makes the case that purposive, profit-seeking investments in knowledge play a critical role in the long-run growth process. First, we review the impli-

cations of neoclassical growth theory and the more recent theories of "endogenous growth." Then we discuss the empirical evidence that bears on modeling long-run growth. Finally, we describe in more detail a model of growth based on endogenous technological progress, and discuss the lessons that such models can teach us.

An Evaluation of Recent Evidence on the Employment Effects of Minimum and Subminimum Wages

David Card, Lawrence F. Katz, and Alan B. Krueger
NBER Working Paper No. 4528
November 1993
JEL No. J3
Labor Studies

We reexamine recent cross-state evidence on the employment effect of the minimum wage. A reevaluation of the data used in Neumark and Wascher's 1992 study of the minimum wage provides no support for their conclusion that the minimum wage has an adverse effect on teenage employment. Neumark and Wascher's findings are caused by an inadvertent mistake in their definition of the school enrollment variable. In addition, their coverage-weighted relative minimum wage index is *negatively* correlated with average teenage wages.

We also reanalyze the experiences of individual states following the April 1990 increase in the federal minimum wage, allowing for a full year lag in the effect of the law, and controlling for changes in (properly measured) enrollment rates. These changes actually strengthen Card's 1992 conclusion that the 1990 increase in the federal minimum had no adverse effect on employment. Lastly, we find that subminimum wages rarely are used, casting doubt on the claim that subminimum wage provisions temper any employment losses attributable to the minimum wage.

Estimating Sectoral Cycles Using Cointegration and Common Features

Robert F. Engle and João Victor Issler
NBER Working Paper No. 4529
November 1993
Economic Fluctuations

This paper investigates the degree of short-run and long-run comovement in U.S. data on sectoral output by estimating sectoral trends and cycles. We use a model based on Long and Plosser (1983) to derive a reduced form for sectoral output from first principles. We perform cointegration and common features (cycles) tests, and find that sectoral output data seem to share a relatively high number of common trends, and a relatively low number of common cycles. After a special trend-cycle decomposition of the dataset, we find a very similar cyclical behavior across sectors, and a very different behavior for trends. In a variance decomposition exercise, for prominent sectors such as manufacturing and wholesale/retail trade, the cyclical innovation is more important than the trend innovation.

Aging in Germany and the United States: International Comparisons

Axel Börsch-Supan
NBER Working Paper No. 4530
November 1993
JEL Nos. J11, J25, D91, R31
Aging

This paper reports on a set of international comparisons of how the German and the U.S. economies are affected by population aging. The paper's main focus is on the influence of institutional arrangements, such as government regulations and subsidies on retirement, savings, and housing choices in the two countries. Germany faces a particularly pronounced aging process. Her dependency ratio already is as large as it will be in the year 2015 in the United States, and is predicted to exceed 43 percent at its peak in 2030. In this respect, changes that are occurring in Germany now may be regarded as indicative of changes to come in the United States. Retirement, savings, and housing behavior differ quite markedly between Germany and the United States, and I show that most of these differences are consistent with the incentives applicable to each country.

Collateral Damage: How Refinancing Constraints Exacerbate Regional Recessions

Andrew Caplin, Charles Freeman, and Joseph Tracy
NBER Working Paper No. 4531
November 1993
Economic Fluctuations

With the current structure of the U.S. residential mortgage market, a fall in property values may make it very difficult for homeowners to refinance their mortgages to take advantage of falling interest rates. In this paper, we explain the institutional background for this effect and quantify its importance. We confirm that this form of collateral constraint has greatly reduced recent refinancing in states with depressed property markets. We also point to the many ways in which the reduction in refinancing may have inflicted additional damage in these already recession-hit states. Finally, we show that relatively minor institutional changes could have neutralized the damaging effects of the collateral constraints, and we discuss why the institutions have their current structure.

Does Central Bank Intervention Increase the Volatility of Foreign Exchange Rates?

Kathryn M. Dominguez
NBER Working Paper No. 4532
November 1993
JEL Nos. F31, E58, F33
International Finance and Macroeconomics

Since the abandonment in the early 1970s of the Bretton Woods system of fixed exchange rates, exchange

rates have displayed a surprisingly high degree of volatility over time. This volatility can be explained statistically, but the question of its economic source remains. Central bank intervention may provide part of the explanation.

Previous work has shown that central banks relied heavily on intervention to influence the level of exchange rates, and that those operations, at times, were effective. This paper investigates whether central bank interventions also have influenced variance of exchange rates. The results from daily and weekly observations of the \$/DM and \$/Yen rates during 1985 to 1991 indicate that publicly known Fed intervention generally *decreased* volatility over the period. Further, I find that intervention need not be known publicly for it to influence the conditional variance of exchange rate changes: secret intervention operations by both the Fed and the Bundesbank generally *increased* exchange rate volatility over the period.

Information and Economic Efficiency

**Richard J. Arnott, Bruce C. Greenwald,
and Joseph E. Stiglitz**

NBER Working Paper No. 4533

November 1993

Public Economics

Is an economy with adverse selection, moral hazard, or an incomplete set of risk markets constrained to be Pareto efficient? In this paper, and under our assumptions, we present an intuitive proof of the Pareto inefficiency of market equilibrium with moral hazard, and identify what the government can do that the market cannot.

International Capital Mobility in the 1990s

Maurice Obstfeld

NBER Working Paper No. 4534

November 1993

JEL Nos. F21, F32, F36

International Trade and Investment

This paper surveys the performance of international capital markets, and reviews the literature on measuring international capital mobility. The focal points for the analysis are the three main functions of a globally integrated and efficient world capital market: 1) Asset-price arbitrage ensures that people in different countries face identical prices for a given asset. 2) To the extent that the usual market failures allow, people in different countries can pool risks to their lifetime consumption profiles. 3) New saving, regardless of its country of origin, is allocated toward the world's most productive investment opportunities.

We evaluate the international capital market's performance of these roles by studying data on international interest rate differences, consumption correlations, and portfolio diversification, and by looking at the relationships between national saving and investment rates. We conclude that while international capital mobility has increased markedly in the last two decades, international capital movements remain less free than *intranational* movements, even among the industrial countries.

The Efficiency Cost of Increased Progressivity

Robert K. Triest

NBER Working Paper No. 4535

November 1993

JEL No. H20

Public Economics

Increases in income tax progressivity generally entail some efficiency cost caused by increased distortion of individuals' labor supply decisions. This paper quantifies the magnitude of the efficiency cost of several policies that would increase the progressivity of the U.S. individual income tax. The analysis differs from previous work on this topic in allowing for complex nonlinear tax schedules similar to those that actually exist.

The efficiency cost of increased progressivity varies considerably with the type of tax reform considered. Expanding the earned income tax credit (EITC) is a particularly efficient means of increasing progressivity. Using the labor supply parameters I consider most reasonable, I find that the efficiency cost of expanding the EITC financed by increased tax rates in the intermediate brackets is less than 20 cents per dollar transferred from the upper-income groups to the lower-income groups.

Market Structure and International Trade:

Business Groups in East Asia

**Robert C. Feenstra, Gary G. Hamilton,
and Tzu-Han Yang**

NBER Working Paper No. 4536

November 1993

JEL Nos. F12, F14, O53

International Trade and Investment

We study the effect of market structure on the trade performance of South Korea, Taiwan, and Japan. Our analysis centers on Korea and Taiwan, countries that have very different market structures: Korea has many large, vertically integrated business groups, known as *chaebol*, whereas business groups in Taiwan are smaller and horizontally integrated in the production of intermediate inputs. We compare the exports of these countries to the United States using indexes of product variety and "product mix," which are constructed at the five-digit industry level. We find that Taiwan tends to export a greater variety of products to the United States than Korea does, and this holds across nearly all industries. In addition, Taiwan exports relatively more high-priced intermediate inputs, whereas Korea exports relatively more high-priced final goods. We argue that these results confirm the importance of market structure as a determinant of trade patterns.

Health, Income, and Retirement: Evidence from Nineteenth Century America

Dora L. Costa

NBER Working Paper No. 4537

November 1993

JEL Nos. J26, N31

Development of the American Economy

I investigate the factors that fostered rising retirement

rates prior to Social Security and private-sector pensions by estimating the income effect of a large government transfer: the first major pension program in the United States, covering Union Army veterans of the American Civil War. Because of the program's rules, the pension had only an income effect; these rules create a natural experiment for identifying effects of pensions and health on labor supply.

Pensions had a large impact on retirement rates. The elasticity of not participating in the labor force with respect to pension income was at least 0.66, exceeding even the most conservative estimates of that elasticity with respect to Social Security payments. Union Army pensions were a much larger fraction of retirement income than Social Security payments today, and this accounts for some of the difference in estimated elasticities. My findings suggest that secular increases in income can explain a substantial part of the rise in retirement rates, although the elasticity of nonparticipation in the labor force with respect to transfer income may have fallen over time, perhaps because of the increasing attractiveness of leisure.

Endogenous Growth, Public Capital, and the Convergence of Regional Manufacturing Industries

Charles R. Hulten and Robert M. Schwab

NBER Working Paper No. 4538

November 1993

Productivity

Several explanations can be offered for the unbalanced growth of U.S. regional manufacturing industries in the decades after World War II. The *convergence hypothesis* suggests that the success of the South in catching up to the Northeast and Midwest is analogous to the economic success of Japan and the rest of the G-7 in closing the gap relative to the United States as a whole. *Endogenous growth theory*, on the other hand, assigns a central role to capital formation, broadly defined. A variant of endogenous growth theory focuses on investments in public infrastructure as a key determinant of regional growth. Finally, traditional *location theory* stresses the evolution of regional supply and demand, and the role of economies of scale and agglomeration.

This paper compares these alternative explanations of U.S. regional growth by testing their predictions about the productive efficiency of regional manufacturing industries. We find little evidence that *technological convergence* explains the regional evolution of U.S. manufacturing industry, or that endogenous growth was an important factor. We also find little evidence that public capital externalities played a significant role in explaining the relative success of industries in the South and West. The main engine of *differential* regional manufacturing growth during 1970–86 seems to be interregional flows of capital and labor. The growth of multifactor productivity is essentially uniform across regions, although there is some variation in the initial levels of efficiency.

Welfare and the Well-Being of Children: The Relative Effectiveness of Cash and In-Kind Transfers

Janet Currie

NBER Working Paper No. 4539

November 1993

JEL Nos. I38, H53

Labor Studies

Cash transfers to families with children increasingly are being restricted to parents who work, while the families of nonworking parents are receiving a progressively larger share of their benefits in kind. This paper evaluates the empirical evidence regarding the effects of in-kind and cash transfer programs on the children who are their intended beneficiaries. I distinguish between in-kind transfer programs, such as the Food Stamp Program, that provide to families transfers that are earmarked for certain purposes, and programs such as Medicaid, which provide specific services directly to children. Although the evidence is incomplete, it suggests that in-kind programs have stronger effects on children than cash transfers, and that programs that target specific benefits directly to children have the largest positive effects.

The Output Contributions of Computer Equipment and Personnel:

A Firm-Level Analysis

Frank R. Lichtenberg

NBER Working Paper No. 4540

November 1993

JEL Nos. O3, O4

Productivity

Using two different sources of data on inputs, this paper examines the contributions to output of capital and labor deployed in information systems (IS) during 1988–91 at the firm level throughout the business sector. The production function estimates suggest that there are substantial excess returns to both IS capital and IS labor, although the size and significance of the excess returns to IS capital are larger. Computer capital and labor jointly contribute, or account for, about 21 percent of output, even though only about 10 percent of both capital and labor income accrue to IS factors. Although IS employees accounted for a very small share of total employment by 1986, growth in IS employment is estimated to have made a larger contribution to 1976–86 growth in output than non-IS employment did, because IS employment grew very rapidly (16 percent per year). The estimated marginal rate of substitution between IS and non-IS employees, evaluated at the sample mean, is 6: that is, one IS employee can be substituted for six non-IS employees without affecting output.

Earnings Inequality in Germany

Katharine G. Abraham and Susan N. Houseman

NBER Working Paper No. 4541

November 1993

Labor Studies

Recent studies have documented the growth of earnings inequality in the United States during the 1980s. In contrast to these studies' findings, our analysis of microdata for the former West Germany yields virtually no evidence of growth in earnings inequality over the same period. Between 1978 and 1988, a reduction in the dispersion of earnings among workers in the bottom half of the earnings distribution led to a narrowing of the overall dispersion of earnings in Germany. Earnings differentials across education and age groups remained roughly stable, and there was no general widening of earnings differentials within either education or age groups.

German wage-setting institutions tend to limit earnings differentials across groups of workers, but cannot fully explain the differences between trends in Germany and those in the United States. Both the high quality of the training received by German youth not bound for college and the fact that the growth of the highly educated work force did not decelerate in Germany as it did in the United States, seem likely to have contributed to these differences.

Does Profit Sharing Affect Productivity?

Douglas L. Kruse

NBER Working Paper No. 4542

November 1993

JEL No. J33

Labor Studies

Existing research tends to show that profit-sharing plans for employees are associated with higher company productivity and profitability, although the causality and mechanisms are unclear. This study uses new data from a survey of 500 U.S. public companies, and panel data on corporate performance, to examine the relationship between productivity measures and the adoption and presence of profit sharing. Controlling for a variety of influences on productivity, the adoption of profit sharing is found to be associated with average productivity increases of 4–5 percent, with no subsequent positive or negative trend. The productivity increase is dispersed; it is larger for small companies and for cash plans, and is unaffected by controlling for personnel policies that may affect productivity. However, there is no evidence on the mechanisms through which profit sharing may affect productivity, since there are no strong interactions with information sharing or with other policies that might affect productivity.

Multilateral Tariff Cooperation During the Formation of Customs Unions

Kyle Bagwell and Robert W. Staiger

NBER Working Paper No. 4543

November 1993

JEL Nos. F13, F15

International Trade and Investment

We study the implications of the formation of customs

unions for multilateral tariff cooperation. We model cooperation in multilateral trade policy as self-enforcing, in that it involves balancing the current gains from deviating unilaterally from an agreed-upon trade policy against the future losses from forfeiting the benefits of multilateral cooperation implied by such a defection. The early stages of the process of formation of a customs union alter this dynamic incentive constraint in a way that leads to a temporary "honeymoon" for liberal multilateral trade policies. However, the harmony between customs unions and multilateral liberalization is temporary: eventually, as the full impact of the emerging customs union becomes felt, a less favorable balance between current and future conditions reemerges, and the liberal multilateral policies of the honeymoon phase cannot be sustained. We argue that this is compatible with the evolving implications of the formation of the European Community customs union for the ability to sustain liberal multilateral trade policies under the General Agreement on Tariffs and Trade.

Term, Inflation, and Foreign Exchange Risk Premiums: A Unified Treatment

Lars E. O. Svensson

NBER Working Paper No. 4544

November 1993

JEL Nos. F31, E43, E52

International Finance and Macroeconomics

The paper reviews the theoretical foundations of the use of forward interest rates to infer expected future rates of interest, inflation, currency depreciation, and inflation differentials. Forward rates are related to these expected future variables via combinations of term, inflation, and foreign exchange risk premiums. We provide a unified derivation, discussion, and comparison of these premiums under both general and specific assumptions, as well as some comments on empirical estimation.

Short-Run and Long-Run Expectations of the Yen/Dollar Exchange Rate

Takatoshi Ito

NBER Working Paper No. 4545

November 1993

International Finance and Macroeconomics

The survey data on the yen/dollar exchange rate, collected twice a month for eight years from 1985 to 1993, shows the following features: First, the expected exchange rate changes in the short horizon (one month) are of the bandwagon type, while the expected changes in the long horizon (three to six months) are of the mean-reversion type. That is, foreign exchange traders infer from recent appreciation or depreciation that the recent change in the exchange rate will continue for a while, but the direction of change will reverse eventually. Second, this result holds for the entire sample period, which includes subperiods of sharp yen appreciations and of relative calm, and holds for different specifications. Third, the deviation from an equilibrium exchange

rate does not yield a robust estimate in the regression of expectation formation. Although the history of the yen/dollar exchange rate fluctuations of the past two decades shows mean reversion over several years, these fluctuations are not captured by the six-month expectations in the survey data.

A Comparison of the United States and Canadian Banking Systems in the Twentieth Century: Stability Versus Efficiency?

Michael D. Bordo, Hugh Rockoff, and Angela Redish
NBER Working Paper No. 4546

November 1993

JEL Nos. E44, G21, N22

Monetary Economics

This paper asks whether the vaunted comparative stability of the Canadian banking system has been purchased at the cost of creating an oligopoly. We assembled a dataset that compares bank failures, lending rates, interest paid on deposits, and related variables over 1920 to 1980. Our principal findings are that: 1) interest rates paid on deposits were generally higher in Canada; 2) interest income received on securities was generally slightly higher in Canada; 3) interest rates charged on loans were generally quite similar; and 4) net rates of return to equity were generally higher in Canada than in the United States.

Rules, Discretion, and Central Bank Independence: The German Experience, 1880–1989

Bernhard Eschweiler and Michael D. Bordo

NBER Working Paper No. 4547

November 1993

JEL Nos. N13, N14, E58

Monetary Economics

Theories of rules and discretion suggest that monetary policy rules are first best in terms of social welfare. However, if commitment is not feasible, then delegating monetary policy to an independent and conservative central bank can be second best. Monetary policy in Germany during the past 100 years provides an excellent case for assessing the empirical evidence on the use of rules and central bank independence in monetary policymaking. Since the creation of a central monetary policy in 1876, Germany has participated in four monetary regimes: the prewar gold standard; the interwar gold standard; the Bretton Woods system; and the floating exchange rate regime.

The bottom line of our analysis is that monetary policy in Germany always was geared toward maintaining price stability with the exception of the two World War periods. Germany relied both on rules and discretion with central bank independence to achieve the goal of price stability. A comparison of the classical gold standard regime with the floating exchange rate regime sug-

gests that society under the floating exchange rate regime with central bank independence was better off. However, this comparison ignores the historical difference in output shocks and the possibility that society became more averse to inflation over time.

Labor Adjustment Under Different Institutional Structures: A Case Study of Germany and the United States

Susan N. Houseman and Katharine G. Abraham

NBER Working Paper No. 4548

November 1993

Labor Studies

Like most Western European countries, Germany stringently regulates dismissals and layoffs. Critics contend that this regulation raises the costs of employment adjustment, and hence impedes employers' ability to respond to fluctuations in demand. However, other German labor policies, especially the availability of unemployment insurance benefits for those on short time, facilitate the adjustment of average hours per worker in lieu of layoffs.

Building on earlier work, we compare the adjustment of employment, hours, and inventories to demand shocks in the German and U.S. manufacturing sectors. We find that, in the short run, whereas U.S. employers rely principally on the adjustment of employment levels to respond to demand shocks, German employers rely principally on the adjustment of average hours per worker. The adjustment of overall labor input is generally similar in the two countries. Short-time work makes a very important contribution to short-run hours adjustment in Germany. We find little evidence that inventories help to buffer demand fluctuations in either country. Our findings suggest that, given appropriate supporting institutions, strong worker job security can be compatible with employers' need for flexibility in staffing levels.

Econometric Estimates of Price Indexes for Personal Computers in the 1990s

Ernst R. Berndt, Zvi Griliches, and Neal Rappaport

NBER Working Paper No. 4549

November 1993

JEL Nos. L63, C23

Productivity

We construct a number of quality-adjusted price indexes for personal computers (PCs) in the U.S. marketplace during 1989–92. We generalize earlier work by incorporating simultaneously the time, age, and vintage effects of computer models into a fully saturated parameterization, and then developing a corresponding specification test procedure.

While the simple arithmetic mean of prices of models by year reveals a price decline of about 11 percent per year, use of a matched model procedure similar to that commonly used by government statistical agencies generates a much larger rate of price decline: about 20 per-

cent per year. Since the matched model procedure holds quality constant, it ignores quality change embodied in new models. When data on new and surviving models are used in the estimation of hedonic price equations, a variety of quality-adjusted price indexes can be calculated, with varying interpretations. Although there are some differences, we find that on average these quality-adjusted price indexes decline at about 30 percent per year, with a particularly large price drop occurring in 1992. Parameters in hedonic price equations for desktop PC models differ from those for mobile PCs. Moreover, quality-adjusted prices fall at a slightly lower annual adjusted growth rate for mobile models (24 percent) than for desktops (32 percent). We conclude that taking quality changes into account has an enormous impact on the time pattern of price indexes for PCs.

The Gender Gap, Fertility, and Growth

Oded Galor and David N. Weil

NBER Working Paper No. 4550

November 1993

JEL Nos. J13, J16, O11, O40

Growth

This paper examines a novel mechanism that links fertility and growth: Household fertility is determined by the relative wages of women and men. Increasing women's wages will reduce fertility by raising the cost of having children relatively more than it raises household income. The lower fertility will raise the level of capital per worker which, since capital is more complementary to women's labor input than to men's, in turn raises women's relative wages. This positive feedback leads to the possibility of multiple steady-state equilibriums. Countries with low initial capital may converge to a development trap with high fertility, low capital, and low relative wages for women.

The Effect of Conviction on Income Through the Life Cycle

Daniel Nagin and Joel Waldfogel

NBER Working Paper No. 4551

November 1993

JEL Nos. K42, J41

Law and Economics

Existing studies of the impact of conviction on income and employment do not consider life-cycle issues. We postulate that conviction reduces access to career jobs that offer stable, long-term employment. Conviction instead relegates offenders to spot market jobs, which may have higher pay at the outset of the career, but do not offer stable employment or rapidly rising wages. Thus, first-time conviction may increase the wages of young workers, while decreasing the wages of older workers.

We test our theory with data on federal offenders. We find that first-time conviction has a *positive* and significant effect on income for offenders under age 25, and an increasingly *negative* and significant impact for offen-

ders over age 30. These results imply that the present value of income lost as a result of conviction varies over the life cycle, reaching a maximum in the middle of one's career. We find that the gains sought by these offenders follow similar profiles, suggesting that prospective offenders are deterred by the possibility of lost future income. Because the discounted loss in future income facing young offenders may be small, our results may provide part of an explanation of youth crime.

Is Housing Wealth a Sideshow?

Jonathan S. Skinner

NBER Working Paper No. 4552

November 1993

Aging

Are fluctuations in housing prices important in determining the economic security of retirees, or is housing wealth just a sideshow in their decisions on consumption and saving? Using both data on saving from the Panel Study of Income Dynamics and aggregate time-series data, I find that shifts in housing wealth do affect consumption and saving, especially for younger households. On the other hand, few elderly households appear to be tapping into their housing windfalls to finance their retirement consumption.

The precautionary saving approach can explain this puzzle. If housing wealth rises, households require less insurance against future contingencies, and they respond by spending more (out of nonhousing wealth). But not every elderly household encounters a bad outcome that requires liquidation of household equity. Hence, the median elderly family will not spend housing windfalls actively. Therefore, the theoretical and empirical results suggest that housing wealth is not a sideshow.

The Japanese Trade Balance: Recent History and Future Prospects

David K. Backus

NBER Working Paper No. 4553

November 1993

JEL Nos. F32, F31

International Finance and Macroeconomics

I examine the evolution of the Japanese trade balance and its relationship to the terms of trade and the value of the yen. Using a vector time-series model, I predict that the trade surplus will fall from a high of 3.7 percent of GNP in late 1992 to about 2.6 percent in 1995. This relatively modest decline is an indication that relative prices are not the dominant factor influencing the Japanese trade balance.

Understanding Risk and Return

John Y. Campbell

NBER Working Paper No. 4554

November 1993

JEL No. G12

Asset Pricing

This paper uses an intertemporal equilibrium asset pricing model to interpret the cross-sectional pattern of

stock and bond returns. The model relates mean returns on assets to their covariances with the contemporaneous return and with news about future returns on the market portfolio. In a departure from standard practice, I measure the market portfolio return using data on both the aggregate stock market and aggregate labor income. I find that aggregate stock market risk is the main factor determining excess stock and bond returns, but that the price of stock market risk does not equal the coefficient of relative risk aversion, as would be implied by the static Capital Asset Pricing Model.

The High Cost of Eating: Agricultural Protection and International Differences in Consumer Food Prices

Robert E. Lipsey and Birgitta Swedenborg

NBER Working Paper No. 4555

December 1993

JEL Nos. E31, F13

International Trade and Investment

Prices of food vary greatly among the developed countries, and some countries' food prices have been consistently far above the OECD average. The main explanation for persistently high food prices is the extent of protection of agricultural products at the farm level, explained in part by the desire to retain agriculture in the face of poor growing conditions. A second important influence for some countries is a high level of VAT on food. A third explanation is deviations of aggregate country price levels from the levels that would be predicted from the countries' per capita incomes; these presumably could arise because of omitted characteristics of the countries' economies, such as possibly inefficient or monopolistic service sectors. In addition, there are occasional episodes of high price levels caused by temporary factors affecting exchange rates.

The issues raised by these large food price differences are relevant to understanding real income differences among countries. They are also relevant to the current round of GATT negotiations, in which agricultural protection is a frequent stumbling block, and to the European Community's hopes of increasing competitive pressures through the creation of a freer internal market.

Foreign Competition, Market Power, and Wage Inequality: Theory and Evidence

George J. Borjas and Valerie A. Ramey

NBER Working Paper No. 4556

December 1993

JEL No. J31

Labor Studies

In this paper, we present theory and evidence on the link between wage inequality and foreign competition in concentrated industries. We develop a simple model in which the impact of foreign competition on the relative wages of an economy depends on the market structure of the industry that is penetrated. We show that the

more concentrated the industry is, the greater is the impact of trade on general wage inequality. We use the theory to argue why import competition in an industry such as automobiles is much more deleterious to the wages of the less-educated workers than import competition in an industry such as apparel. We then test our hypothesis using a panel dataset on relative wages across SMSAs.

Financing Apprenticeship Training: Evidence from Germany

Dietmar Harhoff and Thomas J. Kane

NBER Working Paper No. 4557

December 1993

Labor Studies

Much of the current discussion about apprenticeship programs in the United States proceeds as if it is simply a matter of historical accident or lack of imagination that has hindered investment in human capital by U.S. firms. However, the cause may be rooted more deeply in our labor market institutions.

This paper discusses the structure of incentives undergirding the German system of apprenticeship training. Many German firms face large net costs of apprenticeship training. Yet they continue to provide such training in spite of considerable worker turnover upon its completion. The simplest human capital model suggests that employers would be willing to finance only firm-specific training. Rather than engage in a futile debate over the general or specific nature of the skills being provided, we first describe and evaluate three characteristics of the German labor market that may lead firms to accept part of the cost of general training even in the face of worker turnover. We then attempt to understand why German workers and firms may be more willing to invest even in firm-specific skills than workers and firms in the United States are. Finally, we discuss some implications of these results for the current debate on U.S. vocational training.

The Relationship Between Job Characteristics and Retirement

Michael D. Hurd and Kathleen McGarry

NBER Working Paper No. 4558

December 1993

JEL Nos. J14, J26

Aging

We study the influence of job characteristics on prospective retirement as measured by the probability of working past age 62 or 65. The characteristics fall into three broad classes: physical and mental requirements; job flexibility, including employer accommodation to older workers; and financial aspects, such as pensions and health care insurance. Using data from the Health and Retirement Survey, we find that physical and mental job requirements have a rather small influence on prospective retirement, whereas measures of job flexibility and financial aspects of the job are important determinants.

Integration, Specialization, and Adjustment

Paul R. Krugman and Anthony Venables

NBER Working Paper No. 4559

December 1993

JEL Nos. F12, F15, R1

International Trade and Investment

In the United States, many industries are localized geographically, as in Silicon Valley. In Europe, these same industries often have four or more major centers of production. This difference presumably is the result of the formal and informal trade barriers that have divided the European market. With the growing integration of that market, however, there is the possibility that Europe will develop an American-style economic geography. This paper uses a theoretical model of industrial localization to demonstrate this possibility, and to show the possible transition costs associated with this shift.

Evaluation of Subjective Probability

Distributions in the HRS

Michael D. Hurd and Kathleen McGarry

NBER Working Paper No. 4560

December 1993

JEL Nos. J14, J11

Aging

In the Health and Retirement Survey, respondents were asked about the chances that they would live to be 75 or 85, and the chances that they would work after age 62 or 65. We analyze the responses to determine if they behave like probabilities, if their averages are close to the average probabilities in the population, and if they are correlated with other variables similarly to correlations with actual outcomes. We find that generally the responses do behave like probabilities, and they do aggregate. Most remarkable, however, is that they covary with other variables in the same way that actual outcomes vary with those variables. For example, smokers give lower probabilities of living to age 75 than non-smokers do. We conclude that these measures of subjective probabilities have great potential use in models of intertemporal decisionmaking under uncertainty.

Technology and the Life Cycle of Cities

Elise S. Brezis and Paul R. Krugman

NBER Working Paper No. 4561

December 1993

JEL Nos. O14, O18, R12

International Trade and Investment

During times of major technological change, leading cities often are overtaken by upstart metropolitan areas. Such upheavals may be explained if the advantage of established urban centers rests on localized learning-by-doing. When a new technology is introduced for which this accumulated experience is irrelevant, older centers prefer to stay with a technology in which they are more efficient. However, new centers turn to the new technology, and are competitive despite the raw state of that technology because of their lower land rents and wages. Over time, as the new technology matures, the established cities are overtaken.

Entry and Exit, Product Variety,

and the Business Cycle

Satyajit Chatterjee and Russell W. Cooper

NBER Working Paper No. 4562

December 1993

Economic Fluctuations

We study the stochastic behavior of a dynamic general equilibrium model with monopolistic competition. Each seller sells his product in the consumption goods and the investment goods markets, and has market power in both. Consumers derive utility from an aggregate of all the consumption goods, and augment their capital stock by an aggregate of all the investment goods. We analyze the equilibrium of this economy, allowing for an endogenous determination of the number of firms, and therefore of products. The principal effect we highlight is the endogenous propagation and magnification of technology and preference disturbances through product space variations.

Immigration, Investment, and Real Wages

Elise S. Brezis and Paul R. Krugman

NBER Working Paper No. 4563

December 1993

JEL Nos. F12, F22

International Trade and Investment

When a country receives large-scale, politically motivated immigration—as has been the case for Israel in recent years—the initial impact is to reduce real wages. Over the longer term, however, the endogenous response of investment, together with increasing returns, may well actually increase real earnings. If immigration itself is not wholly exogenous, but responds to real wages, there may be multiple equilibriums. That is, optimism or pessimism about the success of the economy at absorbing immigrants may constitute a self-fulfilling prophecy.

The Influence of Nonmarital Childbearing on the Formation of First Marriages

Neil G. Bennett, David E. Bloom,

and Cynthia K. Miller

NBER Working Paper No. 4564

December 1993

JEL Nos. J12, J13

Labor Studies

We document a negative association between non-marital childbearing and the subsequent likelihood of first marriage—after controlling for a variety of potential confounding influences—in several large survey datasets for the United States. We then empirically test explanations of this finding.

Our analysis supports the following conclusions: Non-marital childbearing does not appear to be driven by low expectations of future marriage. Rather, nonmarital childbearing tends to be an unexpected and unwanted event that has multiple effects, on balance negative, on a woman's subsequent likelihood of first marriage. Fur-

ther, the upward trend in the proportion of childbearing that occurs outside of marriage may account for one-fourth of the increase in the proportion of women never marrying in the United States, over cohorts separated by almost two decades. However, we do find that nonmarital childbearers are more likely to enter informal cohabitational unions than are their single counterparts who do not bear a child.

We find that the negative association between out-of-wedlock childbearing and subsequent marriage is particularly strong among welfare recipients. Also, out-of-wedlock childbearing increases the likelihood that a woman marries her child's biological father. On the other hand, we find no evidence that stigma associated with nonmarital childbearing plays an important role in this process, or that the demands of children reduce the time that unmarried mothers have to devote to "marriage market activities."

The Role of Macroeconomic Factors in Growth

Stanley Fischer

NBER Working Paper No. 4565

December 1993

JEL Nos. E00, O11, C57

Economic Fluctuations, Monetary Economics

In this paper, I present cross-sectional and panel regressions showing that growth is negatively associated with inflation, large budget deficits, and distorted foreign exchange markets. Supplementary evidence suggests that the causation runs from macroeconomic policy to growth. The framework makes it possible to identify the channels of these effects: inflation reduces growth by reducing investment and productivity growth; budget deficits also reduce both capital accumulation and productivity growth. While low inflation and small deficits are not necessary for high growth, even over long periods, high inflation is not consistent with sustained growth.

Should the Government's Allocation Branch Be Concerned About the Distortionary Cost of Taxation and Distributive Effects?

Louis Kaplow

NBER Working Paper No. 4566

December 1993

JEL Nos. H41, H23, H21

Public Economics

Does taxation for public goods generally involve a distortionary cost? Are Pigouvian taxes desirable because they raise revenue without having to resort to distortionary taxes? Should decisions concerning public goods or Pigouvian taxes depend on whether their incidence is regressive? The answer to these questions may be negative, contrary to conventional wisdom, if one considers a different and arguably more natural method of achieving budget balance than is typically assumed.

Taking Trade Policy Seriously: Export Subsidization as a Case Study in Policy Effectiveness

Dani Rodrik

NBER Working Paper No. 4567

December 1993

JEL Nos. H20, F13, H30

International Trade and Investment

In thinking about policy, academic economists alternate between theoretical models, in which governments can design finely tuned optimal interventions, and practical considerations, which usually assume the government to be incompetent and hostage to special interests. I argue in this paper that neither of these caricatures is accurate, and that there is much to be learned by undertaking systematic, analytical studies of state capabilities: how they are generated, and why they differ across countries and issue areas. I present case studies of export subsidization in Korea, Brazil, Turkey, India, Kenya, and Bolivia to confront the usual presumptions against actual experience. Contrary to conventional wisdom, the successful cases of Korea and Brazil turn out to be the ones in which the government exercised discretion and selectivity; the most uniform and nondiscretionary cases, Kenya and Bolivia, were clear failures. I explain the paradox in terms of state autonomy and coherence of policy.

Prices, Wages, and Employment in the U.S. Economy: A Traditional Model and Tests of Some Alternatives

Albert Ando and Flint Brayton

NBER Working Paper No. 4568

December 1993

JEL Nos. E3, E5, J3

Economic Fluctuations

In this paper, we outline the cost-minimizing behavior of oligopoly firms and the price-adjustment process in the labor market that underlie the traditional formulation of aggregate wage-price behavior in the United States. We show that resulting equations applied to U.S. data remain stable before and after the significant change in the monetary policy rule that took place in 1979. This contradicts the prediction of the Lucas critique that, in response to a major change in the monetary policy rule, the Phillips curve and the price-setting equation of firms would have changed significantly. We test several competing hypotheses for the determination of the price level, including the possibility that the more direct effect of the money supply should be relevant. We thus show that our formulation dominates alternatives. Finally, we present evidence that the nature of capital is "putty-clay" rather than fully malleable, and put forth a demand function for labor based on this recognition. In the process of these inquiries, we contrast our formulation with that proposed by Layard and Nickell in England.

Dissaving by the Elderly, Transfer Motives, and Liquidity Constraints
Albert Ando, Luigi Guiso, and Daniele Terlizzese
NBER Working Paper No. 4569
December 1993
JEL Nos. D1, E2
Economic Fluctuations

Two explanations have been proposed for the observed slowness of wealth decumulation by the elderly: the precautionary saving induced by (uninsurable) uncertainty about the time of death, or by the possibility of major catastrophes in old age that require large outlays; and, the desire to pass part of the accumulated assets on to one's heirs. We assess the presence of an additional transfer motive, drawing on Italian data. We show that if intergenerational transfer of assets takes place well before the time of death, induced by the liquidity constraints on younger families, for example, then tests for the presence of a transfer motive might have little discriminatory power. In this case, we suggest that one look at the whole pattern of asset accumulation and decumulation. We also offer an alternative test of the bequest motive based on life insurance purchases.

Employment Effects of Minimum and Subminimum Wages: Reply to Card, Katz, and Krueger
David Neumark and William Wascher
NBER Working Paper No. 4570
December 1993
JEL Nos. J21, J23, J38
Labor Studies

In Neumark and Wascher (1992), we present findings supporting the earlier consensus that minimum wages reduce employment for teens and young adults with elasticities in the range -0.1 to -0.2 . In addition, we find that subminimum wages moderate these disemployment effects. Card, Katz, and Krueger (1993) criticize numerous aspects of our analysis, and contest our conclusions. This reply assesses their arguments, and presents additional evidence related to some of their criticisms. We conclude that the issues they raised do not alter the conclusions from our original paper, and in some cases even reinforce those conclusions.

What Moves the Discount on Country Equity Funds?
Gikas A. Hardouvelis, Rafael La Porta, and Thierry A. Wizman
NBER Working Paper No. 4571
December 1993
JEL Nos. G14, G15
International Finance and Macroeconomics

We characterize several empirical regularities of

closed-end fund prices, and examine the extent to which a "sentiment" model of asset prices is consistent with them. After controlling for the effect of restrictions on cross-border investment, we find that country funds trade at an average discount. Discounts vary substantially, and contribute to a variance in the weekly returns on a country fund generally three times greater than the returns on its net asset value (NAV). Regression analysis suggests that discounts have predictive power for fund returns, but not for NAV returns; this suggests that investor "sentiment" is a component of the price of a fund, and not of its NAV. There is also a significant and strongly persistent common component across fund discounts. Further, fund prices are "sticky" with respect to movements in the host country's stock market, and are overly sensitive to variation in the U.S. and world stock markets. This relationship is unaffected by considering separately funds whose host countries restrict cross-border investment and funds that invest in emerging stock markets.

Elderly Health, Housing, and Mobility
Jonathan S. Feinstein
NBER Working Paper No. 4572
December 1993
Aging, Health Care

In this paper, I construct dynamic economic models that focus on an elderly person's decision of whether to move in response to changes in his or her health. The models specify: three health states (good, moderately disabled, and poor); three housing states (conventional, transitional, and institutional); and several different kinds of mobility costs, including direct utility costs, indirect health effects of mobility, and financial transaction costs.

The first model I present examines elderly mobility in a simple environment in which utility depends only on the match between housing and health, and a bequest. The second model extends the first to incorporate housing prices, household wealth, and elderly consumption decisions.

Extensive simulations of these two models show that both of them predict considerable mobility, even when its costs are large. The results also highlight the importance of transitional housing, and provide evidence about the relationship between housing, mobility, household wealth, and consumption.

Is the Discount Window Necessary?
A Penn-Central Perspective
Charles W. Calomiris
NBER Working Paper No. 4573
December 1993
Monetary Economics

The discount window has been under attack recently as a costly and unnecessary tool of policy. This paper argues that the primary role of the discount window

should be to provide occasional, temporary support to particular financial markets during localized financial crises. The benefits of the discount window revolve around information externalities across firms, resulting from confusion over the incidence of bad news, or reductions in the net worth of market intermediaries. I review the history of the Penn Central commercial paper crisis of 1970, and the Fed's use of the discount window to combat that crisis. The crisis is visible in a pronounced decline in outstanding commercial paper, an increase in the interest rate spreads for commercial paper and for long-term debt, and declines in stock prices. Cross-sectional variation in abnormal stock returns indicates that, controlling for other factors, firms that were likely to have had outstanding debt in the form of commercial paper suffered larger negative returns during the onset of the crisis, and larger positive returns after the Fed intervened to lower the cost of commercial paper rollover. I consider implications of the 1970 crisis for current financial markets, and for discount window policy, in light of this evidence.

No Place Like Home: Tax Incentives and the Location of R and D by American Multinationals

James R. Hines, Jr.
NBER Working Paper No. 4574
December 1993
JEL Nos. H87, H25, F23
Public Economics

This paper analyzes the effects of the U.S. tax treatment of the R and D activities of American multinationals. Recent evidence indicates that the level of R and D spending is highly sensitive to its aftertax cost. The U.S. Tax Reform Act of 1986 reduced the tax deductions that many American firms can claim for their R and D expenses incurred in the United States, and on this basis, observers predicted that American firms would react to the tax change by significantly increasing the fraction of their R and D that they perform abroad. Aggregate data indicate that this fraction instead stayed roughly constant, at around 10 percent.

An important reason why U.S. firms did not move more of their total R and D activity offshore is that U.S. tax law provides quite generous treatment of R and D performed in the United States for use abroad by firms with excess foreign tax credits, and the Tax Reform Act of 1986 significantly increased the number of American firms with excess foreign tax credits. Hence, the 1986 tax change increased the cost of U.S.-based R and D for some American firms, and reduced it for others, with little impact on the overall fraction of R and D spending that U.S. firms do abroad. One consequence of the tax law changes of the late 1980s is that, by 1991, the tax treatment of foreign-source royalties received by American firms with excess foreign tax credits has five times the revenue impact of the Research and Experimentation Tax Credit.

Does Electoral Accountability Affect Economic Policy Choices? Evidence from Gubernatorial Term Limits

Timothy Besley and Anne Case
NBER Working Paper No. 4575
December 1993
JEL Nos. D72, H72
Public Economics

We use data from the U.S. states to investigate whether electoral accountability affects economic policy choices. We set up a model in which the possibility of being reelected may curtail opportunistic behavior by incumbent governors. We find that facing a binding term limit affects choices on taxes, expenditures, state minimum wages, and mandates on workers' compensation. Such effects also vary with the party affiliation of the incumbent. The Democratic party also appears to suffer at the polls following the term of a lame-duck, Democratic incumbent.

Energy Taxes and Aggregate Economic Activity

Julio J. Rotemberg and Michael Woodford
NBER Working Paper No. 4576
December 1993
JEL Nos. H21, H25
Economic Fluctuations, Public Economics

This paper shows that the output losses from energy taxes are significantly larger than usually computed because of imperfect competition among firms that use energy. Even with perfect competition, the loss in GNP is as large as the revenue raised by the taxes. However, in the presence of imperfect competition, the output losses are much higher. There are particularly large transitory losses in the immediate aftermath of energy price increases when firms act as implicitly colluding oligopolists. These losses will be considerably smaller if energy taxes are phased in.

We also show that taxes that affect only household consumption of energy have much smaller effects on output. In particular, for the empirically plausible parameter values we consider, such taxes have no effect on employment or output in the nonenergy sector.

Evidence on Macroeconomic Complementarities

Russell Cooper and John C. Haltiwanger
NBER Working Paper No. 4577
December 1993
JEL No. E32
Economic Fluctuations

This paper provides empirical evidence on macroeconomic complementarities, a restriction on the nature of interaction between individuals in a multiagent setting. These models imply that activities across agents will be correlated positively, that discrete decisions will be synchronized, and that disturbances will be magnified and

propagated. We show that these implications are consistent with aggregate observations, as well as with some microeconomic evidence. Further, looking at certain historical episodes as well as seasonal fluctuations provides additional support for models with macroeconomic complementarities.

The Dynamics of High Inflation

Laurence M. Ball

NBER Working Paper No. 4578

December 1993

JEL No. E31

Economic Fluctuations, Monetary Economics

This paper presents a model of a high-inflation economy that includes: the government budget constraint and the money demand equation from Cagan (1956); an accelerationist Phillips curve that captures inflation inertia; and an aggregate spending equation that accounts for the effects of the inflation tax. I derive the dynamic effects of fiscal policy, incomes policies, and supply shocks, and use the results to interpret the high-inflation episodes of the 1970s and 1980s.

The Effect of Equity Barriers on Foreign Investment in Developing Countries

Stijn Claessens and Moon-Whoan Rhee

NBER Working Paper No. 4579

December 1993

International Finance and Macroeconomics

This paper investigates the performance of stocks in emerging markets in relation to the accessibility of those markets for foreign investors. We reject the existence of integration for most markets, but cannot rule out segmentation. We find a positive relationship between a stock's P/E ratio and its investability index for most emerging markets. This suggests that barriers to access by foreigners have a negative impact. For four markets, this result stands up to the inclusion of the world beta and to the degree of international spanning of the domestic market. We only find a significant negative relationship between the investability index and stock returns for Jordan. This is probably because the effects of changes in the degree of access over time confound the cross-sectional relationship between return and investability indexes.

An Empirical Assessment of the Proximity-Concentration Trade-Off Between Multinational Sales and Trade

S. Lael Brainard

NBER Working Paper No. 4580

December 1993

JEL Nos. F12, F21, F23

International Trade and Investment

This paper empirically investigates the role of transport costs, trade and investment barriers, produc-

tion scale economies, and firm-specific advantages in determining the use of overseas production relative to exports. The proximity-concentration hypothesis explains the share of total sales accounted for by affiliate sales: this share rises as transport costs and trade barriers increase and as plant scale economies and investment barriers decrease. Although, strictly speaking, the proximity-concentration hypothesis applies to the shares of sales and exports of affiliates rather than to their levels, the effects of trade and investment barriers on the levels are similar to the effects on the shares. Freight factors affect trade estimates similarly.

The elasticity of net affiliate sales, both inward and outward with respect to tariffs, is around 0.45. The elasticity of both imports and exports with respect to freight factors is -1.0 . However, the effect of freight factors on the level of affiliate sales is not robust.

The overall complementarity between trade and affiliate sales occurs in part because the intensity of relative income and intellectual property increases both. In contrast, affiliate sales and trade move in opposite directions as advertising intensity increases, suggesting that advertising-intensive products require a local presence.

Tax Evasion and the Allocation of Capital

Don Fullerton and Marios Karayannis

NBER Working Paper No. 4581

December 1993

JEL Nos. D58, H21

Public Economics

The efficiency cost of capital misallocations between the corporate and noncorporate sector typically is measured by statutory tax differences. But tax compliance for corporate-source income is high because of third-party reporting, while tax compliance for noncorporate rental income is low. Differential evasion thus exacerbates statutory differences, and enlarges the efficiency cost. To measure this effect, we build a numerical general equilibrium model in which households simultaneously choose portfolios of risky assets and fractions of income to report.

Energy Taxes: Traditional Efficiency Effects and Environmental Implications

Lawrence H. Goulder

NBER Working Paper No. 4582

December 1993

JEL Nos. H21, H23

Public Economics

This paper examines "traditional" (nonenvironmental) efficiency consequences and environmental effects of two energy tax policies: a tax on fossil and synthetic fuels based on BTU (or energy) content; and a tax on consumer purchases of gasoline. I use a model that uniquely combines attention to details of the U.S. tax system with a consolidated treatment of U.S. energy use and pollution emissions.

On traditional efficiency grounds, each of the energy

taxes emerges as more costly to the economy than increases in personal or corporate income taxes of equal revenue yield. Simulation experiments indicate that the excess costs of energy taxes are caused partly by their relatively narrow tax base. The application of the BTU tax to gross output (as compared with net output under an income tax) expands its excess costs; in contrast, the focus of the gasoline tax on consumption (as opposed to income) tends to mitigate its excess costs. On the environmental side, for each of eight major air pollutants considered, energy taxes induce reductions in emissions that are at least nine times larger than the reductions under the income tax alternatives.

Overall, this study indicates that the BTU and gasoline taxes considered are inferior to the alternatives on narrow efficiency grounds but superior on environmental grounds. Whether the environmental attractions of energy taxes are large enough to offset their relatively high nonenvironmental costs remains an open question.

An Empirical Assessment of the Factor-Proportions Explanation of Multinational Sales

S. Lael Brainard

NBER Working Paper No. 4583

December 1993

JEL Nos. F12, F23, F23

International Trade and Investment

This paper provides evidence challenging the factor-proportions explanation of multinational activity. I apply to the sales of affiliates the same tests on intraindustry ratios and total volumes that were used to demonstrate that a substantial part of trade is explained by factor proportions and income similarities, with surprisingly similar results. Some support for the factor-proportions hypothesis comes from comparing affiliate production destined for export to the parent market, the category of activity most likely to be motivated by factor proportions, with that destined for sale in the local market. Affiliate production destined for export home is moderately more responsive to differences in factor proportion. However, the two types of activity differ more in their response to transport costs and to destination market income. Overall, the evidence suggests that only a small part of multinational activity into and out of the United States in the late 1980s can be explained by differences in factor proportions.

Language, Employment, and Earnings in the United States: Spanish-English Differentials from 1970 to 1990

David E. Bloom and Gilles Grenier

NBER Working Paper No. 4584

December 1993

JEL Nos. J21, J23, J31

Labor Studies

This paper analyzes employment and earnings differentials between Spanish speakers and English speak-

ers in the United States, using data from the 1970, 1980, and 1990 U.S. Censuses. The results show that Spanish speakers, both men and women, do not perform as well in the labor market as English speakers. The results also reveal that Spanish-English differentials in earnings and unemployment increased slightly in the 1970s, most likely because of rapid growth in the number of Spanish speakers. By contrast, these differentials increased sharply in the 1980s, also a period of rapidly increasing supply. However, there is no evidence that the widening of differentials in the 1980s reflects an increase in the labor market rewards to English language proficiency. Rather, the widening differential appears to be the result of Spanish speakers having relatively few of those labor market characteristics, most notably education, whose market value increased dramatically during the 1980s.

Reemployment Probabilities over the Business Cycle

Guido Imbens and Lisa M. Lynch

NBER Working Paper No. 4585

December 1993

Labor Studies

We analyze the determinants of reemployment probabilities of young workers from 1978-89. We find considerable changes in the chances of young workers finding jobs over the business cycle, but the characteristics of those who begin jobless spells do not vary much over time. Therefore, government programs that target specific demographic groups may change individuals' positions within the queue of job seekers, but probably will have a more limited impact on the overall probability of reemployment. Living in an area with high local unemployment reduces the chances of reemployment, as does being in a long spell of nonemployment. However, while workers appear to be scarred by a long spell of unemployment, the damage seems to be reduced if they are unemployed in an area with high overall unemployment.

Should Liability Be Based on the Harm to the Victim or the Gain to the Injurer?

A. Mitchell Polinsky and Steven Shavell

NBER Working Paper No. 4586

December 1993

JEL Nos. K10, K13, K42

Law and Economics

Should the level of liability imposed on an injurer be based on the harm he caused, or on the gain he obtained from engaging in the harmful act? There is a strong reason to favor liability based on harm rather than gain when account is taken of the possibility of legal error. Notably, even a small underestimate of gain can lead an injurer to commit a harmful act when the harm greatly exceeds his gain, causing a large social loss. In contrast, a comparable error in the estimate of harm will not lead an injurer to engage in the harmful act when the harm significantly exceeds his gain. The gen-

eral superiority of harm-based liability holds under the rules of negligence and strict liability, and regardless of whether potential injurers know the error that will be made.

International Experiences with Securities Transaction Taxes

John Y. Campbell and Kenneth A. Froot

NBER Working Paper No. 4587

December 1993

JEL No. F1

Asset Pricing, International Trade and Investment, Public Economics

This paper studies the international experience with securities transaction taxes (STTs), using the Swedish and British systems as case studies. We argue that STTs are best thought of as taxes on different resources used in transactions: domestic brokerage services in the case of Sweden, and registration services in the British case. STTs give investors incentives to economize on the taxed resources by shifting trading to foreign markets or untaxed assets, or by reducing the volume of trade. We show that these effects can be important. Estimated revenues from an STT will be correspondingly overstated if they ignore such behavioral effects.

Continental Trading Blocs: Are They Natural, or Super-Natural?

Jeffrey A. Frankel, Ernesto Stein, and Shang-Jin Wei

NBER Working Paper No. 4588

December 1993

JEL No. F15

International Trade and Investment

Using the gravity model, we find three continental trading blocs: the Americas; Europe; and Pacific Asia. There is more intraregional trade than can be explained by the proximity of a pair of countries, their sizes and GNP per capita, and whether they share a common border or language. We then turn to the implications for economic welfare. Krugman has an argument against a three-bloc world, assuming no transport costs, and an argument in favor, which assumes prohibitively high transportation costs between continents. We complete the model for the realistic case in which intercontinental transport costs are neither prohibitive nor zero. If transport costs are low, then continental free trade areas can reduce welfare. We call such trading blocs super-natural. Within regional Preferential Trading Arrangements, partial liberalization is better than full liberalization, despite the GATT's Article 24. The super-natural zone occurs when the regionalization of trade policy exceeds what is justified by natural factors. Our estimates suggest that such trading blocs as the current EC are super-natural.

The Labor Market Effects of Introducing National Health Insurance: Evidence from Canada

Jonathan Gruber and Maria J. Hanratty

NBER Working Paper No. 4589

December 1993

JEL Nos. H51, I18, J32

Health Care, Labor Studies, Public Economics

While National Health Insurance (NHI) plans in the United States often are opposed on the basis of their potential effects on unemployment, there is no existing evidence on those effects. Therefore, we examine the employment consequences of NHI in Canada, using the fact that NHI was introduced on a staggered basis across the Canadian provinces. We examine monthly data on employment, wages, and hours across eight industries and ten provinces between 1961 and 1975. We find that employment actually rose after the introduction of NHI; wages increased as well, while average hours were unchanged.

The Internationalization of Equity Markets

Jeffrey A. Frankel

NBER Working Paper No. 4590

December 1993

JEL No. G15

International Finance and Macroeconomics

This introduction to a forthcoming NBER volume of the same title argues that in some respects the existing finance literature has not kept pace with world trends. Most empirical studies fail to take account of the diversity of assets offered by countries around the world, locales where investors live, and institutional peculiarities that characterize the markets that link assets and investors. Four of the papers in the volume are econometric studies of asset pricing and home-country bias in internationally integrated equity markets. The other four examine emerging markets, country funds, trading volume, location, taxes, controls, and other imperfections in international markets.

Estimation of the Depreciation Rate of Physical and R and D Capital in the U.S. Total Manufacturing Sector

M. Ishaq Nadiri and Ingmar R. Prucha

NBER Working Paper No. 4591

December 1993

Productivity

Numerous studies on production and cost, the sources of productivity, and on endogenous growth, have recognized the pivotal role of the physical capital stock. There is also a clear recognition by economists and policymakers that knowledge capital, approximated by R and D capital, is crucial for productivity growth and the transformation of the industrial structure of an economy. To estimate the contributions of physical and R and D capital, one must measure the stocks of physical and R

and D capital, which in turn requires measuring their depreciation rates. In this paper, we specify a model of factor demand that allows for estimating the depreciation rate of both physical and R and D capital jointly with the other parameters. For the U.S. total manufacturing sector, we estimate the depreciation rate of physical capital at 0.059 and of R and D capital as 0.12. We need only gross investment data to estimate the model parameters and the depreciation rates, and to generate consistent series for the stocks of physical and R and D capital.

Price Volatility and Volume Spillovers Between the Tokyo and New York Stock Markets

Takatoshi Ito and Wen-Ling Lin

NBER Working Paper No. 4592

December 1993

JEL Nos. G14, G15

International Finance and Macroeconomics

This paper presents a comprehensive study of the interactions among returns, volatility, and trading volume between the U.S. and Japanese stock markets, using intradaily data from October 1985 to December 1991. By examining the effect of foreign price volatility and trading volume on correlations between foreign and domestic stock returns, we aim to distinguish between the market contagion and informational efficiency hypotheses, in order to explain the cause of international transmission of stock returns and volatility. Our major findings are: 1) contemporaneous correlations of stock returns across these two markets are significant, and tend to increase during a high volatility period, which supports the informational efficiency hypothesis; 2) we do not find lagged volatility and volume spillovers across the two markets; and 3) the effect of the New York stock returns on the Tokyo returns exhibits a structural change in October 1987.

The Military Pension, Compensation, and Retirement of U.S. Air Force Pilots

John A. Ausink and David A. Wise

NBER Working Paper No. 4593

December 1993

Aging, Labor Studies

This paper uses the option value model of Stock and Wise to analyze the departure patterns of a sample of pilots in the United States Air Force. We describe pilot compensation and the military pension, as well as some details of the option value model and two other models: the Annualized Cost of Leaving (ACOL) model, which is used by the Department of Defense; and a variant of a dynamic programming model, proposed by Daoua and Moffitt. The option value model captures departure behavior much better than the ACOL model does, and substantially better than the dynamic programming model. The superiority of the option value model raises the possibility that individual decisionmaking may not always be modeled best by a formulation intended to cap-

ture "correct" economic calculations. This is consistent with findings by Lumsdaine, Stock, and Wise for civilians in a *Fortune* 500 firm.

Health Insurance and Early Retirement: Evidence from the Availability of Continuation Coverage

Johnathan Gruber and Brigitte C. Madrian

NBER Working Paper No. 4594

December 1993

Health Care

Although the vast majority of working individuals aged 55–64 receive health insurance coverage through their employment, many of these individuals face the prospect of losing such coverage if they retire before becoming eligible for Medicare at age 65. Because the expected medical expenses of this group are large and uncertain, the availability of health insurance coverage after retirement could be a key factor in their retirement decisions. We study the effect of health insurance on early retirement by looking at variations in state and federal "continuation of coverage" mandates: laws that allow individuals to continue purchasing health insurance through a previous employer for a specified number of months after leaving the firm. By allowing individuals to maintain their employer-provided health insurance after retirement, these laws decrease the cost of early retirement for those who do not have other retiree health insurance available. Using data on 55–64-year-old men from the Current Population Survey, we find that one year of continuation benefits increases the probability of being retired by one percentage point: this represents a 5.4 percent increase in the baseline probability of being retired for this group. We also find that continuation mandates increase the likelihood of being insured after retirement.

An Exploratory Investigation of the Fundamental Determinants of National Equity Market Returns

Wayne E. Ferson and Campbell R. Harvey

NBER Working Paper No. 4595

December 1993

JEL Nos. F3, G1, O5, C4

Asset Pricing, International Finance and Macroeconomics

This paper studies average and conditional expected returns in national equity markets, and their relationship to a number of fundamental country attributes. The attributes are organized into three groups: 1) relative valuation ratios, including price-to-book-value, cash flow, earnings and dividends; 2) measures of relative economic performance; and 3) measures of industry structure. We find that average returns across countries are related to the volatility of their price-to-book ratios. Predictable variation in return also is related to relative gross domestic product, interest rate levels, and dividend-price ratios. We explore the possibility that cross-

sectional variation in the country attributes is a substitute for variation in the sensitivity of national markets to global measures of economic risks.

Jumps and Stochastic Volatility: Exchange Rate Processes Implicit in PHLX Deutschemark Options

David S. Bates

NBER Working Paper No. 4596

December 1993

JEL No. G13

Asset Pricing

I develop an efficient method for pricing American options on combination stochastic volatility/jump-diffusion processes when both jump risk and volatility risk are systematic and nondiversifiable, thereby nesting two major option pricing models. I then estimate the parameters *implicit* in PHLX-traded Deutschemark options of the stochastic volatility/jump-diffusion model and various submodels over 1984–91, and test for consistency with the \$/DM futures process and the implicit volatility sample path. I find the parameters implicit in options to be inconsistent with the time-series properties of implicit volatilities, but qualitatively consistent with log-differenced futures prices. There are no economically significant implicit expectations of exchange rate jumps in full-sample estimation, which is consistent with the reduced leptokurtosis of \$/DM weekly exchange rate changes over 1984–91 relative to earlier periods.

The Politics of Free Trade Agreements

Gene M. Grossman and Elhanan Helpman

NBER Working Paper No. 4597

December 1993

JEL Nos. F13, F15, D78

International Trade and Investment

Suppose that an opportunity arises for two countries to negotiate a free trade agreement (FTA). Will an FTA between these countries be politically viable? And if so, what form will it take? We address these questions using a political-economy framework that emphasizes the interaction between industry special interest groups and an incumbent government. We describe the economic conditions necessary for an FTA to be an equilibrium outcome, both for the case when the agreement must cover all bilateral trade and when a few, politically sensitive sectors can be excluded from the agreement.

Tests of CAPM on an International Portfolio of Bonds and Stocks

Charles M. Engel

NBER Working Paper No. 4598

December 1993

JEL No. F3

International Finance and Macroeconomics

This paper estimates and tests an international version of the Capital Asset Pricing Model (CAPM). Investors

from the United States, Germany, and Japan choose a portfolio that includes bonds and equities from each of these countries to maximize a function of the mean and variance of returns. Investors in each country evaluate returns in terms of their home currency. The CAPM has some power in explaining *ex ante* returns. It predicts fairly large risk premiums on the equities, but small ones on the bonds. I reject the model, however, when I test it against a more general alternative that allows for more investor heterogeneity than the CAPM.

The Role of Judgment and Discretion in the Conduct of Monetary Policy: Consequences of Changing Financial Markets

Benjamin M. Friedman

NBER Working Paper No. 4599

December 1993

JEL No. E5

Monetary Economics

Conventional monetary policy rules based on intermediate targets, such as the growth of money or credit, rest on the presumption that relationships connecting these variables to key measures of nonfinancial economic activity, such as income and prices, are robust. When financial markets change in such a way as to disrupt those relationships, then rules based on intermediate targets no longer provide useful guides for the conduct of monetary policy. Under those circumstances, the central bank instead can exploit money and credit, for example, as information variables. Doing so, however, inevitably requires case-by-case judgments. The greater the impact of changing financial markets in this context, the stronger is the need for the central bank to exploit information both inclusively, in the sense of drawing on multiple and diversified sources of information rather than any one variable, and intensively, in the sense of allowing less time between policy decisions.

The Wealth of Cohorts: Retirement Saving and the Changing Assets of Older Americans

David A. Wise and Steven F. Venti

NBER Working Paper No. 4600

December 1993

Aging, Labor Studies

Personal retirement accounts are becoming an increasingly important form of retirement saving. Using data from the Survey of Income and Program Participation, this paper considers the effect of this change on the assets of recent retirees and persons who are approaching retirement. Much of the analysis is based on comparison of younger and older cohorts with different lengths of exposure to personal retirement saving programs. The findings suggest that personal retirement saving already has added substantially to the personal financial assets of older families. Projections imply that the personal financial assets of the cohort that will reach

age 76 in 28 years will be almost twice as large as the personal financial assets of the cohort that reached age 76 in 1991. The results also indicate that to date there has been little replacement of employer-provided pension saving with personal retirement saving. Together with evidence that personal financial saving is unrelated to changes in home equity, the results suggest that personal retirement saving will lead to an important increase in the overall wealth of the elderly.

The Effects of Demographic Trends on Consumption, Saving, and Government Expenditures in the United States

Michael D. Hurd

NBER Working Paper No. 4601

December 1993

JEL Nos. H55, J14

Aging

This paper reviews and analyzes forecasts of the Social Security trust funds, government spending, medical expenditures, and other elements of aggregate income and spending. According to these forecasts, the aging of the U.S. population will require some increases in taxes to support the retirement system. Aging of the population should reduce the saving rate, and change the composition of output. By themselves, these changes seem manageable. However, the direct effects of aging are dominated completely by the projected increases in medical expenditures. Although medical costs interact with aging, most of the increases are not related to aging. Even the moderately high forecast of medical spending will require that all increases in output between now and 2020 be devoted to the consumption of medical services, allowing no increase in any other component of consumption.

Open Door Policy and China's Rapid Growth: Evidence from City-Level Data

Shang-Jin Wei

NBER Working Paper No. 4602

December 1993

JEL Nos. F00, C53, P21

International Trade and Investment

There is clear evidence that during 1980–90, an increase in exports was positively associated with higher growth rates across Chinese cities. In comparison, in the late 1980s, foreign investment made the main contribution to growth. The contribution of foreign investment comes in the form of technological and managerial spillover across firms, as opposed to an infusion of new capital. Finally, there is nothing magical about the high growth rates of Chinese coastal areas, other than their effective utilization of foreign investment and exports.

Uncovering Some Causal Relationships Between Productivity Growth and the Structure of Economic Fluctuations:

A Tentative Survey

Philippe Aghion and Gilles Saint-Paul

NBER Working Paper No. 4603

December 1993

JEL Nos. D21, E22, E23, D24

Economic Fluctuations

This paper discusses recent theoretical and empirical work on the interactions between growth and business cycles. There are two very different types of approaches to the problem of the influence of macroeconomic fluctuations on long-run growth. In one, which relies on learning-by-doing mechanisms or aggregate demand externalities, productivity growth and direct production activities are complements. Therefore, an expansion has a positive long-run effect on total factor productivity. In the second, hereafter labeled "opportunity cost" or "learning-by-doing," productivity growth and production activities are substitutes. The opportunity cost of some productivity-improving activities falls in a recession, which has a long-run positive impact on output. This does not mean, however, that recessions on average should last longer or be more frequent, since the expectation of future recessions reduces today's incentives for productivity growth. We also briefly discuss some empirical work that is mildly supportive of the opportunity cost approach, while showing that it can be reconciled with the observed procyclical behavior of measured total factor productivity. We also describe some theoretical work on the effects of growth on business cycles.

The Simplest Test of Inflation Target Credibility

Lars E. O. Svensson

NBER Working Paper No. 4604

December 1993

JEL Nos. E43, E52, E58, G12

International Finance and Macroeconomics

I construct a simple test of inflation target credibility by subtracting the maximum and minimum inflation rates consistent with the inflation targets from the yields-to-maturity on nominal bonds. This results in a target-consistent range of real yields on nominal bonds. If expected real yields, or market real interest rates on real bonds, if they are available, fall outside of the range of target-consistent real yields, then credibility is rejected. I distinguish two concepts of credibility: absolute credibility and credibility in expectation. I then examine the inflation targets of Canada, New Zealand, and Sweden with convenient diagrams over yields to maturity and forward interest rates.

Determinants of Timing and Incidence of Exploratory Drilling on Offshore Wildcat Tracts

Kenneth Hendricks and Robert H. Porter

NBER Working Paper No. 4605

December 1993

JEL Nos. D83, L72

Industrial Organization

This paper documents exploratory drilling activity on offshore wildcat oil and gas leases in the Gulf of Mexico that were sold between 1954 and 1990, with emphasis on the period before 1980. For each year of the lease, we study the determinants of the decision whether or not to begin exploratory drilling, and the outcome of any drilling activity. Our results indicate that equilibrium predictions of plausible noncooperative models are reasonably accurate, and more descriptive than those of cooperative models of drilling timing. We discuss why noncooperative behavior may occur, and the potential gains from coordination.

The Political Economy of Declining Industries: Senescent Industry Collapse Revisited

S. Lael Brainard and Thierry Verdier

NBER Working Paper No. 4606

December 1993

JEL Nos. F13, D72

International Trade and Investment

One of the most robust empirical regularities in the political economy of trade is the persistence of protection. This paper explains persistent protection in terms of the interaction among industry adjustment, lobbying, and the political response. Faced with a trade shock, owners of industry-specific factors can undertake costly adjustment, or they can lobby politicians for protection, thereby mitigating the need for adjustment. The choice depends on the returns from adjusting relative to lobbying. By introducing an explicit lobbying process, we can show that the level of tariffs is an increasing function of past tariffs. Since current adjustment diminishes future lobbying intensity, and protection reduces adjustment, current protection raises future protection. This simple lobbying feedback effect has an important effect on dynamic resource allocation: declining industries contract more slowly over time and never fully adjust. In addition, the model makes clear that the type of collapse predicted by Cassing and Hillman (1986) is possible only under special conditions, such as a fixed cost to lobbying. The paper also considers the symmetric case of lobbying in growing industries.

Transfer Behavior: Measurement and the Redistribution of

Resources Within the Family

Kathleen McGarry and Robert F. Schoeni

NBER Working Paper No. 4607

January 1994

JEL No. J1

Aging

Recent work by a number of economists has opened a debate about the role of intergenerational transfers. Using the new Health and Retirement Survey (HRS), we are better able to address the issues involved. Contrary to the current literature on bequests, our research shows that parents do not give transfers equally to all children. Rather, we find that in the case of *inter vivos* transfers, respondents give more financial assistance to their less-well-off children, relative to their children with higher incomes. Financial transfers to elderly parents also are negatively related to the (potential) recipient's income. These results hold both for the incidence and for the amounts of transfers.

Additionally, we allow for unobserved differences across families, and find that our results still hold. Thus, we cannot reject altruism as a possible motivation for transfers. In comparison to other survey data, the HRS is potentially quite useful for research on transfer behavior.

Auctions Versus Negotiations

Jeremy I. Bulow and Paul Klemperer

NBER Working Paper No. 4608

January 1994

Corporate Finance

Which is the more profitable way to sell a company: a public auction, or an optimally structured negotiation with a smaller number of bidders? We show that under standard assumptions, the public auction is always preferable, even if it forfeits all the seller's negotiating power, including the ability to withdraw the object from sale, if it attracts at least one extra bidder. An immediate public auction also dominates negotiating, while preserving the right to hold a subsequent auction with more bidders. The results hold for both the standard independent private values model and a common values model. They suggest that the value of negotiating skill is small relative to the value of additional competition.

The Best Business Schools:

A Market-Based Approach

Joseph Tracy and Joel Waldfogel

NBER Working Paper No. 4609

January 1994

JEL Nos. M10, J31

Labor Studies

We present a new methodology for ranking business schools. Unlike previous rankings based on subjective survey responses (from CEOs, business school deans, recruiters, or graduates), our approach uses data from

the labor market for new MBAs. We adjust graduates' salaries in an attempt to distinguish value added during the program from the quality of incoming students. We then rank programs according to their value added.

Our results are rather surprising. While four of our top five programs also are labeled top in other rankings, ten of our top twenty are previously unranked. By emphasizing value added, our procedure identifies several programs that have been overlooked by other rankings, since those programs do not recruit the very top students. We explore the determinants of our measures of value added and student quality, and find that connections to the business community are related positively to value added, while academic research and high faculty salaries are more strongly associated with student quality. We also find that tuition is better explained by our measure of value added than by raw salary, suggesting that programs charge according to value added.

Quality Improvements in Models of Growth

Robert J. Barro and Xavier Sala-i-Martin

NBER Working Paper No. 4610

January 1994

JEL Nos. O40, O30

Growth, Productivity

Technological progress takes the form of quality improvements in an array of intermediate inputs to production. In a standard equilibrium, all research is carried out by outsiders, and success means that the outsider replaces the incumbent as the industry leader. The equilibrium research intensity involves three considerations: leading-edge goods are priced above the competitive level; innovators value the extraction of monopoly rents from predecessors; and innovators regard their successes as temporary. We show that, if industry leaders have lower costs of research, then in equilibrium the leaders will do all the research. However, if the cost advantage is not too large, then the equilibrium research intensity and growth rate depend on the existence of the competitive fringe, and take on the same values as in the standard solution. We discuss the departures from Pareto optimality, and analyze the determination of the economy's rate of return and growth rate.

International Equity Transactions and U.S. Portfolio Choice

Linda L. Tesar and Ingrid M. Werner

NBER Working Paper No. 4611

January 1994

Asset Pricing, International Finance and Macroeconomics, International Trade and Investment

We study the cross-border transactions in equity by investors in Canada, Germany, Japan, the United Kingdom, and the United States. We find that investors from different countries make very different decisions about the allocation of their portfolios across markets. In con-

tradition to the notion that high variable transactions costs hinder international diversification, we find that the volume of gross equity flows vastly exceeds net equity flows, and the turnover rate on foreign equity investments by some investors even exceeds domestic turnover rates. We also reject the hypothesis that U.S. investors follow the standard Capital Asset Pricing Model in allocating their global equity portfolios.

Cities and Growth: Theory and Evidence from France and Japan

Jonathan Eaton and Zvi Eckstein

NBER Working Paper No. 4612

January 1994

JEL Nos. F43, R1

International Trade and Investment

The relative distribution of the populations of the top 40 urban areas of France and Japan remained very constant during those countries' periods of industrialization and urbanization. Moreover, projection of their future population distributions based on past growth indicates that their size distributions in the steady state will not differ essentially from what they have been historically. Consequently, urbanization appears to have taken the form of the parallel growth of cities, rather than of convergence to an optimal city size, or of the divergent growth of the largest cities.

We develop a model of urbanization and growth that is based on the accumulation of human capital and is consistent with these observations. Our model predicts that larger cities will have higher levels of human capital, higher rents, and higher wages per worker, even though workers are homogeneous and free to migrate between cities. Cities grow at a common growth rate, with relative city size depending upon the environment provided for learning.

Retirement Incentives: The Interaction Between Employer-Provided Pensions, Social Security, and Retiree Health Benefits

Robin L. Lumsdaine, James H. Stock, and David A. Wise

NBER Working Paper No. 4613

January 1994

JEL Nos. J14, J26

Aging, Labor Studies, Public Economics

Proposed changes in the U.S. Social Security provisions include increasing the normal retirement age from 65 to 67 and raising from 3 percent to 8 percent the increase in benefits for each year that retirement is delayed after normal retirement. We consider the interaction between these changes and the provisions of employer-provided pension plans. We conclude that, for people with an employer-provided defined-benefit plan, the Social Security changes will have little effect on labor force participation, but changes in the firm plan—such as increasing the early retirement age—would have very large effects on labor force participation.

Capital Market Imperfections and Countercyclical Markups:

Theory and Evidence

Judith A. Chevalier and David S. Scharfstein

NBER Working Paper No. 4614

January 1994

Industrial Organization

During recessions, output prices tend to rise relative to wages and raw materials prices. One explanation of this fact is that imperfectly competitive firms compete less aggressively during recessions: that is, markups of price over marginal cost are countercyclical. We present a model in which markups are countercyclical because of imperfections in the capital market. During recessions, liquidity-constrained firms try to boost short-run profits by raising prices to cut their investments in market share. We provide evidence from the supermarket industry to support this theory. We show that during regional and macroeconomic recessions, the most financially constrained supermarket chains tend to raise their prices relative to the less financially constrained chains.

Flexibility: A Partial Ordering

Kala Krishna and Marie C. Thursby

NBER Working Paper No. 4615

January 1994

International Trade and Investment

We use an approach developed by Krishna and Young to examine the ability of economies to adjust to exogenous shocks. While, in general, economies cannot be ranked in terms of their flexibility, we provide a partial ordering for certain types of economies. In particular, we use properties of the revenue function to show that restricting factor mobility and production in certain sectors reduces the flexibility of a small open economy with respect to all price, endowment, and technology shocks that are small enough. Since these restrictions are distortions, we would expect them to reduce the level of GNP in the economy. We find that, not only is the level of GNP affected, but the intrinsic ability of the economy to adjust to shocks is also reduced.

Fluctuations, Instability, and Agglomeration

Paul R. Krugman

NBER Working Paper No. 4616

January 1994

JEL Nos. R0, R1

International Trade and Investment

Recent models in economic geography suggest that there may be very large numbers of equilibrium spatial structures. However, simulations suggest that the structures that emerge are surprisingly orderly and often seem to follow simple rules about the spacing of urban sites. This paper offers an explanation in terms of the process by which a spatial economy diverges from an even distribution of activity across the landscape. It shows that a small divergence of activity away from spatial uniformity, even if it is highly irregular, can be regard-

ed as the sum of a number of simple periodic fluctuations at different spatial "wavelengths"; these fluctuations grow at different rates. There is a particular "preferred wavelength" that grows fastest; provided that the initial distribution of activity across space is flat enough, this preferred wavelength eventually dominates the spatial pattern and becomes the typical distance between cities. This approach suggests that surprisingly simple principles of self-organization may lie beneath the surface of models that appear at first to yield hopelessly complex possibilities.

Minimum Wage Effects and Low-Wage Labor Markets: A Disequilibrium Approach

David Neumark and William Wascher

NBER Working Paper No. 4617

January 1994

JEL Nos. D33, J23, J38, J42

Labor Studies

We present a new approach to estimating minimum wage effects on employment. In contrast to most previous researchers, we account for the possibility that the relationship between minimum wages and employment depends on the magnitude of the legislated minimum wage relative to the equilibrium wage in the absence of legislation. In particular, we separate sample observations into those that are on the labor demand curve but off the labor supply curve, and those that are at labor market equilibriums. We also estimate the impact of labor market characteristics on the probability that minimum wages are binding.

The Role of Exclusive Territories in Producers' Competition

Joseph E. Stiglitz and Patrick Rey

NBER Working Paper No. 4618

January 1994

Industrial Organization

We show how vertical restraints, which affect intra-brand competition, can and will be used as an effective mechanism for reducing interbrand competition and increasing producer profits. In particular, we show how exclusive territories alter the perceived demand curve, making each producer believe that he faces a less elastic demand curve, thereby inducing an increase in the equilibrium price. The use of exclusive territories may increase producers' profits, even if the producers cannot charge franchise fees, and so cannot recapture from the retailers the monopoly rents they earn from their exclusive territory. We show that "double marginalization" effects can be overcome by the strategic effect on producers' competition.

We provide a model in which we can clearly specify the full range of feasible contracts between producers and retailers, and show that it is always a dominant strategy for firms to use exclusive territories (so that exclusive territories are used in equilibrium). The best situation from the producers' viewpoint may or may not en-

tail franchise fees. In all cases, exclusive territories hurt consumer surplus and reduce total welfare, which yields a different light on vertical restraints from a competition policy perspective.

Life-Cycle Versus Annual Perspectives on the Incidence of a Value-Added Tax

Gilbert E. Metcalf

NBER Working Paper No. 4619

January 1994

JEL No. H2

Public Economics

Using a lifetime perspective, I analyze the distribution of tax burdens with a value-added tax (VAT). In contrast to the results of an annual snapshot perspective, it turns out that a VAT on total expenditures would be proportional over the lifetime. Various modifications to the VAT (zero rating necessities, or giving lump sum rebates to households) would increase the progressivity of the tax substantially. However, the additional progressivity comes at the cost of substantial tax revenue.

A Theory of Gradual Trade Liberalization

Robert W. Staiger

NBER Working Paper No. 4620

January 1994

JEL No. F13

International Trade and Investment

I propose a theory of gradual trade liberalization, considering only countries that are limited to self-enforcing arrangements. I argue that enforcement problems associated with maintaining low cooperative tariffs are exacerbated by the presence of resources in the import-competing sector that are (or potentially could be) earning rents from their sector-specific skills. Intuitively, by being able to transform a portion of what otherwise would be dead weight loss into rents under a tariff hike, the presence of such resources makes deviation from a low cooperative tariff to a high tariff more desirable for the deviating country; punishments under reciprocally high tariffs are also less painful. Hence, the presence of rent-collecting resources in an import-competing sector deters trade liberalization. But if an initial "round" of liberalization can induce at least a portion of resources in the import-competing sector to relocate to the rest of the economy, and if not using sector-specific skills causes these resources to lose them, then enforcement issues also will diminish over time, and the effects of the initial round will make further rounds of liberalization possible. I formalize this gradual process of trade liberalization, and explore the consequences of a failed round for the ability to maintain current levels of cooperation.

Predictable Risk and Returns in Emerging Markets

Campbell R. Harvey

NBER Working Paper No. 4621

January 1994

JEL Nos. F3, G0, G1

Asset Pricing

The emergence of new equity markets in Europe, Latin America, Asia, the Mideast, and Africa provides new opportunities for investors. These markets exhibit high expected returns as well as high volatility. Importantly, the low correlations with developed countries' equity markets significantly reduce the unconditional portfolio risk of a world investor. However, standard global asset pricing models, which assume complete integration of capital markets, fail to explain the cross section of average returns in emerging countries. An analysis of the predictability of the returns reveals that in these emerging markets returns are more likely to be influenced by local information than those in developed countries.

Sources of Risk and Expected Returns in Global Equity Markets

Wayne E. Ferson and Campbell R. Harvey

NBER Working Paper No. 4622

January 1994

JEL Nos. F3, G0, G1, C5

Asset Pricing

This paper empirically examines multifactor asset pricing models for the returns and expected returns on 18 national equity markets. The factors chosen measure global economic risks. Although previous studies do not reject the unconditional mean-variance efficiency of a world market portfolio, our evidence indicates that the tests are low in power, and that the world market betas do not provide a good explanation of cross-sectional differences in average returns. Multiple beta models better explain the equity returns.

Conditional Asset Allocation in Emerging Markets

Campbell R. Harvey

NBER Working Paper No. 4623

January 1994

JEL Nos. G0, G1

Asset Pricing

Within the context of conditional asset allocation strategies, I explore the implications of the low correlations of emerging market returns with developed market returns, and the relatively high degree of predictability of emerging countries' returns. Low correlations improve investment opportunities; my research provides out-of-sample validation of improved performance. However, the most dramatic performance enhancement is generated by the use of conditioning information. Portfolio strategies that use conditioning information to predict emerging market returns produce impressive out-of-sample performance between 1980 and 1992.

The Implications of First-Order Risk Aversion for Asset Market Risk Premiums

**Geert Bekaert, Robert J. Hodrick,
and David A. Marshall**

NBER Working Paper No. 4624

January 1994

JEL Nos. G12, F3

Asset Pricing

Existing general equilibrium models based on traditional expected utility preferences have been unable to explain the predictability of excess returns observed in equity markets, bond markets, and foreign exchange markets. In this paper, we abandon the expected-utility hypothesis in favor of preferences that exhibit first-order risk aversion. We incorporate these preferences into a general equilibrium two-country monetary model, solve the model numerically, and compare the quantitative implications of the model to estimates obtained from U.S. and Japanese data for equity, bond, and foreign exchange markets. Although increasing the degree of first-order risk aversion substantially increases the predictability of excess returns, the model remains incapable of generating sufficiently large predictability of excess returns to match the data. We conclude that the observed patterns of excess return predictability are unlikely to be explained purely by time-varying risk premiums generated by highly risk-averse agents in a complete markets economy.

New Facts About Factor-Demand Dynamics: Employment, Jobs, and Workers

**Daniel S. Hamermesh, Wolter H. J. Hassink,
and Jan C. van Ours**

NBER Working Paper No. 4625

January 1994

JEL No. J23

Labor Studies

We provide a unified discussion of the relationships among flows of workers, changes in employment, and changes in the number of jobs at the level of the firm. Using the only available set of data (a nationally representative sample of Dutch firms in 1988 and 1990), we discover that: 1) nearly half of all hiring is by firms in which employment is not growing; 2) over half of all firing is by firms that are not contracting; 3) most firing is by firms that are also hiring; 4) flows of workers within firms are small compared to flows into and out of firms; and 5) accounting for simultaneous creation and destruction of jobs within firms adds roughly 15 percent to estimates of economywide job creation and destruction. The results imply that macroeconomic fluctuations can have substantial effects beyond those indicated by net employment changes at the firm level, and that studies of dynamic factor demand must account for variations in gross flows of workers.

The New Regionalism: Trade Liberalization or Insurance?

Carlo Perroni and John Whalley

NBER Working Paper No. 4626

January 1994

International Trade and Investment

Several of the recently negotiated regional trade agreements (Canada-U.S.; NAFTA; E.C.-Hungary/Poland/Czech and Slovak Republics) contain significantly fewer concessions by the large countries to smaller countries than vice versa. Yet, it is small countries that have sought them, and see themselves as the main beneficiaries. In this paper, we attempt to resolve this seeming paradox by interpreting such agreements as insurance arrangements for smaller countries, which partially protect them against the consequences of a global trade war. What they offer to the large countries in return is largely nontrade benefits (such as restraints on domestic policies in the smaller countries; firmer intellectual property protection; and firmer guarantees of royalty arrangements affecting resources on state-owned lands).

When evaluated alongside the regional trade arrangements of the 1960s (such as the European Community or EC), these agreements may appear to produce little or no benefit for smaller countries relative to the status quo. But, when evaluated relative to a post-retaliation tariff equilibrium, the value of these agreements to small countries is large, because they help to preserve existing access to larger foreign markets. There is little incentive for large countries to negotiate such arrangements without side payments, because these agreements constrain their ability to play strategically against smaller neighboring countries (who are still important trade partners) in a trade war.

Using a calibrated numerical general equilibrium model of world trade, we compute post-retaliation tariffs by region under various regional and other trade arrangements, with aggregates of importables and exportables for the key trading areas (United States, E.C., Japan, Canada, Mexico, other Western Europe, rest-of-the-world). Regional agreements constrain strategic behavior within each trading area, and enhance it outside the bloc. Our results confirm the intuition that, without side payments, large-small country regional agreements will not occur. We provide insights on other related issues, such as sequential bloc formation (Mexico to follow Canada), and simultaneous bloc formation (NAFTA and E.C.-EFTA).

The New York Stock Market in the 1920s and 1930s: Did Stock Prices Move Together Too Much?

Eugene N. White and Peter Rappoport

NBER Working Paper No. 4627

January 1994

JEL Nos. G12, N22

Development of the American Economy

By studying individual stock returns, we reexamine the market of the 1920s and 1930s for evidence of a

bubble, a "fad," or "herding" behavior. One story often advanced is that the boom of 1928 and 1929 was driven by the entry into the market of largely uninformed investors, who followed the fortunes of, and invested in, "favorite" stocks. The recent theoretical literature on how "noise traders" perturb financial markets is consistent with this description. The result of this behavior would be a tendency for the favorite stocks' prices to move together more than would be predicted by their shared fundamentals. Our results suggest that there was excess comovement in returns, even before the boom began. But comovement increased significantly during the boom, and was a signal characteristic of the tumultuous market of the early 1930s. These results are thus consistent with the possibility that a fad or crowd psychology played a role in the rise of the market, its crash, and subsequent volatility.

Evaluating Labor Adjustment Costs from Trade Shocks: Illustrations for the U.S. Economy Using an Applied General Equilibrium Model with Transactions Costs
Ramon L. Clarete, Irene Trela, and John Whalley
NBER Working Paper No. 4628
January 1994
International Trade and Investment

We present a general equilibrium approach to calculating costs of labor adjustment induced by changes in trade policy or external sector shocks. We illustrate the approach by analyzing the adjustment consequences of eliminating quotas and tariffs on U.S. imports.

Factor adjustments in the presence of transactions costs are determined endogenously within the equilibrium structure. The conventional way of calculating such labor adjustment costs is to use full equilibrium models that exclude adjustment costs, and apply exogenous estimates of duration of unemployment to implied intersectoral labor reallocations. By using an equilibrium model without adjustment costs, the conventional approach tends to overstate the amount of labor that moves to other sectors, and hence introduces an upward bias to estimates of adjustment costs. Also, such an approach tends to ignore the impact on intersectoral wage rates. Our results suggest that concerns over adjustment problems should focus as much on the consequences of adjustment costs in impeding factor mobility as on the magnitude of the adjustment costs themselves. Compared to the redistributive effects they induce by inhibiting labor movement in response to policy or other changes, these costs may be small.

Retirement in a Family Context: A Structural Model for Husbands and Wives
Alan L. Gustman and Thomas L. Steinmeier
NBER Working Paper No. 4629
January 1994
JEL Nos. D1, J14, J26
Aging

We specify and estimate a model of retirement of

married couples using recent panel data from the National Longitudinal Survey for Mature Women. A coincidence of spouses retiring together, despite the younger ages of wives, suggests explicit efforts at coordination. Our estimates suggest that one reason is a coincidence of tastes for leisure. More importantly, each spouse, and perhaps husbands in particular, values retirement more after their spouse has retired. The opportunity set accounts for peaks in the retirement hazards of each spouse, but coordination in opportunities is not responsible for coordination of retirement dates.

Exchange Rate Volatility, Monetary Policy, and Capital Mobility: Empirical Evidence on the Holy Trinity

Andrew K. Rose
NBER Working Paper No. 4630
January 1994
JEL Nos. F31, F33
International Finance and Macroeconomics

This paper uses a panel of data from 22 countries between 1967 and 1992 to explore the trade-off between the "Holy Trinity" of fixed exchange rates, independent monetary policy, and capital mobility. I use exchange rate models with both flexible and sticky prices to parameterize monetary divergence; factor analysis to extract measures of capital mobility from a variety of different indicators; and conditional exchange rate volatility to measure the degree to which the exchange rate is fixed. Exchange rate volatility is linked loosely to both monetary divergence and the degree of capital mobility. Interestingly, exchange rate volatility is correlated significantly with the width of the explicitly declared exchange rate band, even after taking monetary divergence and capital mobility into account.

Accuracy, Complexity, and the Income Tax

Louis Kaplow
NBER Working Paper No. 4631
January 1994
JEL No. H24
Public Economics

The complexity of the income tax is an unending source of complaint. Compliance costs have received increasing attention and are estimated to be large. Yet most people recognize that some degree of complexity is necessary if the ability to pay is to be measured accurately. I present a framework for analyzing the value of greater accuracy in income taxation, offering formulations for both distributive and incentive benefits of accuracy. I also examine the question of whether taxpayers have excessive or inadequate incentives to acquire information about taxable income and to challenge tax assessments.

Public Pension Performance and Governance

Olivia S. Mitchell and Ping Lung Hsin

NBER Working Paper No. 4632

January 1994

JEL No. J3, J28, J38

Aging, Asset Pricing, Labor Studies

We investigate the determinants of investment and funding behavior for public sector pension plans so that their design and governance ultimately might be improved. Our study suggests that most large public pension systems did fund their plans satisfactorily in 1990, although some did not. Better funding was associated with a pension system with in-house actuaries, and pension board members required to carry liability insurance. In contrast, public pension funding was lower in states experiencing fiscal stress, and where employees were represented on the pension system board. Pension funding did not appear sensitive to statutes guaranteeing benefits or funding levels, nor to the ability of states to carry budget deficits from one year to the next. Our results also suggest that public pension boards with more retiree-trustees experience lower investment returns, as do public sector pension plans required to devote a portion of their assets to in-state investments. Returns do not differ depending on whether a pension board has in-house, or external, money managers.

No single set of pension plan management practices can optimize plan performance for all systems across all time periods. Nevertheless, our results suggest that care must be taken when designing the regulatory and investment environment in which these plans operate.

Monetary Policy with Flexible Exchange Rates and Forward Interest Rates as Indicators

Lars E. O. Svensson

NBER Working Paper No. 4633

January 1994

JEL No. E50, E52, F31

International Finance and Macroeconomics,
Monetary Economics

In the new situation with flexible exchange rates, monetary policy in Europe will have to rely more on indicators than was previously the case under fixed rates. One of the potential indicators, the forward interest rate curve, can be used to indicate market expectations of the time-paths of future short interest rates, monetary policy, inflation rates, and currency depreciation rates. The forward rate curve separates market expectations for the short, medium, and long term more easily than the standard yield curve does. I interpret monetary policy in France, Germany, Great Britain, Sweden, and the United States with the help of forward rates.

Economic Growth and the Environment

Gene M. Grossman and Alan B. Krueger

NBER Working Paper No. 4634

February 1994

JEL Nos. Q25, O57

International Trade and Investment, Public Economics

Using data assembled by the Global Environmental Monitoring System, we examine the relationship between various environmental indicators and a country's per capita income. Our study covers four types of indicators: concentrations of urban air pollution; measures of the state of the oxygen regime in river basins; concentrations of fecal contaminants in river basins; and concentrations of heavy metals in river basins. We find no evidence that environmental quality deteriorates steadily with economic growth. Rather, for most indicators, economic growth brings an initial phase of deterioration followed by a subsequent phase of improvement. The turning points for the different pollutants vary, but in most cases they come before a country reaches a per capita income of \$8000.

Employee Decisions with Respect to 401(k) Plans: Evidence from Individual-Level Data

**Andrea L. Kusko, James M. Poterba,
and David W. Wilcox**

NBER Working Paper No. 4635

February 1994

JEL Nos. H2, J3

Aging, Public Economics

401(k) plans have been the most rapidly growing type of employer-provided pension plan during the last decade. This paper uses employee-level data from the 401(k) plan at a medium-sized U.S. manufacturing firm to analyze the participation and contribution decisions of workers eligible for this plan.

Our analysis reveals two important features of the behavior of 401(k) participants. First, contribution decisions of eligible employees are relatively insensitive to the rate of employer matching on worker contributions. At the firm we study, most employees maintain the same participation status and contribution rate year after year, despite substantial changes in the employer's match rate. This suggests that employer matching may not be a critical factor in explaining the growth of 401(k) plans.

Second, institutional constraints on contributions, imposed either by the employer or by the IRS, are an extremely important influence on contributor behavior. About three-quarters of eligible employees contribute at rates that place them at one of the "corners," or "kinks," in the 401(k) opportunity set. This finding must be recognized in any analysis of how changes in 401(k) plan provisions are likely to affect contribution levels.

Preventing Financial Crises: An International Perspective

Frederic S. Mishkin

NBER Working Paper No. 4636

February 1994

JEL Nos. E5, E65

Monetary Economics

In recent years, the possibility of an international financial crisis has increased because of greater liquidity of international financial markets, an increase in corporate indebtedness, and the decline of the banking industry. This paper outlines the signals a central bank might look for to determine if a financial crisis is occurring, and then describes how central banks might operate and cooperate to prevent financial crises.

The Political Economy of Budget Deficits

Alberto Alesina and Roberto Perotti

NBER Working Paper No. 4637

February 1994

Monetary Economics, Public Economics

This paper provides a critical survey of the literature on politico-institutional determinants of the government budget. We organize our discussion around two questions: Why did certain OECD countries, but not others, accumulate large public debts? Why did these fiscal imbalances appear in the last 20 years, rather than before?

We begin by discussing the "tax smoothing" model, and conclude that this approach alone cannot provide complete answers to these questions. We then discuss political economy models, which we organize into six groups: 1) models based upon opportunistic policymakers and naive voters with "fiscal illusion"; 2) models of intergenerational redistributions; 3) models of debt as a strategic variable, linking the current government with the next one; 4) models of coalition governments; 5) models of geographically dispersed interests; and 6) models emphasizing the effects of budgetary institutions.

Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy

Robert W. Fogel

NBER Working Paper No. 4638

February 1994

Development of the American Economy

This paper sketches a theory of the secular decline in morbidity and mortality, taking account of changes in human physiology since 1700. The synergism between technological and physiological improvements has produced a form of human evolution, much more rapid than natural selection, which is still ongoing in both OECD and developing countries. I define thermodynamic and physiological aspects of economic growth and assess their impact on growth rates. I then consider the implications of this theory for population forecasting, measurement of national income, demand for leisure, pension policies, and the demand for health care.

Home Country Effects of Foreign Direct Investment: Evidence from Sweden

Magnus Blomström and Ari Kokko

NBER Working Paper No. 4639

February 1994

JEL No. F23

International Trade and Investment

This paper examines two broad issues related to foreign investment by Swedish multinationals (MNCs): first, the effects of outward foreign direct investment on domestic investment, exports, and employment; and second, the effects on the domestic economy from the increasing division of labor between the parents and foreign affiliates of Swedish MNCs. We summarize and synthesize the existing empirical evidence on these matters, much of which hitherto has been available only in Swedish, and discuss some possible long-run effects that have not received much attention in the literature.

The Logic of Currency Crises

Maurice Obstfeld

NBER Working Paper No. 4640

February 1994

JEL No. F31

International Finance and Macroeconomics

Once one recognizes that governments borrow international reserves and exercise other policy options to defend fixed exchange rates during currency crises, the question arises: What factors determine a government's decision to abandon a currency peg or hang on? In a setting of purposeful action by the authorities, the possibility of self-fulfilling crises becomes important. Speculative anticipations depend on conjectured government responses that depend, in turn, on how price changes that are themselves fueled by expectations affect the government's economic and political positions. The circular dynamic implies a potential for crises that need not have occurred, but that do because market participants expect them to. In contrast to this picture, most previous literature on balance-of-payments crises ignores the response of government behavior to markets. That literature throws little light on events such as the collapse of the European Exchange Rate Mechanism in 1992-3. This paper presents two different models in which crisis and realignment result from the interaction of rational private economic actors and a government that pursues well-defined policy goals. In both, arbitrary expectational shifts can turn a fairly credible exchange rate peg into a fragile one.

Long-Run Convergence of Ethnic Skill Differentials

George J. Borjas

NBER Working Paper No. 4641

February 1994

Labor Studies

This paper investigates whether the ethnic skill differentials introduced into the United States by the inflow of very dissimilar immigrant groups during the Great Migra-

tion of 1880–1910 disappeared during the past century. An analysis of the 1910, 1940, and 1980 Censuses and the General Social Surveys reveals that ethnic differentials converge slowly. It might take four generations, or roughly 100 years, for the skill differentials introduced by the Great Migration to disappear. The analysis also indicates that the economic mobility experienced by American-born blacks resemble that of the white ethnic groups that made up the Great Migration.

France and the Bretton Woods International Monetary System: 1960 to 1968

Michael D. Bordo, Dominique Simard, and Eugene White

NBER Working Paper No. 4642

February 1994

JEL Nos. E42, N14, F42, F33

Development of the American Economy, International Finance and Macroeconomics, Monetary Economics

We reinterpret the commonly held view in the United States that France, by deliberately converting its dollar holdings into gold from 1965 to 1968, helped perpetuate the collapse of the Bretton Woods International Monetary System. We argue that French international monetary policy under Charles de Gaulle was consistent with strategies developed in the interwar period and with the French Plan of 1943. France used proposals to return to an orthodox gold standard, as well as conversions of its dollar reserves into gold, as tactical threats to induce the United States to initiate the reform of the international monetary system toward a more symmetrical and cooperative gold exchange standard regime.

Measuring Business Cycles:

A Modern Perspective

Francis X. Diebold and Glenn D. Rudebusch

NBER Working Paper No. 4643

February 1994

JEL No. E32

Economic Fluctuations

In the first half of this century, two features of the business cycle received special attention: the comovement of many individual economic series, and behavior of the economy during expansions and contractions. Many subsequent business cycle models ignored these attributes, often representing a single macroeconomic aggregate. However, recent theoretical and empirical research has revived interest in each attribute separately. Notably, dynamic factor models have been used to obtain a single common factor from a set of macroeconomic variables, and nonlinear models have been used to describe the regime-switching nature of aggregate output. We survey these two strands of research, and then provide some suggestive empirical analysis in an effort to unite the two literatures and to assess their usefulness in a statistical characterization of business cycle dynamics.

Saving Babies: The Efficacy and Cost of Recent Expansions of Medicaid Eligibility for Pregnant Women

Janet Currie and Jonathan Gruber

NBER Working Paper No. 4644

February 1994

JEL Nos. H51, J12, J17

Health Care, Health Economics

Will expanded health insurance eligibility lead to improvements in health? We address this question in the context of expansions that took place during the 1980s in Medicaid eligibility for pregnant women. We build a detailed simulation model of each state's Medicaid policy during 1979–90, and use it to estimate the effect of changes in the rules on the eligibility of pregnant women for Medicaid, and on births.

We have three main findings. First, the expansions *did* dramatically increase the Medicaid eligibility of pregnant women, but at quite different rates across the states. Second, the expansions lowered the incidence of infant mortality and low birthweight; we estimate that the 20 percentage point increase in eligibility among 15–44-year-old women was associated with a decrease in infant mortality of 7 percent. Third, earlier targeted changes in Medicaid eligibility, for example through relaxation of the family structure requirements from the AFDC program, had much larger effects on births than broader expansions of eligibility to all women with somewhat higher income levels. We suggest that the reason for this difference was the much lower takeup of Medicaid coverage by individuals who became eligible under the broader expansions. We find that the targeted expansions, which raised Medicaid expenditures by \$1.7 million per infant life saved, were in line with conventional estimates of the value of a life. We conclude that expansion of insurance coverage can improve health, but that the key link in making insurance policy effective may be translating eligibility into coverage.

International Portfolio Choice and Asset Pricing: An Integrative Survey

René M. Stulz

NBER Working Paper No. 4645

February 1994

Asset Pricing, Corporate Finance

In general, theories of portfolio choice and asset pricing at most let investors differ with respect to their preferences, their wealth, and possibly their information. However, if there are multiple countries, the investment and consumption opportunities of investors depend upon their country of residence. Theories of international portfolio choice and asset pricing attempt to explain how the existence of country-specific investment and consumption opportunities affects the portfolios held by investors and the expected returns on assets. In this paper, I review these theories, discuss how they fare in empirical tests, and assess their relevance for international finance.

A Model of Research, Patenting, and Productivity Growth

Samuel Kortum

NBER Working Paper No. 4646

February 1994

JEL Nos. O30, O40

Productivity

I use the aggregate behavior of three indicators of technology (employment of research scientists and engineers; patented inventions; and total factor productivity) to identify a plausible model of endogenous technological change. In the United States and other developed countries, both research employment and total factor productivity have grown, while the rate of patenting has remained relatively flat. One interpretation of these facts is that: 1) patentable inventions are becoming increasingly difficult to discover as the quality of techniques used increases; 2) inventions that are patented represent percentage improvements on techniques currently in use; and 3) the economy is growing, making patents increasingly valuable, and justifying increased research efforts devoted to discovering them.

Did Computer Technology Diffuse Quickly? Best and Average Practice in Mainframe Computers, 1968–83

Shane M. Greenstein

NBER Working Paper No. 4647

February 1994

JEL Nos. L63, O33

Productivity

An economy benefits from advances in technical frontiers only when new technology comes into general use. This paper measures the diffusion of computing equipment when computing technology was undergoing dramatic technical improvement. It sheds light on the long lag between advances in computing technology and advances in economic performance of users. There is little evidence that long lags were produced by the "slow diffusion" of new technology embodied in new hardware. "Average practice" in computing advanced as rapidly as "best practice," lagging it by a maximum of six to seven years.

The Federal Deposit Insurance Fund That Didn't Bark in the Night

Edward J. Kane and Robert Hendershott

NBER Working Paper No. 4648

February 1994

JEL No. G2

Corporate Finance

Unlike the Federal Savings and Loan Insurance Corporation and the Bank Insurance Fund, the National Credit Union Share Insurance Fund (NCUSIF) entered the 1990s in a state of accounting solvency. This paper shows, more importantly, that NCUSIF remained solvent in terms of market value as well. Differences between

credit unions and banks and thrifts in institutional product lines and risktaking opportunities are not consequential enough to explain the differences in their funds' health. We explain how differences in decisionmaking environments caused incentives for managerial and regulatory risktaking in the credit union industry to diverge substantially from the incentives in banking and the S&L industry. The differences in incentives suggest that private coinsurance could lessen taxpayers' exposure to loss elsewhere in the federal deposit insurance system.

Health, Income, and Risk Aversion: Assessing Some Welfare Costs of Alcoholism and Poor Health

John Mullahy and Jody L. Sindelar

NBER Working Paper No. 4649

February 1994

JEL No. I1

Health Economics

The economic costs of poor health typically have been evaluated in a context of risk neutrality, which ignores individuals' risk preferences. This paper unifies the research in health capital and earnings with that on risk preferences. We estimate the economic damages caused both by general health problems and by one specific health problem that is of considerable interest from society's perspective: alcoholism. Our empirical findings, based on data from the Epidemiologic Catchment Area survey, indicate that failure to recognize the possibility of risk-averse preferences leads to a potentially serious underestimation of the magnitudes of the "costs" of alcoholism and poor health. In particular, we show that while alcoholism has a negative impact on the conditional *mean* of income (which is consistent with most of the existing literature), it also has a positive impact on the conditional *variance* of income. Our conclusions are somewhat provisional, because our estimates of conditional variances necessarily are biased in that unobserved heterogeneity is an important determinant of the moment structure of income in our sample.

Is the Business Cycle a Necessary Consequence of Stochastic Growth?

Julio J. Rotemberg and Michael Woodford

NBER Working Paper No. 4650

February 1994

JEL Nos. E13, E32

Economic Fluctuations

We compute the forecastable changes in output, consumption, and hours implied by a variable autoregression that includes the growth rate of private value added, the share of output that is consumed, and the detrended level of private hours. We show that the size of the forecastable changes in output greatly exceeds what a standard stochastic growth model predicts. Forecastable movements in labor productivity are small, and related only weakly to forecasted changes in output. Also, forecasted movements in investment and hours are corre-

lated positively with forecasted movements in output. Finally, and again in contrast to what the growth model implies, forecasted output movements are related positively to the current level of the consumption share, and negatively to the level of hours. We also show that these contrasts between the model and the observations are robust to allowance for measurement error, and to a variety of other types of transitory disturbances.

Explaining the Duration of Exchange Rate Pegs

Michael W. Klein and Nancy P. Marion

NBER Working Paper No. 4651

February 1994

JEL Nos. F31, F33

International Finance and Macroeconomics

We investigate the duration of exchange rate pegs. One theoretical model considers a policymaker who must trade off the economic costs of real exchange rate misalignment against the political cost of realignment. We derive the optimal time to spend on a peg, and identify the factors that influence peg duration. We then test our predictions with a dataset of exchange rate pegs for 16 Latin American countries and Jamaica during 1957–91. We find that the real exchange rate is a significant determinant of the likelihood of a devaluation. Structural variables, such as the openness of the economy and its geographical trade concentration, also significantly affect the likelihood of a devaluation. Finally, political events that change the political cost of realignment, such as executive transfers, are empirically important determinants of the likelihood of a devaluation.

Nonleaky Buckets: Optimal Redistributive Taxation and Agency Costs

Karla Hoff and Andrew B. Lyon

NBER Working Paper No. 4652

February 1994

JEL Nos. H21, D82, I22

Public Economics

Economists generally have argued that income redistribution comes at a cost in aggregate incomes. We provide a counter example in a model in which private information gives rise to incentive constraints. In the model, a wage tax creates the usual distortion in labor–leisure choices, but the grants that it finances reduce a distortion in investment in human capital. We prove that simple redistributive policies can yield Pareto improvements and increase aggregate incomes. Where higher education is beyond the reach of the poor, the wage tax-transfer policy is, under most circumstances, more effective than targeted credit taxes or subsidies in increasing overall efficiency.

Historical Factors in Long-Run Growth

Explaining the Changing Dynamics of Unemployment: Evidence from Civil War Pension Records

Dora L. Costa

NBER Historical Paper No. 51

December 1993

JEL Nos. J64, N31

I investigate why the probability of workers leaving unemployment has fallen since 1900 by estimating the impact of a large government transfer: the first major pension program in the United States, covering Union Army veterans of the Civil War. Because of the program's rules, the pension was a strict income transfer; these rules created a natural experiment for identifying the effects of pensions and health on labor supply.

I find that pensions had a large impact on the probability of long-term, but not short-term, unemployment. Pensions affected the probability of both entering and exiting unemployment, but mainly lowered the probability of leaving unemployment. Thus, explanations for the secular rise in long-term unemployment should focus on such factors as the secular increase in wealth, and the increased availability and generosity of unemployment benefits.

The Meaning of Money in the Great Depression

Hugh Rockoff

NBER Historical Paper No. 52

December 1993

JEL No. N11

The quality of the money stock declined during the banking crises of the early 1930s. Bank deposits no longer served as a secure, short-term store of purchasing power for use in an emergency. During the periods of restricted deposits, in late 1932 and early 1933, bank deposits could not fulfill their basic function of being a medium of exchange. This paper shows that the decline in the quality of the money stock contributed to the severity of the contraction.

Employer Recruitment and the Integration of Industrial Labor Markets, 1870–1914

Joshua L. Rosenbloom

NBER Historical Paper No. 53

January 1994

JEL Nos. N31, O15

The substantial shifts in the sectoral and geographic location of economic activity that took place in the late nineteenth century United States required the realloca-

tion of large quantities of labor. This paper examines the response of labor market institutions to the challenges of unbalanced growth. Using previously unexploited descriptive evidence from the reports of the Immigration Commission, I argue that employer recruitment was crucial to the adjustment of labor markets to shifting patterns of supply and demand. Because individual employers could capture only a fraction of the benefits, however, investment in recruitment may have been less than would have been socially optimal, suggesting a possible explanation for the persistence of large geographic wage differentials.

Technical Papers

A Two-Stage Estimator for Probit Models with Structural Group Effects

George J. Borjas and Glenn T. Sueyoshi

NBER Technical Paper No. 146

November 1993

JEL No. C23

Labor Studies

This paper outlines a two-stage technique for estimation and inference in probit models with structural group effects. The structural group specification belongs to a broader class of random-components models. In particular, individuals in a given group share a common component in the specification of the conditional mean of a latent variable. For a number of computational reasons, existing random-effects models are impractical for estimation and inference in this type of problem. Our two-stage estimator provides an easily estimable alternative to the random-effect specification. In addition, we conduct a Monte Carlo simulation comparing the performance of alternative estimators, and find that the two-stage estimator is superior—both in terms of estimation and inference—to traditional estimators.

Econometric Methods for Fractional Response Variables with an Application

to 401(k) Plan Participation Rates

Leslie E. Papke and Jeffrey M. Woolridge

NBER Technical Paper No. 147

November 1993

JEL No. C21

Public Economics

We offer simple quasi-likelihood methods for estimating regression models with a fractional dependent variable and for performing asymptotically valid inference. Compared with log-odds type procedures, there is no difficulty in recovering the regression function for the fractional variable, and there is no need to use ad hoc transformations to handle data at the extreme values of zero and one. We also offer some new, simple specification tests by nesting the logit or probit function in a more general functional form. We apply these methods to a

dataset of employee participation rates in 401(k) pension plans.

The Mixing Problem in Program Evaluation

Charles F. Manski

NBER Technical Paper No. 148

December 1993

Labor Studies

A common concern of evaluation studies is the distribution of outcomes when a specified *treatment policy*, or assignment rule, determines the treatment received by each member of a specified population. Recent studies have emphasized evaluation of policies providing the same treatment to all members of the population. In particular, experiments with randomized treatments have this objective. Policies mandating homogeneous treatment of the population are interesting, but so are ones that permit treatment to vary across the population. This paper examines the use of empirical evidence on programs with homogeneous treatments to infer the outcomes that would occur if treatment were to vary across the population. I use experimental evidence from the Perry Preschool Project to illustrate the inferential problem and the main findings of the analysis.

Making the Most Out of Social Experiments: Reducing the Intrinsic Uncertainty in Evidence from Randomized Trials with an Application to the National JTPA Experiment

Nancy Clements, James J. Heckman, and Jeffrey Smith

NBER Technical Paper No. 149

January 1994

Labor Studies

This paper demonstrates that even under ideal conditions, social experiments in general only uniquely determine the mean impacts of programs, but not the median or the distribution of program impacts. The conventional common parameter evaluation model widely used in econometrics is one case in which experiments uniquely determine the distribution of program impacts. That model assumes that everyone responds to a social program in the same way. Allowing for heterogeneous responses to programs, the data from social experiments are consistent with a wide variety of alternative distributions of impact. We discuss why it is interesting to know the distribution of program impacts. We propose and implement a variety of different ways of incorporating prior information to reduce the wide variability that is intrinsic in experimental data. We develop and apply robust Bayesian and deconvolution methods. We analyze earnings and employment data on adult women from a recent social experiment. In order to produce plausible distributions of impact, we must impose strong positive dependence between outcomes in the treatment and in the control distributions. Such dependence is an outcome of certain optimizing models of the program participation decision.

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