

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

Periodical Part

NBER Reporter Online, Volume 1994

NBER Reporter Online

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Suggested Citation: National Bureau of Economic Research (NBER) (Ed.) (1994) : NBER Reporter Online, Volume 1994, NBER Reporter Online, National Bureau of Economic Research (NBER), Cambridge, MA

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NBER *Reporter*

NATIONAL BUREAU OF ECONOMIC RESEARCH

FALL 1994

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Program Report

Labor Studies

Richard B. Freeman

Two developments have made the period since I last summarized the work of the NBER's labor program particularly exciting: first, several topics of NBER research have attracted great public attention. Rising wage inequality, the subject of many Bureau Working Papers between 1991 and 1994, is now recognized as one of the nation's major economic problems. The effect of labor market institutions and government policies—ranging from minimum wages to training—on employment and wages also has been the subject of considerable public discourse. Further, internationalization of the U.S. economy, NAFTA, and development of the Common Market all have increased the interest of business and the public in how labor markets overseas work.

Second, newly available microdatasets for firms and individuals in many countries, and continued improvements in computer technology have opened new vistas for NBER researchers. In the 1980s, most researchers exploited U.S. microdatasets, which provided information on individuals; in the 1990s, many economists have analyzed datasets from other countries, and cross-sectional and longitudinal data for firms. Now researchers are beginning to examine the "intersection" of these two forms of data: that is, longitudinal data that track the economic performance of both individual workers and the establishments in which they work.

In the early 1990s, the NBER's labor studies program focused in particular on the following areas: earnings inequality; the behavior of labor demand; the effect of government programs; training; international comparisons; and social or family effects on individuals.

Earnings Inequality¹

Bureau studies of earnings inequality, and of the fall in the real earnings of less-skilled workers, have documented a period of rising inequality, both among and within observable skill groups, and in hours worked. What emerges in these studies is a multicausal explanation of the rise in earnings inequality: in the 1980s, and to some extent earlier, the forces of

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

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supply and demand and institutional changes all operated in the same direction to raise inequality.

On the supply side, the key factors were: 1) a reduced rate of growth in the supply of college graduates relative to less-educated workers, caused in part by young Americans' decisions about investing in education; and 2) the influx of less-educated immigrants. On the demand side, shifts toward more-educated workers within industries, shown by Alan B. Krueger to be related in part to technological changes associated with computers, and by myself, George J. Borjas, and Lawrence F. Katz to be related to the growth of the trade deficit, are widely cited factors. In terms of institutional changes, David Card, Thomas Lemieux, and I have shown that the decline in unionization and the reduction in the real value of the minimum wage contributed to the increase in inequality. Katz and Kevin M. Murphy conclude that these factors help to account for the rise in earnings differentials among workers who differ in measured skills. In addition, measured shifts in demand and supply have been shown to affect the earnings of blacks and women by John Bound and Harry J. Holzer, and by Francine D. Blau and Lawrence M. Kahn, respectively. Steven G. Allen and several others also have examined the interindustry wage structure, which is an important component of wage differences. Still, these analyses have been unable to pin down the factors underlying the rise in inequality among workers with the same measured attributes.

Labor Demand Behavior

The surge in interest in the de

demand for labor,² focused on everything from the use of outside contractors to the dynamics of adjustments in firm size and employment growth, perhaps spurred by changes in the minimum wage, has yielded some results that have challenged conventional wisdom. Daniel S. Hamermesh has developed models that explore the dynamics of demand, among other things. Steven J. Davis (and others) have shown that small employers do *not* create more net jobs than larger firms in the manufacturing sector, because the job destruction rate as well as the job creation rate is greater in small firms than in large firms. Eli Berman, Bound, and Zvi Griliches report that labor demand within industries has shifted toward more skilled workers, which helps to explain the rise of inequality. Bound and Holzer also have examined the effect of industrial shifts on the employment of black workers relative to white workers. And, Douglas L. Kruse has developed evidence that profit-sharing arrangements raise firm productivity.³

Several researchers, in particular Card, Krueger, and Katz, have examined the demand-side effects of recent increases in the minimum wage.⁴ Their results are striking: they find that the recent increases have had no discernible adverse effect on employment, which raises questions about the appropriate model for analyzing modest changes in wages in the labor market for low-skilled workers.

Training and Human Capital Formation

Continuing the long NBER tradition, stretching back to the pioneering work of Gary S. Becker and Jacob A. Mincer, researchers

have explored the effects of various government programs and policies on investment in schooling, earnings profiles, and human capital formation in general.⁵ James J. Heckman and Steven J. Cameron have examined the effects of the widely used General Equivalency Degree, and found that it is far from the equivalent of a high school education in terms of earning power. Thomas J. Kane and Cecilia Rouse have found that two years of junior or community college earns roughly the same return as two years in a four-year college, though. Ronald G. Ehrenberg and his coauthors have studied the effects of government programs on the decision to attend college.

Finally, Card and Krueger, and Michael A. Boozer, Krueger, and Shari Wolkon have examined issues relating to school quality. Their results suggest that differences in school quality play a greater role in earnings than had been found in past studies of educational production functions.

In addition, various NBER studies used different instrumental variables to determine the effect of schooling, and examined randomized experiments to assess training programs. These papers are summarized in the methodology section of this Program Report.

Other Government Programs

In addition to studying minimum wages and training or education programs, Bureau researchers have analyzed the labor market effects of a diverse set of governmental programs.⁶ Janet Currie has examined the effects of several programs, including Head Start, on the well-being of children. Jonathan Gruber and Maria J. Hanratty have ex-

plored the possible labor market effects of introducing national health insurance, Canadian-style, to the United States. Gruber also has analyzed the effects of unemployment insurance on consumption smoothing, beginning what I hope will be a series of studies on the benefits of a program whose costs, in terms of extended joblessness, have been analyzed in great detail. Rebecca M. Blank (and Patricia Ruggles) studied Aid to Families with Dependent Children. Olivia S. Mitchell has explored the U.S. retirement system. David A. Wise and coauthors have examined the interaction between Social Security and employer-provided pensions and health benefits, along with their studies of related government programs and aging. Patricia M. Anderson and Bruce D. Meyer have examined unemployment insurance benefits, while Wayne B. Gray and John Sholz studied the effects of OSHA inspections on injuries. Finally, Morris M. Kleiner and Robert T. Kudrie analyzed the effects of occupational licensing on entry into dentistry across the U.S. states.

Given the diversity of programs and analyses, it is difficult to summarize this work. Some government programs seem to have both intended and unintended effects on the labor market, while others either have little effect or an effect that is hard to determine.

International Comparisons

Some of the papers in the labor studies program dealing with foreign countries are associated with the "Working Under Different Rules" project (described in the Summer 1993 *Reporter*), but others were undertaken separately.⁷ The range of issues is considerable.

Amanda Gosling and Stephen Machin studied the effects of British unions on the dispersion of earnings in Britain. Katharine G. Abraham and Susan N. Houseman examined labor adjustments in Germany. Lemieux and Sara De La Rica investigated the grey economy in Spain, while Per-Anders Edin looked at the decline of solidarity bargaining in Sweden. David G. Blanchflower and Lisa M. Lynch studied on-the-job training in the United Kingdom, while Blanchflower and I investigated the effects of the policies of the Thatcher government on the British labor market.

Most of these studies focused on particular countries, usually comparing them to the United States, but some took a broader approach, looking at several countries at once. Unlike traditional cross-country comparisons, almost all of the studies use detailed microdatasets to explore differences or similarities in countries, rather than using aggregate data. In one of the first uses of microdata that match workers and firms over time, John M. Abowd and Francis Kramarz examined incentive compensation within French firms.

The major message from the international comparative work is that there are different ways for capitalist economies to organize their labor markets. Some developments in the United States are found in other countries; others seem unique to the United States, raising important questions about the role of institutions in influencing labor market outcomes.

Social Capital and Institutions

Standard empirical work that focuses on individuals almost always

fails to explain the full extent of economic behavior. Researchers in the labor studies program have dealt with this shortfall in various ways.⁸ Some have been concerned with spillovers or externalities. In this vein, Katz and Ann C. Case used the Boston Youth Survey to provide evidence on the effects of neighborhoods; Borjas looked at spillovers related to ethnicity, while also continuing his work on immigration. Card, Edward L. Glaeser, and David C. Maré all have examined the links between labor skills and the geographic areas in which those skills are employed. Other researchers have focused on the way particular institutions operate. For example, Henry S. Farber has examined dispute resolution in cases of medical malpractice, while Orley C. Ashenfelter and David E. Bloom have studied the role of lawyers in dispute settlement.

Methodology

NBER researchers also have continued to refine the statistical tools needed to examine data, have developed imaginative "pseudo-experiments" to tease behavioral or causal inferences from nonexperimental data, and have examined the underlying quality of the available data. For example, they have explored the strengths and weaknesses of instrumental variables in obtaining behavioral or structural parameters.⁹ In some of the studies, the instruments are quite ingenious: Joshua D. Angrist and Krueger use the Vietnam-era draft lottery; Ashenfelter and David J. Zimmerman, and Krueger use sibling data; and so on.¹⁰ Others, including James J. Heckman, have been particularly innovative in exploring the value of random assignment controlled experiments.¹¹

If there is a single overriding theme that emerges from the methodological papers, it is that problems exist with forms of empirical analysis and techniques that many had hoped would be "panaceas," such as instrumental variables or randomized treatments in social experiments. Methodological advances are not reducing the demand for econometricians, it seems.

Where Are Theory . . . And Plant Visits?

Labor economics is first and foremost an empirical area, and new data and technology have opened the door to analyses that researchers of previous generations would scarcely believe. Thus, it is no surprise that most work in the NBER's labor studies program is blatantly empirical, in the Bureau tradition of Simon Kuznets, albeit with computers doing the dirty work. Studies based on datasets with thousands or hundreds of thousands of observations allow researchers to establish facts in ways never before possible.

Concentration on empiricism has left two noticeable gaps in the work: 1) in the development of theory, although some researchers have sought to develop theoretical insights into various forms of behavior,¹² and most build their empirical work on microeconomic foundations; and 2) in first-hand observation of firms and workers, although some researchers make "field visits" to firms, unions, or public training programs, and most are aware that there is a world outside of their computer. I hope that my next report will tell you that the labor studies program has made some progress in amalgamating theory and case studies.

In the notes that follow, except where indicated otherwise, the number following "No." is the number of an NBER Working Paper.

¹Among the papers on inequality are: L. F. Katz and A. B. Krueger, "Changes in the Structure of Wages in the Public and Private Sectors," No. 3667, March 1991; A. H. Beller and F. D. Blau, "Black-White Earnings Over the 1970s and 1980s: Gender Differences in Trends," No. 3736, June 1991; G. J. Borjas, R. B. Freeman, and L. F. Katz, "On the Labor Market Effects of Immigration and Trade," No. 3761, June 1991; J. Bound and R. B. Freeman, "What Went Wrong? The Erosion of Relative Earnings and Employment Among Young Black Men in the 1980s," No. 3778, July 1991; G. J. Borjas, "Ethnic Capital and Intergenerational Mobility," No. 3788, July 1991; C. Goldin and R. A. Margo, "The Great Compression: The Wage Structure in the United States at Midcentury," No. 3817, August 1991; R. B. Freeman, "How Much Has Deunionization Contributed to the Rise in Male Earnings Inequality?" No. 3826, August 1991; R. B. Freeman and K. Needels, "Skill Differentials in Canada in an Era of Rising Labor Market Inequality," No. 3827, September 1991; A. B. Krueger, "How Computers Have Changed the Wage Structure: Evidence from Microdata, 1984-9," No. 3858, October 1991; M. L. Blackburn, D. E. Bloom, and R. B. Freeman, "Changes in Earnings Differentials in the 1980s: Concordance, Convergence, Causes, and Consequences," No. 3901, November 1991; L. F. Katz and K. M. Murphy, "Changes in Relative Wages, 1963-87: Supply-and-Demand Factors," No. 3927, December 1991; D. M. Cutler and L. F. Katz, "Rising Inequality? Changes in the Distribution of Income and Consumption in the 1980s," No. 3964, January 1992; D. E. Bloom and R. B. Freeman, "The Fall in Private Pension Coverage in the United States," No. 3973, January 1992; S. J. Davis, "Cross-Country Patterns of Change in Relative Wages," No. 4085, June 1992; F. D. Blau and L. M. Kahn, "Race and Gender Pay Differentials," No. 4120, July

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²The following papers examine demand issues: D. S. Hamermesh, "Labor Demand: What Do We Know? What Don't We Know?" No. 3890, November 1991; J. B. Rebitzer and L. J. Taylor, "Do Labor Markets Provide Enough Short-Hour Jobs? An Analysis of Work Hours and Work Incentives," No. 3883, October 1991; D. S. Hamermesh, W. H. J. Haskins, and J. C. van Ours, "New Facts About Factor-Demand Dynamics: Employment, Jobs, and Workers," No. 4625, January 1994; J. B. Rebitzer and L. J. Taylor, "Work Incentives and the Demand for Primary and Contingent Labor," No. 3647, March 1991; D. S. Hamermesh and G. Pfann, "Turnover

and the Dynamics of Labor Demand," No. 4204, October 1992; D. S. Hamermesh, "Labor Demand and the Source of Adjustment Costs," No. 4394, July 1993; S. J. Davis, J. C. Haltiwanger, and S. Schuh, "Small Business and Job Creation: Dissecting the Myth and Reassessing the Facts," No. 4492, October 1993; K. G. Abraham and S. K. Taylor, "Firms' Use of Outside Contractors: Theory and Evidence," No. 4468, September 1993; D. Card and A. B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania," No. 4509, October 1993; and S. N. Houseman and K. G. Abraham, "Labor Adjustment Under Different Institutional Structures: A Case Study of Germany and the United States," No. 4548, November 1993.

³D. L. Kruse, "Does Profit Sharing Affect Productivity?" No. 4542, November 1993.

⁴The following papers explore the effects of the minimum wage: L. F. Katz and A. B. Krueger, "The Effect of the New Minimum Wage Law in a Low-Wage Labor Market," No. 3655, March 1991; D. Card, "Do Minimum Wages Reduce Employment? A Case Study of California, 1987-9," No. 3710, May 1991; A. C. Freeman and R. B. Freeman, "Minimum Wages in Puerto Rico: Textbook Case of a Wage Floor?" No. 3759, June 1991; D. Neumark and W. Wascher, "Evidence on Employment Effects of Minimum Wages and Subminimum Wage Provisions from Panel Data on State Minimum Wage Laws," No. 3859, October 1991; J. B. Rebitzer and L. J. Taylor, "The Consequences of Minimum Wage Laws: Some New Theoretical Ideas," No. 3877, October 1991; L. F. Katz and A. B. Krueger, "The Effect of the Minimum Wage on the Fast Food Industry," No. 3997, February 1992; D. Card, "Using Regional Variation in Wages to Measure the Effects of the Federal Minimum Wage," No. 4058, April 1992; J. Currie and B. Fallick, "A Note on the New Minimum Wage Research," No. 4348, April 1993; D. Card, L. F. Katz, and A. B. Krueger, "An Evaluation of Recent Evidence on the Employment Effects of Minimum and Subminimum Wages," No. 4528, November 1993; D. Neumark and W. Wascher, "Employment Effects of Minimum and Subminimum Wages: Reply to Card, Katz, and Krueger," No. 4570, December

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⁵Among the papers in this area are: S. J. Cameron and J. J. Heckman, "The Non-equivalence of High School Equivalents," No. 3804, August 1991; D. J. Brewer, R. G. Ehrenberg, and D. I. Rees, "How Would Universities Respond to Increased Federal Support for Graduate Students?" NBER Reprint No. 1795, June 1993; R. G. Ehrenberg and P. G. Mauros, "Do Doctoral Students' Financial Support Patterns Affect Their Times-to-Degree and Completion Probabilities?" No. 4070, May 1992; R. G. Ehrenberg, D. D. Goldhaber, and D. J. Brewer, "Do Teachers' Race, Gender, and Ethnicity Matter? Evidence from NELS88," No. 4669, March 1994; M. A. Boozer, A. B. Krueger, and S. Wolkon, "Race and School Quality since Brown vs. Board of Education," No. 4109, June 1992; D. Card, "Using Geographic Variation in College Proximity to Estimate the Return to Schooling," No. 4483, October 1993; T. J. Kane and C. Rouse, "Labor Market Returns to Two- and Four-Year Colleges: Is a Credit a Credit, and Do Degrees Matter?" No. 4268, January 1993; J. Tracy and J. Waldfogel, "The Best Business Schools: A Market-Based Approach," No. 4609, January 1994; E. L. Glaeser and D. C. Maré, "Cities and Skills," No. 4728, May 1994; V. R. Fuchs and D. M. Reklis, "Mathematical Achievement in Eighth Grade: Interstate and Racial Differences," No. 4784, June 1994; M. L. Blackburn and D. Neumark, "Are OLS Estimates of the Return to Schooling Biased Downward? Another Look," No. 4259, January 1993; D. Neumark and P. J. Taubman, "Why Do Wage Profiles Slope Upwards? Tests of the General Human Capital Model," No. 4688, March 1994; and D. Card and A. B. Krueger, "School Quality and Black-White Relative Earnings: A Direct Assessment," No. 3713, May 1991.

⁶Among the papers in this area are: W. B. Gray and J. T. Scholz, "Do OSHA Inspections Reduce Injuries? A Panel Analysis," No. 3774, July 1991; N. Cole and J. Currie, "Does Participation in Transfer Programs During Pregnancy Improve Birthweight?" No. 3832, September 1991; J. Currie, L. Nixon, and N. Cole, "Restrictions on Medicaid Fund-

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Research Summaries

What Moves the Stock Market?

John Y. Campbell

Stock prices tend to move with the state of the economy. This fact is both familiar—it describes the United States, the United Kingdom, and many other national markets in the postwar period, the interwar period, and the 19th Century¹—and surprisingly hard to explain. My most recent work, with John H. Cochrane, proposes a simple model that accounts for this and other aspects of aggregate stock market behavior.

Financial theorists describe asset prices as expected present values of future payments, discounted to adjust for time and risk. This can be seen as a matter of accounting: if an asset's price is high today, then either its price must be even higher tomorrow, or its dividend must be high tomorrow, or its rate of return between today and tomorrow (the ratio of price plus dividend tomorrow to price today) must be low. If prices cannot grow explosively forever, then an asset with a high price today must have some combination of high dividends and low returns over the indefinite future. Furthermore, investors must recognize this fact in forming their expectations, so when an asset price is high, investors must expect some combination of high future dividends and low future returns.

In a series of papers, some written jointly with Robert J. Shiller, I have developed this simple insight into a quantitative framework for

analyzing the variation of asset prices. As a matter of accounting, price movements must be driven by some combination of changing expectations ("news") about future dividends and changing expectations about future returns; the latter in turn can be broken into news about future riskless real interest rates and news about future excess returns on risky assets over riskless ones.²

Until the early 1980s, most financial economists believed that there was very little predictable variation in stock returns and that dividend news was by far the most important factor driving stock market fluctuations. The first challenge to this orthodoxy came from Stephen F. LeRoy and Richard Porter, and from Shiller.³ These authors pointed out that dividends, and plausible measures of expectations about future dividends, are far less volatile than stock prices. A few years later, Eugene F. Fama and Kenneth R. French studied the predictability of stock returns from past returns and dividend-price ratios. They pointed out that the

"[C]hanging expectations of future stock returns are a powerful force driving movements in stock prices."

predictable variation in stock returns becomes increasingly impressive—in the sense that it accounts for an increasing share of the overall variation of returns—as one

lengthens the horizon over which returns are measured.⁴

In several papers, some written with Shiller and one with John M. Ammer, I have shown that these observations are intimately related. When the expected return on an asset changes slowly over time, any change in today's expected return has a large effect on the asset price. This increases the volatility of prices; it also may increase the volatility of short-horizon returns relative to the volatility of long-horizon returns, so that the predictable variation of returns is a more important component of the variation of total returns at long horizons. The dividend-price ratio reflects the underlying variation in the expected stock return, and therefore is a good forecasting variable for long-horizon stock returns. The message of this research is that changing expectations of future stock returns are a powerful force driving movements in stock prices.⁵

None of this work addresses the important question of what economic factors cause the expected return on the aggregate stock market to change over time. As a matter of logic, the expected stock return can change only if the short-term riskless real interest rate changes, or if the expected excess return on stock over short-term debt changes. The expected excess return may change if the riskiness of stock changes, or if the "price of risk" (the extra return demanded by investors for bearing risk) changes.

There are many theoretical asset pricing models in which the riskless interest rate changes over time.

One standard model suggests that assets are priced as if there is a representative investor who consumes aggregate consumption. When consumption is low and predicted to rise, the representative investor would like to borrow from the future; the riskless real interest rate must rise to deter the investor from doing so, and this drives down asset prices in recessions.⁶ Unfortunately, there is little empirical evidence for the strong countercyclical variation in the real interest rate required by this story; and, it cannot explain why excess stock returns over Treasury bills are just as predictable as raw stock returns.

Many researchers have explored the idea that risk varies over time. Econometricians have found that the conditional variance of stock returns is highly variable. If conditional variance is an adequate measure of risk, then perhaps this can explain the predictability of excess stock returns. But this approach has several problems. First, changes in conditional variance are most dramatic in daily or monthly data, and are much weaker at lower frequencies. There is some business-cycle variation in volatility, but it does not seem strong enough to explain large movements in aggregate stock prices.⁷ Second, forecasts of excess stock returns do not move proportionally with estimates of conditional variance.⁸ Finally, one would like to explain the cyclical variation of stock market volatility, rather than treating it as an unexplained phenomenon.

The remaining possibility is that the price of risk moves cyclically. In a recent paper with Cochrane, I have proposed a simple asset pricing model with this property.⁹ Coch-

rane and I suggest that assets are priced as if there is a representative investor who consumes aggregate consumption; but in a departure from the standard model, the investor's utility is a function of the difference between consumption and "habit," where habit is a slow-moving nonlinear average of past

"[I]nvestor[s] [become] more risk averse during recessions."

consumption. This utility function makes the investor more risk averse during recessions, when consumption is low relative to its past history, than in periods when consumption is high relative to its past history.

Cochrane and I develop a version of this model in which aggregate consumption is a random walk. For simplicity, we model stocks as assets that pay aggregate consumption as their dividends. Hence, by construction, there is no predictable variation in dividend growth. If expected stock returns were constant, the dividend-price ratio would be constant, and stock returns always would equal aggregate consumption growth.

We also can parameterize the model so that the riskless real interest rate is constant. Thus we can shut down all the standard channels by which macroeconomic volatility is communicated to the stock market. Yet we can still explain the observed volatility and long-horizon forecastability of stock returns through time-varying risk aversion. When consumption falls, the aggregate stock market falls because dividends are lower, but more importantly because investors are more

risk averse. This drives the dividend-price ratio up and is followed, on average, by high returns as risk aversion returns to more normal levels. The model predicts that stock returns are volatile, and that they are more volatile in recessions, when the habit-formation effect is more powerful.

Our model has important implications for both finance and macroeconomics. Financial economists have been puzzled by the fact that the traditional Capital Asset Pricing Model (CAPM), which pri-

ces assets by their covariance with the aggregate stock market, seems to work better than the consumption CAPM, which prices assets by their covariance with aggregate consumption. Our model accounts for this fact. Although aggregate consumption is the driving force in the model, the effect of a consumption shock depends in a complicated way on the past history of consumption. The movement in aggregate stock prices is a better proxy for the underlying shock to investors' welfare than is the consumption shock itself, and this explains the comparative success of the CAPM.

Macroeconomists have tended recently to downplay the importance of economic fluctuations in favor of an emphasis on long-term economic growth.¹⁰ But in our model, fluctuations have important negative effects on welfare because they move consumption in the short term, when consumers' habits have little time to adjust. The evidence from asset markets is that consumers take fluctuations extremely seriously, and macroeconomists should not neglect this fact.

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²J. Y. Campbell and R. J. Shiller, "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *Review of Financial Studies* (Fall 1988), pp. 195-228, and "Stock Prices, Earnings, and Expected Dividends," *Journal of Finance* (July 1988), pp. 661-676; and J. Y. Campbell, "A Variance Decomposition for Stock Returns," *Economic Journal* (March 1991), pp. 157-179.

³S. F. LeRoy and R. Porter, "The Present Value Relation: Tests Based on Variance Bounds," *Econometrica* (May 1981), pp. 555-577; and R. J. Shiller, "Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends?" *American Economic Review* (June 1981), pp. 421-436.

⁴E. F. Fama and K. R. French, "Perma-

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⁵J. Y. Campbell and R. J. Shiller, "The Dividend-Price Ratio . . .," *op. cit.*, and "Stock Prices, Earnings . . .," *op. cit.*; J. Y. Campbell, "A Variance Decomposition . . .," *op. cit.*; and J. Y. Campbell and J. M. Ammer, "What Moves the Stock and Bond Markets? A Variance Decomposition for Long-Term Asset Returns," *Journal of Finance* (March 1993), pp. 3-37.

⁶A simple version of this model is given by L. P. Hansen and K. J. Singleton, "Stochastic Consumption, Risk Aversion, and the Temporal Behavior of Asset Returns," *Journal of Political Economy* (April 1983), pp. 249-268.

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⁸C. R. Harvey, "Time-Varying Conditional Covariances in Tests of Asset Pricing Models," *Journal of Financial Economics* (October 1989), pp. 289-317, and "The World Price of Covariance Risk," *Journal of Finance* (March 1991), pp. 111-157.

⁹J. Y. Campbell and J. H. Cochrane, "By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior," unpublished paper, Harvard University and University of Chicago, September 1994.

¹⁰R. J. Barro, for example, in the Summer 1994 NBER Reporter, writes that "Economic growth is the part of macroeconomics that really matters."

International Taxation

James R. Hines Jr.

My research examines the impact of taxation on the level and performance of international business. There are three reasons why international taxation is the focus of a considerable amount of recent research in economics: First, there is growing recognition of the importance of foreign direct investment (FDI) in the lives of modern economies; this heightens concerns about the impact of tax policy on FDI. Second, international aspects

of taxation represent some of the most complex and traditionally understudied parts of tax systems. Third, the internationalization of firms and economies raises the prospect that certain international aspects of tax systems may have unrecognized consequences even for the purely domestic parts of tax systems.

Among the important issues in the economics of international taxation are: the impact of tax provisions on the competitiveness of multinational firms in foreign mar-

kets, as evidenced by the level and location of FDI; the effect of international tax rules on international research and development; the impact of taxation on the financing of multinational firms; and matters of political concern, such as negotiations over bilateral tax treaties, and the use of tax policy to curtail certain practices in foreign countries. Research on these issues indicates that tax policy has an important effect on the allocation of resources by multinational firms.

Foreign Direct Investment

There is a great deal of interest in, and concern about, the possible impact of tax policy on FDI. High tax rates generally are thought to discourage foreign investment, although there is some controversy over this point. Time-series evidence on this question is typically rather inconclusive, perhaps in part reflecting the infrequency of major tax changes and the correlation of tax changes with movements in important unobservable variables.¹

However, there are at least two sources of cross-sectional variation in tax rates that offer useful evidence on the impact of taxation on the location of FDI. First is the distribution of tax rates across countries. Analysis of the pattern of outbound investments by U.S. multinationals indicates that high tax rates significantly reduce FDI levels, all else equal.²

The second useful source of information on the responsiveness of multinational investors to tax differences is variation in state corporate tax rates within the United States. Foreign firms investing in the United States fall into two broad categories: investors from countries (such as Canada and Germany) that do not tax the American profits of their resident multinationals; and investors from countries (such as Japan and the United Kingdom) that do tax the American profits of their firms, but provide foreign tax credits for the federal and state income taxes these firms pay. To investors from Canada and Germany, state income taxes represent the costs of doing business; to investors from Japan and the United Kingdom, state income taxes also represent costs, but these costs are—at least in part—compensated by their own government's provi-

sion of foreign tax credits. Consequently, investors from Canada and Germany have stronger incentives to avoid locating their businesses in high-tax states than do investors from Japan and the United Kingdom, even if the businesses are otherwise identical. Patterns of FDI indicate that high-tax states attract fewer plants and less capital from firms whose home countries do not provide foreign tax credits than from firms whose home countries do. This evidence suggests that high tax rates significantly reduce local investment.³

A number of studies find little effect of taxation on FDI, perhaps because of the subtlety of some of the behavioral incentives generated by tax systems in practice. Recent research examines two particular aspects of these tax incentives. First is the effect of differences between countries in their definitions of the tax base; these differences typically appear to attenuate the impact of local investment tax incentives on investment behavior by multinational firms from certain countries.⁴

Second is the effect of taxation on the financing and capitalization over time of foreign subsidiaries. Since foreign owners have incentives to reinvest profits earned by their subsidiaries rather than repatriate the profits as dividends, these owners are encouraged to undercapitalize their subsidiaries initially in order to preserve profitable opportunities for future reinvestment of profits. This incentive is the strongest in countries with low tax rates. As a consequence, American firms may transfer less equity to finance their initial investments in countries with low tax rates than they do to finance investments in countries with high tax rates, even though they plan to maintain higher steady-state capital levels in the

low-tax countries. Furthermore, this process encourages firms to finance their subsidiaries in low-tax countries with higher proportions of debt than typically are used in high-tax countries. Evidence indicates that these tax incentives influence the behavior of U.S. multinationals.⁵

Research and Development

There are certain types of activities, such as advertising, central administration, and research and development (R and D) that multinational firms undertake centrally in order to generate sales in multiple locations. Governments then face the problem of deciding whether all or part of a multinational firm's expenditures on these activities represent deductible expenses in the location in which the expenses are incurred.

In the case of the deductibility of R and D expenses, the U.S. Congress has taken different approaches at different times. Congress is generally quite eager to encourage firms to undertake R and D in the United States. From 1981–6, American multinationals were permitted to deduct all of their U.S. R and D expenses against their taxable U.S. incomes. On occasion, however, Congress becomes concerned that multinational firms may perform R and D in the United States with the benefit of American tax subsidies, and then use the resulting know-how to generate profits in foreign locations where they are taxed by foreign governments. The Tax Reform Act of 1986 replaced the earlier system with one in which some multinational firms are required to allocate a portion of their R and D

expense deductions against their foreign incomes.

After 1986, the tax cost of doing R and D in the United States has been a complicated function of a firm's foreign tax credit status and the fraction of its sales and assets located abroad. Since the 1986 tax change introduced firm-specific differences between U.S. multinationals in the tax cost of undertaking R and D in the United States, it is possible to examine firm behavior before and after 1986 to estimate the responsiveness of R and D spending to its aftertax cost. The results imply that the elasticity of R and D spending to its aftertax cost is approximately unity, which represents a considerably more elastic demand curve for R and D than aggregate time-series investigations suggest.⁶

One of the concerns that motivates U.S. tax policy is the possibility that American multinational firms that are unable to deduct all of their U.S. R and D expenses against U.S. taxable income might have incentives to move their R and D operations to foreign locations. In spite of the 1986 changes in U.S. tax law, however, U.S. firms do not appear to have changed significantly the fraction of their total R and D (about 10 percent) that they perform abroad. Some recent research focuses on reconciling this unchanged aggregate share of R and D performed abroad with the reduced deductibility of R and D expenses in the United States (and the sizable elasticity of demand for R and D indicated by firm-level responses to the Tax Reform Act of 1986). Indeed, the 1986 tax change reduced the tax deductibility—and therefore the incentive—for some multinationals to undertake R and D in the United States. But at the same time, the U.S. statutory corpo-

rate tax rate reduction imposed by the Tax Reform Act of 1986, together with the U.S. tax treatment of foreign royalty income, gave *other* multinational firms incentives to *increase* the fraction of their worldwide R and D performed in the United States. Hence, the 1986 tax change encouraged a change in the distribution between firms of R and D performed in the United States without changing the aggregate amount of U.S. R and D.⁷

One of the issues that concern capital importing countries is the question of whether imported technology is a complement or a substitute for technology produced by local R and D. One way to investigate this question is to examine the effect of variations between countries in the royalty taxes that firms must pay on technology imports. Recent research on the foreign activities of U.S. multinationals, and the behavior of foreign firms investing in the United States, indicates that R and D intensities are significantly higher in countries that impose higher royalty withholding taxes, implying that imported technology and locally produced technology are substitutes.⁸

Impact of Taxation on Financial Policies

Tax policy influences the financial behavior of multinational firms by affecting the aftertax return to different financial arrangements. Recent research examines the extent to which the finances of multinational firms respond to international tax differences, and the impact of international taxation on domestic finance.

Transfer Pricing

One widely discussed possibility is that firms adjust the prices they charge for cross-border transactions of goods and services between affiliates that are all members of the same controlled group. Firms often have incentives to charge low prices for items sold by affiliates in high-tax countries to affiliates in low-tax countries, thereby lowering the recorded levels of profits in high-tax countries (and raising the levels of profits in low-tax countries). Tax systems usually permit firms some discretion in choosing their transfer prices, and tax-minimizing firms have incentives to concentrate as many of their profits as possible in low-tax areas.

Cross-country evidence indicates that the (properly adjusted) profit rates of U.S. multinationals appear to be higher in low-tax countries than in high-tax countries.⁹ Other evidence is provided by cross-sectional studies of firms, in which American firms with tax haven affiliates appear to have lower U.S. tax liabilities than do otherwise similar U.S. firms without affiliates in tax havens.¹⁰ To be sure, much of this evidence is subject to interpretation, and does not, in any case, prove that particular American firms are not in compliance with U.S. tax laws. Instead, the evidence suggests that low tax rates attract multinational operations that, for one reason or another, are particularly profitable.

Firms and governments frequently encounter situations in which they are uncertain about the transfer prices that would be appropriate for items traded across borders between related parties, particularly when there are no out-

side markets for comparable goods. This is, of course, frequently the case, since some valuable items—such as patent rights—have unique attributes. Also, because they are unique, they are difficult to trade in markets subject to problems arising from asymmetric information. The problem of valuing such goods generally is thought not to have a single answer. In part as a concession to this ambiguity, the U.S. tax regulations that accompany §482 of the Internal Revenue Code provide no fewer than four methods of determining appropriate transfer prices. However, the U.S. regulations may reflect a cost-based notion of transfer pricing that is less arbitrary than often believed. Some recent research examines the economic rationale behind these U.S. transfer pricing regulations, tracing the motivations behind the alternatives provided by U.S. law,¹¹ and drawing attention to the connection between U.S. practice and systems that promote allocational efficiency.¹²

An alternative approach to the problem of designing transfer price regulations is to create tax systems in which transfer prices have little or no impact on overall tax liabilities. One possibility is to reconfigure international tax systems as residence-based tax systems; there are other possibilities as well.¹³

Dividend Repatriation

Multinational firms have some discretion in arranging the financing of their affiliates, and tax policy influences the choices they make. Under U.S. law, American multinationals owe taxes to the U.S. government on all of their worldwide profits, whether earned in the Unit-

ed States or earned abroad. Profits earned by the foreign subsidiaries of U.S. firms are not, however, subject to U.S. taxation until repatriated to the United States in the form of dividends or other payments. Given this system, American multinationals typically have incentives to leave their lightly taxed foreign profits abroad, if possible, to avoid U.S. tax due upon repatriation. In spite of this tax incentive, aggregate data reveal that close to half of the profits earned abroad by U.S. multinationals each year are repatriated to the United States as intrafirm dividends. Recent research indicates that these aggregate figures mask important differences between firms in their repatriation decisions. Corporate tax returns for 1984 reveal that 84 percent of the foreign subsidiaries of U.S. multinationals repatriated no dividends. The large aggregate dividend repatriation rate represents the behavior of a small number of affiliates, most of them in advantageous tax situations.¹⁴ Examination of the behavior of U.S. multinationals in subsequent years reveals a similar pattern of infrequent but selective dividend repatriations.¹⁵

Domestic Finance

The foreign operations, and foreign profits, of multinational corporations are likely to have an intimate connection to their domestic operations. One tax aspect of this connection is that the foreign earnings of U.S. corporations generate U.S. tax revenues in two ways: they are taxed (by the corporate income tax) upon repatriation, and they are taxed (by the individual income tax) when they augment sharehold-

er income as dividends or capital gains. Given the institutional features of the U.S. income tax system, it is possible that the latter source of revenue is more substantial than the former. Recent research examines the effect of foreign earnings on the proclivity of U.S. multinationals to pay dividends to their shareholders, finding a very strong effect, roughly that \$1 in foreign earnings stimulates the same dividend payout as does \$3 in domestic earnings.¹⁶ This result implies that the U.S. tax system raises more revenue from the foreign earnings of U.S. companies through the individual income tax than through the corporate income tax. In addition, it may shed some light on the question of why firms pay dividends in the first place.

A second connection between international and domestic finance arises through the tax treatment of interest expenses of multinational firms. American law does not permit U.S.-based multinational firms to deduct all of their U.S. borrowing costs against their U.S. taxable incomes. Instead, some portion of interest expenses must be allocated against foreign incomes. The Tax Reform Act of 1986 significantly changed the U.S. tax treatment of the interest expenses of multinational corporations. Because of various complexities in its application, the law now makes it more expensive for certain U.S.-based multinationals to borrow \$1 in the United States than it is for many, otherwise similar, domestic and multinational firms. It is possible to examine the behavior of U.S. multinationals before and after the passage of the Tax Reform Act of 1986 in order to identify its impact on behavior. The evidence indicates that the tax change significantly discouraged borrowing and capital investment by the multinational firms that lost the benefits of full interest deductibility.¹⁷

Other Issues

The U.S. taxation of repatriated foreign earnings of U.S. corporations raises the question of why firms choose to be U.S. corporations, since there are other countries (such as the Netherlands Antilles) that exempt from taxation the foreign earnings of their resident corporations. The ease with which multinationals can relocate between countries carries with it the potential to undermine governments' abilities to tax multinational firms. This possibility frequently arises in discussions of U.S. tax policy toward multinational corporations. It appears, however, that a number of tax considerations, each of them small when viewed in isolation, conspire to make it very expensive for an American company to set itself up as a foreign corporation, or to become a foreign corporation after years of operation in the United States.¹⁸ Consequently, there is little reason to anticipate an imminent demise of the U.S. corporate tax base.

Political Issues

One of the important ways in which governments can avoid some of the difficulties that accompany international double taxation is by signing bilateral tax treaties that provide for reduced tax rates. High-income countries often sign such treaties, but there is an open question of why countries seem to be unwilling to conclude an even larger number of treaty arrangements. In addition, there is surprisingly little variation in the terms of treaties that many countries sign. Recent research investigates the determinants of tax treaty patterns,

reporting evidence that various bargaining strategies may be responsible for certain aspects of the number and design of the world's treaties.¹⁹

International tax policy often is used to promote foreign policy goals or other government objectives. There is frequently some debate about the ability of tax policy to induce behavior that furthers noneconomic objectives. One example is provided by the U.S. Tax Reform Act of 1976, which imposed tax penalties on American firms caught paying bribes to foreign government officials. Some critics of the anti-bribery provisions of the Tax Reform Act of 1976 (along with the Foreign Corrupt Practices Act of 1977, which made bribe payments criminal offenses) argued that the legislation was sufficiently difficult to enforce that it would have no impact. It is very difficult to obtain reliable information on levels of bribe payments in foreign countries. But recent research reveals declines in U.S. investment, capital/labor ratios, joint venture activity, and aircraft exports in the more bribery-prone countries in the period after enactment of the U.S. anti-bribery legislation.²⁰ Hence, it appears that the American legislation influences the location of overseas business activities, just as the U.S. tax system influences other aspects of the behavior of American multinationals.

¹For a survey of this evidence, see J. B. Slemrod, "Tax Effects on Direct Investment in the United States: Evidence from a Cross-Country Comparison," in *Taxation in the Global Economy*, A. Razin and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1990, pp. 79-117.

²See J. R. Hines Jr. and E. M. Rice, "Fiscal Paradise: Foreign Tax Havens and American Business," NBER Reprint No. 1868, May 1994, and *Quarterly Journal of Economics* 109 (February 1994), pp. 149-182.

³See J. R. Hines Jr., "Altered States: Taxes and the Location of Foreign Direct Investment in America," NBER Working Paper No. 4397, July 1993.

⁴For a discussion of this point, and estimates of the magnitude of its effect, see J. R. Hines Jr., "Taxation and U.S. Multinational Investment," in *Tax Policy and the Economy*, Volume 2, L. H. Summers, ed. Cambridge, MA: MIT Press, 1988, pp. 33-61. This point has been applied subsequently to various situations; see J. R. Hines Jr., "Credit and Deferral as International Investment Incentives," NBER Working Paper No. 4191, October 1992, and *Journal of Public Economics*, forthcoming; and C. Leechor and J. Mintz, "On the Taxation of Multinational Corporate Investment When the Deferral Method Is Used by the Capital Exporting Country," *Journal of Public Economics* 51 (May 1993), pp. 75-96.

⁵For an elaboration of this model of firm behavior, see Hines, "Credit and Deferral as International Investment Incentives," *op. cit.*; T. S. Newlon, "Tax Policy and the Multinational Firm's Financial Policy and Investment Decisions," Ph.D. dissertation, Princeton University, 1987; and H. W. Sinn, "Taxation and the Birth of Foreign Subsidiaries," in *Trade, Welfare, and Economic Policies: Essays in Honor of Murray C. Kemp, H. Herberg and N. V. Long*, eds. Ann Arbor: University of Michigan Press, 1993, pp. 325-352. Evidence on the behavior of American firms is provided by J. R. Hines Jr. and R. G. Hubbard, "Coming Home to America: Dividend Repatriations by U.S. Multinationals," NBER Reprint No. 1446, September 1990, and in *Taxation in the Global Economy*, A. Razin and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1990, pp. 161-200, which describes the infrequency with which U.S. multinationals repatriate dividends from their foreign subsidiaries; and Hines, "Credit and Deferral as International Investment Incentives," *op. cit.*, which examines debt-to-equity ratios of U.S. foreign subsidiaries.

⁶See J. R. Hines Jr., "On the Sensitivity of R and D to Delicate Tax Changes: The Behavior of U.S. Multinationals in the 1980s," NBER Reprint No. 1808, September 1993, and in *Studies in International Taxation*, A. Giovannini, R. G. Hubbard, and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1993, pp. 149-187.

⁷See J. R. Hines Jr., "No Place Like Home: Tax Incentives and the Location of R and D by American Multinationals," NBER Reprint No. 1883, June 1994, and in *Tax Policy and the Economy*, Volume 8, J. M. Poterba, ed. Cambridge, MA: MIT Press, 1994, pp. 65-104.

⁸See J. R. Hines Jr., "Taxes, Technology Transfer, and the R and D Activities of Multinational Firms," in *The Effects of Taxation on Multinational Corporations*, M. Feldstein, J. R. Hines Jr., and R. G. Hubbard, eds., Chicago: University of Chicago Press, forthcoming.

⁹See, for example, Hines and Rice, *op. cit.*, and H. Grubert and J. Mutti, "Taxes, Tariffs, and Transfer Pricing in Multinational Corporate Decision Making," *Review of Economics and Statistics* 68 (May 1991), pp. 285-293. Both of these studies analyze the off-shore behavior of U.S. multinationals in 1982, although they differ in their coverage of foreign locations and in the methods used to adjust profit rates for use of productive inputs. Much of the controversy in the area of transfer pricing centers on the questions of how best to interpret reported profit rates, and

how to adjust profit rates for uses of various inputs.

¹⁰See D. Harris, R. Mørck, J. B. Slemrod, and B. Yeung, "Income Shifting in U.S. Multinational Corporations," in *Studies in International Taxation*, A. Giovannini, R. G. Hubbard, and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1993, pp. 277-302.

¹¹See C. H. Berry, D. F. Bradford, and J. R. Hines Jr., "Arm's-Length Pricing: An Economic Perspective," *Tax Notes* 54 (February 10, 1992), pp. 731-740.

¹²For an analysis of transfer pricing systems that support efficient resource allocation, see J. R. Hines Jr., "The Transfer Pricing Problem: Where the Profits Are," NBER Working Paper No. 3538, December 1990.

¹³For an analysis of the efficiency properties of international residence-based tax systems, with an application to Europe, see A. Giovannini and J. R. Hines Jr., "Capital Flight and Tax Competition: Are There Viable Solutions to Both Problems?" NBER Working Paper No. 3333, April 1990, and in *European Financial Integration*, A. Giovannini and C. Mayer, eds. Cambridge, UK: Cambridge University Press, 1991, pp. 172-210. For an analysis of some more radical proposals, see G. C. Hufbauer, *U.S. Taxation of International Income: Blueprint for Reform*, Washington, DC: Institute for International Economics, 1992.

¹⁴See Hines and Hubbard, *op. cit.*

¹⁵See R. Altschuler and T. S. Newlon, "The Effects of U.S. Tax Policy on the

Income Repatriation Patterns of U.S. Multinational Corporations," in *Studies in International Taxation*, A. Giovannini, R. G. Hubbard, and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1993, pp. 77-115, and R. Altschuler, T. S. Newlon, and W. C. Randolph, "Do Repatriation Taxes Matter? Evidence from the Tax Returns of U.S. Multinationals," in *The Effects of Taxation on Multinational Corporations*, M. Feldstein, J. R. Hines Jr., and R. G. Hubbard, eds. Chicago: University of Chicago Press, forthcoming.

¹⁶See J. R. Hines Jr., "Dividends and Profits: Some Unsubtle Foreign Influences," NBER Working Paper No. 3730, June 1991.

¹⁷See K. A. Froot and J. R. Hines Jr., "Interest Allocation Rules, Financing Patterns, and the Operations of U.S. Multinationals," in *The Effects of Taxation on Multinational Corporations*, M. Feldstein, J. R. Hines Jr., and R. G. Hubbard, eds. Chicago: University of Chicago Press, forthcoming.

¹⁸See J. R. Hines Jr., "The Flight Paths of Migratory Corporations," *Journal of Accounting, Auditing, and Finance* 6 (Fall 1991), pp. 447-479.

¹⁹See J. R. Hines Jr. and K. L. Willard, "Trick or Treaty? Bargains and Surprises in International Tax Agreements," mimeograph, Harvard University, October 1992.

²⁰See J. R. Hines Jr., "Forbidden Payment: Foreign Bribery and American Business After 1977," mimeograph, Harvard University, August 1994.



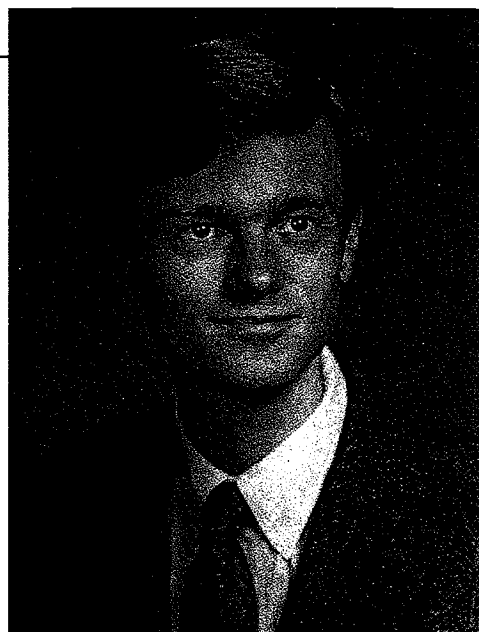
NBER Profile: *John Y. Campbell*

John Y. Campbell, the director of the NBER's Program on Asset Pricing, grew up in Oxford, England, the son of a British father and an American mother. He received a B.A. from Oxford in 1979 and then moved to the United States to attend graduate school, earning his Ph.D. from Yale in 1984. He spent the next ten years teaching at Princeton, but has just moved to Harvard as the first Otto Eckstein Professor of Applied Economics.

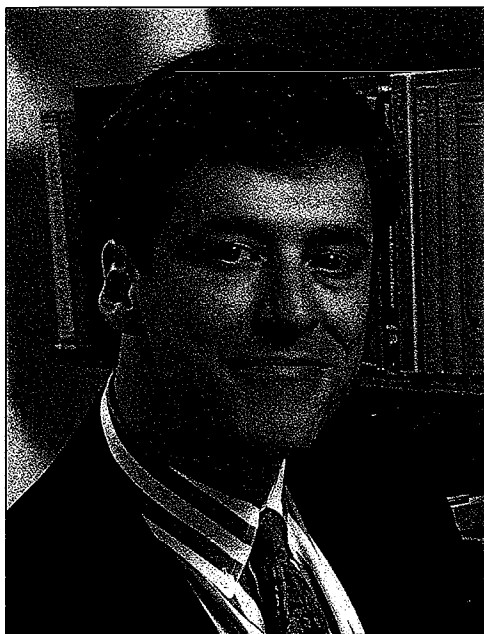
Campbell's research concerns asset markets, the macroeconomy, and the links between them. He

has served as coeditor of the *American Economic Review*, and currently is writing a graduate-level textbook, *The Econometrics of Financial Markets*, with Andrew W. Lo of the NBER and MIT and A. Craig MacKinlay of the NBER and the University of Pennsylvania.

Campbell and his wife, Susanna Peyton, live in Lexington, MA, with their three children, aged 4 through 7. Campbell's longstanding interests include hiking and choral singing; more recently, he has been seen teetering uncertainly on rollerblades through the streets of Lexington.



NBER Profile: *James R. Hines, Jr.*



James Hines is associate professor of public policy at the John F. Kennedy School of Government at Harvard University, and a faculty research fellow of the National Bureau of Economic Research. He teaches courses on tax policy both in the Kennedy School and in the economics department at Harvard.

Hines holds a B.A. and M.A. from Yale University, and a Ph.D. from Harvard, all in economics. Before coming to Harvard, he taught in the economics departments at Princeton and Columbia, and in the Woodrow Wilson School at Princeton.

Hines is also a member of the editorial boards of the journals *World Politics* and *International Tax and Public Finance*. Previously, he was an economist in the U.S.

Department of Commerce.

Hines's research concerns international taxation, particularly the taxation of multinational corporations. His work focuses on issues in transfer pricing, the financing of foreign direct investment, the influence of tax regimes on the location of R and D and physical investment, and the design of tax treaty policy. His research also examines the impact of domestic tax incentives on investment in the United States.

Hines is married to Kathryn M. Dominguez, who also teaches at the Kennedy School and is a faculty research fellow of the NBER. They look forward to the arrival of their first child "around the end of the tax year."

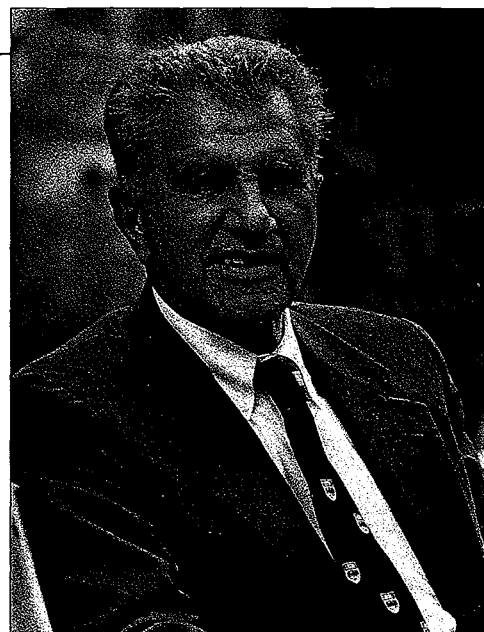
NBER Profile: *Merton H. Miller*

Merton H. Miller, the Robert R. McCormick Distinguished Service Professor Emeritus at the Graduate School of Business (GSB), University of Chicago, was elected to the NBER's Board of Directors in April 1994. He received his A.B. from Harvard University, his Ph.D. from Johns Hopkins University, and has been a member of the GSB faculty since 1961.

Miller began his career as an economist with the U.S. Treasury, Division of Tax Research (from 1943 to 1947), and the Board of Governors, Federal Reserve System (from 1947 to 1949). Following a term as an assistant lecturer at the London School of Economics, he joined the faculty of the Graduate School of Industrial Administration at Carnegie Institute of Technology. He taught economics and industrial administration there until his appointment at the GSB in 1961.

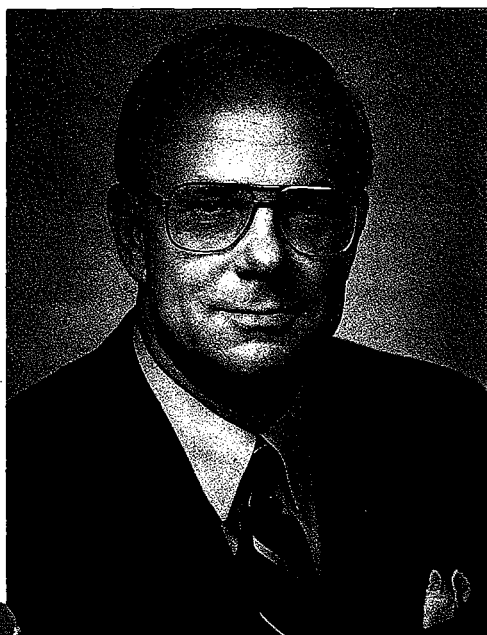
Miller has written extensively on economics and finance. Along with Franco Modigliani of MIT, he developed the much-cited "M&M Theorems" on capital structure and dividend policy that are the foundations of the theory of corporate finance. For these contributions he received the 1990 Nobel Memorial Prize for Economic Science.

Miller is the author of several books, including *Financial Innovations and Market Volatility* (Basil Blackwell, Inc.), 1991. He also served as chairman of a special panel appointed by the Chicago Mercantile Exchange to examine the role of futures markets in the crash of October 1987, and is currently a public director of the "Merc." Miller recently was appointed a Fellow of the American Academy of Arts and Sciences, and a Distinguished Fellow of the American Economic Association.



On winter Sunday afternoons, Miller and his wife Katherine can be found in the south endzone stands of Soldier Field in Chicago, watching the Bears play, and hoping against hope for another Super Bowl.

NBER Profile: *Gerald A. Polansky*



Gerald A. Polansky is the newest member of the NBER's Board of Directors, and has replaced Charles A. Walworth as Treasurer. Polansky retired from Deloitte & Touche at the end of 1992 as managing partner of the Office of Federal Services and a senior partner of the firm. He had been the managing partner of Touche Ross's Washington practice office from 1967-86, and chairman of the firm's Professional Strategy Group from

1986-9.

Polansky is currently a consultant, and is a member of the Board of Directors and Executive Committee of Montgomery Mutual Insurance Company. He is also past chairman of the board, and past treasurer, of the American Institute of Certified Public Accountants.

Polansky received his B.B.A. from the University of Wisconsin. He is married to Elizabeth Arlene Iverson, and they have three children.

Conferences

Behavior Models of Saving

An NBER Conference on "Behavioral Models of Saving" was held on June 3 at the offices of the Russell Sage Foundation. Jonathan S. Skinner, NBER and University of Virginia, organized this program.

Session I: Discussion—How Well Does the Life-Cycle Model Fit the Facts?

Richard Thaler, NBER and Cornell University, "What's Wrong with the Life-Cycle Model? Can Psychology Help?"

Angus Deaton, NBER and Princeton University, "Is There Still Life in the Life-Cycle Model?"

Session II: Alternative Models of Saving Behavior Theory and Evidence.

David Bowman, Federal Reserve Board, and

Debby Minehart and **Matthew Rabin**, University of California, Berkeley, "Loss Aversion in a Savings Model"

Discussant:

Anna Maria Lusardi, Dartmouth College

David I. Laibson, MIT, "Golden Eggs and Hyperbolic Discounting"

Discussant:

Chris Carroll, Johns Hopkins University

Session III: New Developments in Life-Cycle Models of Saving

Michael D. Hurd, NBER and SUNY, Stony Brook, "Evidence About the Life-Cycle Model in U.S. Panel Data"

Discussant:

George Loewenstein, Carnegie-Mellon University

Orazio Attanasio, NBER and Stanford University,

James Banks, IFS,

Costas Meghir, University College, London, and

Guglielmo Weber, University of Venice, "Dynamic Consumption and Saving Behavior in the United States and United Kingdom"

Discussant: Robert J. Shiller, NBER and Yale University

Session IV: Discussion—Public Policy Toward Retirement Saving

Christina H. Paxson, NBER and Princeton University, "What Do We Know About Retirement Saving?"

B. Douglas Bernheim, NBER and Princeton University, "Personal Saving, Information and Economic Literacy: New Directions for Public Policy"

In the first formal presentation of the day, **Bowman**, **Minehart**, and **Rabin** note that psychological evidence indicates that individuals' well-being depends not only on their current consumption of goods, but also on a reference level determined by their past consumption. People care much more about losses relative to their reference points than about gains: the authors define these characteristics as "loss aversion." After incorporating an extended form of loss aversion into a simple model, they conclude that, when there is sufficient uncertainty about income, people resist lowering consumption in response

to bad news about future income. This resistance is far greater than the resistance to increasing consumption in response to good news.

Laibson examines the savings patterns of consumers whose long-term preferences are in conflict with their short-term preferences. These conflicts create an incentive for consumers to use commitment devices to force themselves to honor their long-term tastes and to resist short-term temptations. Laibson also analyzes the consumption pattern of decisionmakers who create such commitments with illiquid financial instruments that constrain

their future choices. His model explains why consumption tracks income, while simultaneously explaining how impatient consumers manage to avoid excessive spending. It also explains why consumers have a different propensity to consume out of wealth than they do out of labor income. Finally, the model suggests a new link between rising access to consumer credit and falling levels of savings.

According to **Hurd**, in several U.S. panel datasets, the assets of the retired elderly decline as age increases, consistent with the life-cycle hypothesis of consumption (LCH), extended to include uncer-

tainty about the age of death. However, there are substantial differences among individuals in rates of change of wealth. This is partly measurement error and partly attributable to differences in taste. But under the LCH, it also could be the result of differences in individual perceptions of mortality risk: some anticipate much longer lifespans than others, and therefore want to retain more assets. Indeed, subjective evaluations of mortality risk, as measured in the Health and Retirement Survey, show substantial variation when averaged over known risk factors, such as economic status, smoking, and drinking, and at the individual level. One objective of future research will be to learn whether evaluations of risk influence saving.

In several datasets, differences in income/age profiles across different groups in the populations are mirrored in differences in consumption/age profiles. This has been interpreted as contradicting the life-cycle model of consumption. However, these groups also exhibit differences in demographics and labor supply. In his paper, **Attanasio** and his coauthors investigate

whether, under plausible assumptions about income and interest rates, a flexible version of the life-cycle model can generate the patterns observed in microdata.

"Bernheim finds that households have only a moderate appreciation of their financial vulnerabilities."

Rather than presenting a formal paper, **Paxson** gave an overview of what we know about saving for retirement. Her introduction and Bernheim's presentation then set the stage for an informal discussion.

Bernheim pointed out that previous work on public policy toward personal saving focused primarily on tax incentives. Relatively little has been written about current and potential information policies—including various forms of education and training, the provision of advice and guidance, the dissemination of pertinent facts and data, and general promotion—that also may influence saving decisions. Using a unique data source, Bernheim finds that households have only a moderate appreciation of their financial vulnerabilities.

Further, the new Social Security policy on benefit statements could depress saving significantly: first, because most recipients of these statements will be pleasantly surprised

by the generosity of the system, and second, because the statements may instill confidence that benefits will not be reduced or eliminated in the future. This is particularly important, since Bernheim's analysis

indicates that among workers aged 27 to 47, virtually all saving is undertaken by those with little or no confidence in the Social Security system.

Also attending this conference were NBER affiliates Eric Engen, University of California, Los Angeles; R. Glenn Hubbard, Columbia University; Laurence J. Kotlikoff, Boston University; Steven F. Venti, Dartmouth College; David N. Weil, Brown University; and Stephen P. Zeldes, University of Pennsylvania. Other participants were: Martin Browning, McMaster University; Colin Camerer, University of Chicago; Karen Dynan, Federal Reserve Board; William Gale, Brookings Institution; and Eric Wanner, Russell Sage Foundation.

Fifth Annual East Asian Seminar on Economics

The NBER's fifth annual East Asian Seminar on Economics was held at the National University of Singapore on June 15-17. Takatoshi Ito, NBER and Harvard University, and Anne O. Krueger, NBER and Stanford University, organized this program.

Ronald McKinnon and **Huw Pill**, Stanford University,

"Credible Liberalizations and International Capital Flows: The Overborrowing Syndrome"

Discussants:

Francisco Nadal, National University of Singapore, and Chong-Hyun Nam, Korea University

Kenjiro Hirayama, Kansai University, and

Wing Thye Woo, University of California, Davis, "Capital Flows and Monetary Policy"

Discussants:

Ronald McKinnon, and Chia Siow Yue, National University of Singapore

Jonathan Eaton, NBER and Boston University, and **Akiro Tamura**, Boston University, "Bilateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment" (NBER Working Paper No. 4758)

Discussants:

Chong-Hyun Nam, and
Bhanooji Rao, National University
of Singapore

Akira Kohsaka, Osaka Univer-
sity, "Interdependence Through
Capital Flows in the Pacific Asia
and the Role of Japan"

Discussants:

Toshiniko Kinoshita, The Import-
Export Bank of Japan,
Anne O. Krueger, and
Ya-Hwei Yang, Chung-Hua
Institute

Shang-Jin Wei, NBER and Har-
vard University, "White Cat or
Black Cat: Source and
Consequences of Foreign
Investment in China"

Discussants:

Pakorn Vichyanond, Thailand
Development Research Institute
Foundation, and
Wing Thye Woo

Shin-ichi Fukuda, Hitotsubashi
University, "The Structural
Determinants of Invoice
Currencies in Japan"

Discussants:

Jonathan Eaton and
Akira Kohsaka

Akiyoshi Horiuchi, University
of Tokyo, "An Evaluation of
Japanese Financial Liberalization:
A Case Study of Corporate Bond
Markets"

Discussants:

Kenneth S. Lin, National Taiwan
University, and
Won-Am Park, Hong-Ik University

Kenneth S. Lin, "The Role of
Macroeconomic Policy in Export-
Led Growth: Taiwanese and
South Korean Experience"

Discussants:

Florian A. Albuero, University of
the Philippines, and
Tankim Song, National University
of Singapore

Ya-Hwei Yang, Chung-Hua Insti-
tution for Economic Research, and
Jia-Dong Shea, Academia Sinica,
"Money and Prices in Taiwan in
the 1980s"

Discussants:

Kenjiro Hirayama, and
Muthi Semudram, University
of Malaya

Sang Woo Nam, Korean
Development Institute, "A Search
for a Desirable Banking System
and Bank Business Relationships
in Korea"

Discussants:

Akiyoshi Horiuchi and
Shang-Jin Wei

Won-Am Park, "Financial
Liberalization: The Korean
Experience"

Discussants:

Shin-ichi Fukuda and
Huw Pill

Kyitack Hong, Chung-ang Uni-
versity, "Foreign Capital and Eco-
nomic Growth in Korea: 1970-90"

Discussants:

Anne O. Krueger, and
Yiu Kuen Tse, National
University of Singapore

Tankim Song and

Yiu Kuen Tse, "Interest Parity
and Dynamic Capital Mobility:
The Experience of Singapore"

Discussants:

Ngiam Kee Jin, National
University of Singapore, and
Takatoshi Ito

Ngiam Kee Jin, "Singapore as a
Financial Center—New De-
velopments, Challenges,
and Prospects"

Discussants:

Sang Woo Nam and
Pakorn Vichyanond

Economic reform and stabiliza-
tion programs often have been
plagued by an excessive inflow of
foreign capital that has stimulated a
credit-driven boom, undermined
domestic monetary control, and ul-
timately reignited domestic price
inflation and damaged the reform
process. **McKinnon** and **Pill** ex-
amine this "overborrowing" syn-
drome. While effective real reforms
may justify increased inflows of fi-
nancial capital from abroad, as do-
mestic residents borrow to smooth
consumption in anticipation of high-
er future incomes, a variety of com-

mon financial market failures may
make such borrowing excessive.

The behavior of capital flows is
fundamental to monetary autono-
my; that is, the ability to maintain a
desired capital stock through steri-
lized intervention. **Hirayama** and
Woo find that interest rate linkages
have been loose enough for Pacific
Rim countries to conduct indepen-
dent monetary policy, at least with-
in a limited range. In particular, In-
donesia, Malaysia, and Singapore
have substantial monetary autono-
my despite their open capital ac-
count policies. Their foreign ex-

change markets are thin and domi-
nated by banks that are closely su-
pervised by their governments;
and, their governments are willing
to shock these economies to pun-
ish currency speculators. But Hira-
yama and Woo find that Indone-
sia's use of the covered interest
parity condition in the 1980s actu-
ally reduced monetary autonomy.

Eaton and **Tamura** analyze Jap-
anese and U.S. bilateral trade flows
and direct foreign investment (DFI)
positions with a sample of about
100 countries during 1985-90. Tak-
ing into account population, in-

come, the land-labor ratio, the average level of education, and region, they find that the features of a country associated with more trade with either Japan or the United States also tend to be associated with more DFI from Japan or the United States. However, despite U.S. concern about its trade deficit with Japan, Japan is much more open to the United States, not only as a source of imports, but also as a destination for U.S. exports, than most countries in Western Europe. Western Europe is more open to U.S. DFI than Japan is, though. Eaton and Tamura also find that a country's level of education tends to increase its interaction with the United States, but not its trade with Japan. Also, the United States tends to trade more with densely populated countries, while Japan tends to import more from sparsely populated countries.

Kohsaka presents an overview of the recent trends in capital flows across categories, and into and out of the economies in Pacific Asia. The regional pattern of capital flows there is different from that of other developing regions. Official flows and bank loans have remained important in Pacific Asia since the 1980s, while all developing regions share upward trends in direct and portfolio investment. In addition to being recipients of capital, the Asian newly industrializing economies have become significant capital suppliers in Pacific Asia since the 1980s. The network of capital flows in the region is now greatly diversified and sophisticated; Japan's role as a supplier of capital has remained large, but has not grown relatively. Finally, even though bank loans have declined relatively on a net basis, gross cross-border bank claims and liabil-

ities have increased remarkably since the mid-1980s. This reflects the recent development of capital markets in the region, where Japan has played an important role.

Foreign direct investment (FDI) in China comes disproportionately

"Indonesia, Malaysia, and Singapore have substantial monetary autonomy despite their open capital account policies."

from overseas Chinese, particularly those residing in Hong Kong, rather than from the four major source countries: the United States, Germany, France, and the United Kingdom. Using city-level Chinese data, **Wei** finds that FDI is associated positively with cross-city differences in growth rates. Foreign-invested firms contribute significantly to overall Chinese exports. Further, FDI contributes positively to the rapid expansion of township and village enterprises, **Wei** finds.

Fukuda investigates why invoice ratios of the Japanese yen are relatively low for Japan's foreign trades. He shows that the "pricing-to-market" behavior of Japanese exporters may explain their choice of invoice currency. He also focuses on the invoice currency ratios in Japan's imports, and the relationship between invoice ratios and trade dependency. **Fukuda** shows that low yen-invoiced ratios are caused mainly by the large shares of oil and raw materials in Japan's imports. Recent changes in Japan's invoice currency ratios are caused by changing trade dependency with the United States.

Horiuchi investigates the process of Japan's financial liberalization in corporate bond markets.

Japanese corporate bond markets have been liberalized substantially since the early 1980s, mainly because of pressure from abroad. But the liberalization has proceeded in a distorted way, in the sense that convertible bonds and other new instruments were not allowed to the firms that needed them most. Specifically, only well-established firms were allowed access to convertible bonds.

Lin analyzes the role of macroeconomic policy in export-led growth for Taiwan and South Korea. He argues that sound fiscal policy in both countries not only gave macroeconomic policy instruments the maximum degree of freedom in achieving the goal of export growth, but also allowed the central bank to be more flexible in promoting exports without immediately jeopardizing its goal of price stability. Further, sound fiscal policy, not central bank independence, accounted for moderate inflation in the two economies.

Yang and Shea set up a theoretical model that incorporates stock trading and import prices in order to analyze the relationship between the money supply and domestic prices in Taiwan. Using data from the first quarter of 1978 to the second quarter of 1993, they then find that stock trading has a strong influence on the demand for M2. Thus stock trading absorbs some of the influence of the money supply on prices. Decreases in import prices (even after considering the appreciation of the New Taiwan dollar and import decontrol) also help to stabilize domestic prices.

Nam explains that, in order to ease the concentration of bank loans to large Korean business groups, their "principal transactions

banks" have been required to carry out government credit controls and to monitor investment and financing operations. This system has been successful in limiting access to bank credit. However, it has not been effective in improving the capital structure, alleviating the concentration of economic power, or strengthening industrial competitiveness. Furthermore, the regulatory system has hampered the autonomous development of cooperative bank-business relationships similar to those with Japanese main banks. With the relaxation of credit controls, progress in financial liberalization, and structural changes in Korea's financial market, the largest and leading corporations are likely to maintain rather competitive relationships with several banks, while somewhat smaller but established firms will develop more exclusive relationships with one bank.

Park explains that although Korea's cautious and gradual approach to financial liberalization succeeded in avoiding the unexpected pitfalls of deregulation, and in achieving macroeconomic stability, it was driven mostly by the deregulation of nonbank financial institutions. Thus, reform of the bank-

ing sector has still not occurred. Park's analysis reveals that Korea still has a long way to go to achieve free mobility of capital and floating exchange rates.

Hong quantifies the contributions that foreign capital has made toward the growth of individual industries in Korea. Using annual data for the last 20 years, he finds that foreign direct investment in Korea has greatly enhanced the factor productivity of most manufacturing industries, whereas neither commercial loans nor public

"Foreign direct investment in Korea has greatly enhanced the factor productivity of most manufacturing industries."

loans have had a significant impact on productivity. However, the direct contributions of foreign capital to growth through capital formation are small vis-à-vis their indirect contributions through the increase in productivity.

Song and Tse examine international capital mobility in Singapore from 1977 to 1993. They find that, except for a brief period in the early 1980s, deviations from covered interest parity were very small

indeed. Over time, deviations from uncovered interest parity also have become smaller and less variable, suggesting an increasing degree of capital mobility. This implies that the various financial liberalization measures have had their intended effects, but that the central bank's ability to conduct independent domestic monetary policy will be hampered further.

Jin notes that Singapore has become a major financial center of international repute. Its foreign exchange market is now the fourth largest, and the Singapore International Monetary Exchange is among the fastest growing futures and options exchanges in the world. However, the Asian Dollar Market (ADM) business in Singapore has not been growing as rapidly as in Hong Kong and Tokyo. In the years ahead, the ADM business, which is basically a conventional banking service, will face greater competition from the emerging financial centers in the region such as Taipei, Bangkok, and Labuan.

The proceedings of this conference will be published by the University of Chicago Press as an NBER volume. Its availability will be announced in a future issue of the *NBER Reporter*.

Uncertainty, Risk, and Insurance

The NBER and the French Ministry of Foreign Affairs cosponsored the seventh annual Franco-American Seminar on "Uncertainty, Risk, and Insurance." It was held in Bordeaux, France on June 20 and 21. The program, organized by David F. Bradford, NBER and Princeton University,

Pierre-André Chiappori, ENSAE, and Denis Kessler, EHESS, was

Georges Dionne, University of Montreal, "Moral Hazard, Optimal Auditing, and Workers' Compensation"

Discussant:

David Cummins, University of Pennsylvania

David Cummins and **Sharon Tennyson**, University of Pennsylvania, "Controlling Automobile Insurance Costs"

Discussant:

Pierre Picard, University of Nanterre

Ralph Winter, University of Toronto, "The Dynamics of Competitive Insurance Markets"

Discussant:

Eric Bryis, ISA

Christian Gollier and **Jean-Jacques Laffont**, University of Toulouse, "Monopolistic Insurance Markets Under the Coinsurance Clause"

Discussant:
Michael Rothschild, University of California, San Diego

Pierre Pestieau, University of Liege, The Eighteenth Annual Lecture of the Geneva Association: "Social Protection and Private Insurance"

Discussants:
David F. Bradford,
Gary S. Fields, and
André Masson, DELTA

Christian Gourieroux, CREST, "Unemployment Insurance on Mortgage Contracts"

Discussant:
Jeremy I. Bulow, NBER and University of California, San Diego

William Gentry, NBER and Duke University,
Patricia Born and
W. Kip Viscusi, Duke University, and

Richard J. Zeckhauser, NBER and Harvard University, "Determinants of the Organizational Form of Insurance Companies: Stocks Versus Mutuals"

Discussant:
Georges Diorme
Christian Gollier,
Eric Renault, and
Jean-Charles Rochet, University of Toulouse, "Recursive Utility, Precautionary Saving, and the

Demand for Insurance"

Discussant:
Thomas Russell, University of California, Berkeley

Anne Gron, University of Chicago, and
Deborah J. Lucas, NBER and Northwestern University, "External Financing and Insurance Cycles"

Discussant:
Pierre-Andre Chiappori
Dwight M. Jaffee and
Thomas Russell, University of California, Berkeley, "Causes and Consequences of Rate Regulation in the Auto Insurance Industry"

Discussant:
Louis Beckhoudt

In many workers' compensation insurance plans, the insurer does not bother to verify the health status of the insured who files a claim. **Dionne** identifies certain groups of workers who are likely to file workers' compensation claims. Then, using Canadian data, he confirms that for any stated injury, certain workers will stay out of work longer than others; some workers will file fraudulent claims. Among those likely to file fraudulent claims, the tendency is also to claim injuries that are difficult to diagnose and verify, including lower back pain, or strains. So, the question becomes: how much auditing, or verification, would be cost effective for insurance companies in eliminating fraudulent claims?

Cummins and **Tennyson** compare and analyze American data on fraudulent claims, and survey data on individuals' reactions to fraudulent insurance claims. They find

that in certain states (for example in the Midwest and on the West Coast), people are far more shocked by insurance fraud than in other states (those in the South and on the East Coast). The authors confirm that the most fraudulent claims occur in the "least ethical" states, according to the survey data.

"Stock companies appear to respond more rapidly to changing conditions in the market, since they reduce the scale of their business, as reflected in premium levels, in response to declines in profitability more rapidly than mutual companies do."

According to conventional theory, insurance premiums should be efficient predictors of the present value of policy claims and expenses. **Winter** develops an alternative

theory based on two assumptions: first, insured risks are dependent; insurer's net worth determines market capacity, since it is necessary to back the contractual promises to pay claims. Second, in raising net worth, external equity is more costly than internal equity. This theory explains the variation in premiums and insurance contracts over the "insurance cycle," and is supported by tests on postwar data.

Gollier and **Laffont** consider a monopoly insurance company that cannot estimate the value of covered assets at the time of underwriting; only the distribution of the severity of losses is known. Also, an ex post appraisal of the value of the property can be performed in case of accident. As in most property insurance lines, the premium paid relies on the value of the asset announced by the owner. The coinsurance clause stipulates that the indemnity paid by the insurer equals the actual

loss, multiplied by the ratio of the amount of insurance carried, over the value of the insured property. The authors show that policyholders will deliberately underestimate the value of their asset under that clause. At equilibrium, owners with a low property value will be partially insured, whereas owners with a larger value will be fully covered.

Pestieau received the Geneva Association prize for his work on the relationship between public economics and the economics of insurance. In his speech, he reviewed the possible justifications for a system of national health insurance, distinguishing between classical and more recent arguments. He concluded that one must choose between the pure logic of insurance, implying a strong link between coverage and premiums, and a logic of assistance, or more specifically, redistribution.

Gourieroux considers a type of mortgage insurance with which the insurance company will pay the cash flow of the credit as soon as the borrower becomes unemployed, for a maximum number of payments fixed in the contract. They develop a model for describing the cash flows paid by the insurance company, and jointly take into account unemployment, job search, and prepayment. With such a model, it is possible to study the probabilistic properties of the cash flow pattern as a function of the age of the credit.

An interesting organizational feature of insurance markets is that stock firms (which are owned by shareholders) and mutual firms (which are owned by policyholders) coexist. **Born, Gentry, Viscusi,** and **Zeckhauser** analyze the performance of these two classes of insurance firms using data collected by the National Association

of Insurance Commissioners for 1984-91. Overall, stock companies comprise a larger share of the property-casualty market, accounting for 65 percent of all premiums, versus 25 percent for mutuals. However, mutuals are larger on a per-line, per-state basis. Stock companies appear to respond more rapidly to changing conditions in the market, since they reduce the scale of their business, as reflected in premium levels, in response to declines in profitability more rapidly than mutual companies do. Also, mutuals screen their policies more carefully, because they incur a lower level of losses for any given value of premiums.

Gollier, Renault, and Rochet enrich the classical model of demand for life insurance by introducing "Kreps-Porteus" preferences. The classical form with a single utility function does not permit distinguishing between intertemporal substitution and risk aversion. This is a serious limitation, because one can imagine agents characterized simultaneously by a weak degree of intertemporal substitution and a relative neutrality to risk. The chosen model allows us to distinguish conceptually between the two effects, and thus to generalize and clarify the classical results on precautionary saving.

Insurance markets experience marked fluctuations, or cycles. At first there are relatively low but steady profits; then a difficult period when rates are raised and benefits cut; finally, the industry returns to a level of profitability that depends on the premium base and volume of activity. One possible explanation for these cycles is capacity constraint. **Gron and Lucas** show that these periods that they study are characterized equally, from the perspective of the in-

surance company, by a decline in payments to stockholders (including dividends), as much as by numerous issues of stock in the financial markets.

Proposition 103, passed by a referendum in California in 1988, attempted to suppress auto insurance premiums by requiring a 20 percent rate rollback, and to compress premiums by restricting the use of certain key variables (such as zip codes). Many other states have similar auto insurance regulations. **Jaffee and Russell** consider self-interest, economic efficiency, redistributive equity, and "fairness" as four possible causes of this voter initiative. They are in the process of carrying out empirical tests of these hypotheses, based on the Proposition 103 voting record across California counties.



17th Annual ISOM

The NBER's Seventeenth Annual International Seminar on Macroeconomics was held at the Bank of France in Paris on June 23 and 24. The general themes of the meeting were social spending, business cycle disturbances, and European regional differences. This year's program was co-chaired by Jeffrey A. Frankel, NBER and University of California, Berkeley, and Guido Tabellini, IGIER. The executive cochairmen of the conference were Robert J. Gordon of NBER and Northwestern University, who so ably organized the past 16 meetings, and Charles Wyplosz of INSEAD. Outgoing cochairman Georges de Mènil of DELTA served as liaison to the Bank of France for this meeting, together with Gordon, he was instrumental in ensuring the success of this conference over the past 16 years.

The program was:

Alberto Alesina, NBER and Harvard University, and
Roberto Perotti, Columbia University, "Taxation and Redistribu-

tion in Open Economies"

Discussants:

Sweder Van Wijnbergen, University of Amsterdam, and
 Albert Marcet, Universitat Pompeu Fabra

Laurence M. Ball, NBER and John Hopkins University;
Douglas W. Elmendorf, Congressional Budget Office, and
N. Gregory Mankiw, NBER and Harvard University, "The Deficit Gamble"

Discussants:

Daniel Cohen, CEPREMAP, and
 Patrick Kehoe, Federal Reserve Bank of Minneapolis

Lars Ljungqvist, University of Wisconsin, and
Thomas J. Sargent, NBER and Stanford University, "The Swedish Unemployment Experience"

Discussants:

Robert E. Hall, NBER and Hoover Institution, and
 Torsten Persson, NBER and IIES

Riccardo Rovelli, IGIER;
R. Helg, University of Bocconi, and
P. Manasse, University of Udine, "EMU and the Dynamics of

Industrial Sectors in Europe"

Discussants: William H. Branson, NBER and Princeton University, and

Philippe Moutot, Bank of France
 Panel Discussion: Are Europe's Problems Cyclical or Structural?

Martin Feldstein, NBER and Harvard University;
Robert J. Gordon,
Andre Icart, Bank of France, and
Mervyn A. King, NBER and Bank of England

Danny Quah, London School of Economics, "Convergence Across Europe"

Discussants:

Andrew K. Rose, NBER and University of California, Berkeley, and
 Jurgen Von Hagen, University of Mannheim

Fabio Canova, Universitat Pompeu Fabra, and
Gianni De Nicolò, University of Rome, "Financial Markets and Business Cycles"

Discussants:

Anil K. Kashyap, NBER and University of Chicago, and
 Harald Uhlig, University of Bonn

In all modern industrial countries, redistributive expenditures are a larger component of the government budget than consumption of goods and services. In this paper, **Alesina** and **Perotti** study redistribution across different types of agents in a world characterized by the presence of labor unions and distortionary taxation. They show that an increase in transfers to, say, retirees, financed by distortionary taxation, can generate a loss of competitiveness, an appreciation of the relative price of nontradables, and a decrease in em-

ployment in all sectors of the domestic economy.

The conventional wisdom holds that government budget deficits crowd out capital, reduce national income, and lead to lower living standards for future generations. But **Ball**, **Elmendorf**, and **Mankiw** argue that this conventional wisdom might well turn out to be incorrect. It is quite probable that deficits lead to a period of greater prosperity without any adverse long-run consequences. This follows from the likelihood that the government can run a Ponzi

scheme: forever roll over its debt, rather than retire it through taxes. Yet deficits are a risky gamble, because they harm future generations. In particular, the slow growth of output may cause a government Ponzi scheme to fail, and thus compel a tax increase. However, the deficit gamble is more likely to succeed than to fail, the authors find.

Ljungqvist and **Sargent** interpret several aspects of the Swedish unemployment experience since the 1960s. The rate of open unemployment in Sweden during the last

25 years has been between 1.2 and 3.5 percent. (Adding workers who participate in training programs and those in temporary relief jobs, the rate still remains between 3 and 6 percent.) However, there was a major change in the average duration of unemployment spells and the inflow of workers into unemployment: the inflow declined in the 1980s compared to the 1960s, but the average duration increased enough to leave the overall unemployment rate roughly unchanged. Finally, in the early 1990s there was a sharp increase in the unemployment rate: the "total" unemployment rate in 1993, including workers in various labor programs, was 13 percent.

A new monetary regime, and the growing integration of markets for goods and factors in Europe, may affect the incentive for firms in different industries to disperse their plants in different regions and countries, thus influencing factor prices and incomes. **Rovelli, Helg, and Manasse** look at production data disaggregated by industry for 11 European countries, and derive time series corresponding to coun-

trywide, industrywide, and idiosyncratic innovations. They evaluate the share of growth in industrial output that is attributable to each type of disturbance, and assess whether innovations can be considered "symmetric" or "asymmetric."

Quah examines the process of European regional convergence, stressing its connection to labor mobility. His analysis departs from most previous research in two ways: first, it emphasizes the dynamics of the entire cross-sectional distribution of regions, not just the behavior of a single, representative region. Second, it considers actual two-way labor mobility, not net mobility. Quah claims that regional convergence across Europe has been greater than that within individual countries, and that actual regional mobility greatly exceeds net regional mobility. These findings emphasize the importance of heterogeneity in labor flows that, in turn, helps to explain observed regional convergence patterns across Europe.

Canova and De Nicolo analyze the relationship between stock returns and real activity from the

point of view of a general-equilibrium, multicountry model of the business cycle. They find that there is a relationship between domestic output growth and domestic stock returns, which becomes stronger when foreign variables are included and when longer holding period returns are considered. Their model better reproduces the actual data when technology shocks drive the cycle; the magnitude of the effect of shocks on future expected cash flows is crucial in reproducing the strength of association between stock returns and output growth. Finally, **Canova and De Nicolo** show that international linkages emerge primarily because foreign variables contain information about future domestic variables.

Also participating in the conference were: **Bernard Bensaid**, **Henri Pages**, and **Pierre Sicsic**, Bank of France; **François Bourguignon**, **DELTA**; **Olivier Jeanne**, **CERAS-ENPC**; and **Richard Portes**, **NBER** and **Birkbeck College-University of London**. The proceedings of this conference will be published in a special issue of the *European Economic Review*.

Microstructure of Foreign Exchange Markets

The NBER, the Centre for Economic Policy Research (CEPR) in London, and the Bank of Italy jointly sponsored a conference on the "Microstructure of Foreign Exchange Markets" on July 1 and 2. The conference was organized by **Jeffrey A. Frankel**, director of the NBER's research on international finance and macroeconomics, also of the University of California, Berkeley; **Giampaolo Galli**, Bank of Italy; and **Alberto Giovannini**, Treasury Ministry of Italy

and CEPR. Participants discussed the following topics:

Mark Taylor, University of Liverpool, and
Robert P. Flood, NBER and International Monetary Fund, "Exchange Rate Economics: What's Wrong with the Conventional Macro Approach?"
 Discussants:
Andrew K. Rose, NBER and University of California, Berkeley, and

Lars E. O. Svensson, NBER and Stockholm University

Charles Goodhart, London School of Economics, and
Takatoshi Ito, NBER and Harvard University, "One Day in June 1993: A Study of the Working of Reuters D2000-2 Electronic Foreign Exchange Trading System"
 Discussants:
William H. Branson, NBER and Princeton University, and
Alessandro Penati, IGIER

Fabio Baglione and
Andrea E. Beltratti, University of
Torino, and

Giuseppe Bertola, NBER and
University of Torino,
"Heterogeneous Behavior in
Exchange Rate Crises"

Discussants:

Lorenzo Bini-Smaghi, Bank of
Italy, and

Richard K. Lyons, NBER and
University of California, Berkeley

Philippe Jorion, University of
California, Irvine, "Risk and
Turnover in the Foreign Exchange
Market"

Discussants:

Bernard Dumas, NBER and HEC
School of Management, and
Marco Pagano, University of
Bocconi

William Perraudin and
Paolo Vitale, Cambridge
University, "Information Flows in
the Foreign Exchange Markets"

Discussants:

Alan Kirman, European University
Institute, and

Silverio Foresi, New York
University

Richard K. Lyons, "Foreign
Exchange Volume: Sound and
Fury Signifying Nothing?"

Discussants:

Mark Flood, Concordia
University, and

Antonio Mello, Bank of Portugal

Allan Kleidon, Stanford
University, and

David Hsieh, Duke University,
"Bid-Ask Spreads in Foreign
Exchange Markets: Implications
for Models of Asymmetric
Information"

Discussants:

Zhaohui Chen, London School of
Economics, and

Anita Suvanto, Bank of Finland

Peter M. Garber and
Michael G. Spencer,
International Monetary Fund,
"Dynamic Hedging and the
Interest Rate Defense"

Discussants:

Paolo Kind, Salomon Brothers,

and

Gerard Genotte, Institute of
Economic Analysis, Barcelona

Barry Eichengreen, NBER and
University of California, Berkeley;

Andrew K. Rose; and

Charles Wyplosz, INSEAD, "Is
There a Safe Passage to EMU?
Evidence from the Markets"

Discussants:

Vittorio U. Grilli, Treasury
Ministry of Italy, and

Jose Vinals, Bank of Spain

Panel Discussion: Is the Growth
and Evolution of Foreign
Exchange Markets a Concern for
Policymakers?

Andrew Crockett, BIS;

Michael L. Mussa, International
Monetary Fund;

David Mulford, CS First Boston
Limited;

Ian Plenderleith, Bank of
England; and

Fabrizio Saccomanni, Bank of
Italy

Taylor and **Flood** analyze the major macroeconomic exchange rate models developed during the last 20 years, including the flexible-price monetary model, the sticky-price, overshooting monetary model, the portfolio balance model, and the equilibrium model. Using data on 21 industrialized countries for the floating-rate period, the authors show that while macroeconomic fundamentals may be a poor guide to variations in short-run (one year or less) movements in the exchange rate, these fundamentals have considerable explanatory power over longer horizons.

On June 16, 1993, Reuters videotaped entries on their electronic dealing system, D2000-2, for seven

hours. They allowed **Goodhart** and **Ito** to transcribe these entries, and provided them with data on prices and amounts of "firm" quotes, and on transactions prices and quantities. Goodhart and Ito investigate how closely certain widely available foreign exchange data corresponded to the D2000-2 data. They find similarities for price characteristics, levels, changes, and volatility, but not for frequency of quote entry, spreads, and transactions.

Baglione, **Beltratti**, and **Bertola** study a foreign exchange market in which agents have different consumption patterns, risk aversion, and institutional features. Their analysis is motivated by the apparent differences in investors' posi-

tions on the eve of the September 1992 European currency crisis, particularly regarding the Italian lira. Accordingly, the authors focus on the balance-sheet effects of changes in the probability of a devaluation. This probability affects both the expectation and the variance of return differentials across assets denominated in different currencies, and therefore the portfolio positions of different investors and central banks, and yields ex post speculative gains and losses as the devaluation is realized.

Many elements of the microstructure of the foreign exchange market depend on perceived risk. Bid-ask spreads should increase with the risk of open positions. **Jorion** uses risk forecasts contained

in option-on-currency-futures quoted on the Chicago Mercantile Exchange from 1985-92 to confirm a positive relationship between unexpected volatility and unexpected volume. He also finds that spreads are correlated positively with expected volatility.

A striking feature of the market for foreign exchange is dealers' ignorance of the order flow of other marketmakers. Such decentralized markets contrast sharply with most stock markets in which information on trades is public knowledge. **Perraudin** and **Vitale** examine the efficiency and other characteristics of decentralized markets. They show that decentralized markets are efficient in times of high uncertainty, but perform less well when market participants are confident of underlying values. Decentralized markets also generate greater volatility than other types of markets.

Lyons asks whether variation in trading intensity is informative. Using data on transactions, he tests whether foreign exchange trades occurring when intensity is high are more informative—dollar for dollar—than trades occurring when intensity is low. Lyons presents what he calls a Hot-Potato model of currency trading, which explains why low-intensity trades might be more informative. In his model, the wave of inventory-management trading among dealers following innovations in orderflow generates an inverse relationship between intensity and information content. Empirically, low-intensity trades are more informative, which supports the Hot-Potato hypothesis.

Kleidon and **Hsieh** explore the implications of foreign exchange

markets for alternate models of intraday price and volume behavior. The advantage of using foreign exchange data is that the market extends around the clock, and that traders from any location have equal access via computer to the posted quotes of all traders in all locations. Moreover, since the busi-

“While macroeconomic fundamentals may be a poor guide to variations in short-run (one year or less) movements in the exchange rate, these fundamentals have considerable explanatory power over longer horizons.”

ness days of traders in London and New York overlap, the authors can observe whether the behavior of quotes is integrated as implied by asymmetric information models. But **Kleidon** and **Hsieh** find no impact of the striking New York quote behavior on London quotes, in either volatility or spreads. Similarly, although London “closes” its day with high variances and high spreads, this does not cause a ripple on the quotes of New York traders.

The expansion of markets for financial derivative products, and their use for both speculative and hedging purposes, has complicated the management of fixed exchange rates. Hedging strategies are mainly of the stop-loss or portfolio insurance variety, and are triggered by changes in exchange rates and interest rates. **Garber** and **Spencer** describe the trading operations involved in implementing hedges, and the impact of these operations on central bank policy. Specifically, they focus on the viability of the

use of a liquidity squeeze to defend an exchange rate in the face of dynamic hedging strategies. This will hinge on the size and timing of the funding operations of those who are being squeezed, relative to those engaged in the hedging operation.

Eichengreen, Rose, and Wyplosz discuss the historical efficacy of capital controls. Using IMF data from a panel of countries, they show that capital controls have been associated strongly with differences in macroeconomic behavior, especially in monetary policy. However, capital controls have not prevented speculative attacks. The authors also provide some tentative evidence on the channels of speculative

attacks, showing that bank lending to foreigners is probably a key factor. Finally, they discuss the merits of capital controls as a way to achieve a European Monetary Union (EMU). Capital controls are a third-best route to an EMU.

An NBER conference volume is anticipated, to be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.



Political Economy of Trade Protection

An NBER conference on the "Political Economy of Trade Protection" was held in Washington, DC on September 13. This conference marked the final stage of an NBER research project. The Bureau organized a coordinated study of the political and economic factors that shape trade policy. A scientific conference was held last February to discuss the research; this meeting brought the results to a broader audience of government and corporate policymakers. Anne O. Krueger, NBER and Stanford University, organized the following program:

J. Michael Finger, The World Bank, and

Ann Harrison, NBER and Columbia University, "Import Protection for U.S. Textiles and Ap-

parel: Viewed from the Domestic Perspective" (NBER Working Paper No. 4751)

Joseph P. Kalt, Harvard University, "Do Precedent and Legal Argument Matter in the Lumber CVD Cases?" (NBER Working Paper No. 4749)

Bruce L. Gardner, University of Maryland, "The Political Economy of U.S. Export Enhancement Program for Wheat" (NBER Working Paper No. 4747)

David Orden, Virginia Polytechnic Institute, "Agricultural Interest Groups and the North American Free Trade Agreement" (NBER Working Paper No. 4790)

Douglas A. Irwin, NBER and University of Chicago, "Trade Politics and the Semiconductor Industry" (NBER Working Paper

No. 4745)

Robert W. Staiger, NBER and University of Wisconsin, and **Frank A. Wolak**, NBER and Stanford University, "Differences in the Uses and Effects of Antidumping Law Across Import Sources: A Nontechnical Summary" (NBER Working Paper No. 4846)

Michael O. Moore, George Washington University, "Steel Protection in the 1980s: The Waning Influence of Big Steel?" (NBER Working Paper No. 4760)

Douglas R. Nelson, Tulane University, "Making Sense of the 1981 Automobile Voluntary Export Restraints: Economics, Politics, and the Political Economy of Protection" (NBER Working Paper No. 4746)

Finger and **Harrison** examine the role of the state—in this case the U.S. government—in the process of obtaining trade protection. The U.S. textile and apparel industries were particularly successful in becoming protected: while comprising only 2 percent of the domestic labor force, they accounted for an estimated 83 percent of the net cost to the U.S. economy of all import restrictions. The authors find that the industries' power in key congressional districts, particularly in the South, and their regional impact in presidential elections, explains much of this success.

Kalt shows that Canadian policy toward lumber results in intramarginal transfers, but it does not affect exports to the United States. Despite that, the U.S. lumber in-

dustry has been able to achieve protection, which Kalt judges to be of substantial benefit, since it raises the U.S. price of lumber. Kalt also finds that, in general, the political influence of the participants who seek protection is a significant factor in determining the outcome: that is, when the potential gains from winning are significant, and the group seeking protection is politically influential, protection is more likely to follow from the process.

Despite a widespread belief that the United States had a comparative advantage in the production of grain, particularly wheat, real farm income fell by one-half from 1971 to the early 1980s, and farm equity dropped by two-thirds. **Gardner** analyzes the battle over export subsidies for wheat. Two powerful

farm-state senators were able to negotiate effectively with the White House budget director, producing a "revenue-neutral" export enhancement program. Since the program's costs were spread among the mass of consumers, who were not effectively organized, the cooperation between the legislative and executive branches secured the program's passage.

Orden evaluates the influence of diverse agricultural interest groups in the United States on the North American Free Trade Agreement (NAFTA). Export-oriented interest groups, such as oilseeds, livestock, most grains, and some horticultural products, supported NAFTA publicly. Wheat, sugar, peanut, and winter fruit and vegetable producers opposed NAFTA.

This opposition was not directed toward the executive branch and the side agreements being negotiated, but toward Congress. In the legislative debate, the opponents were able to bargain for accommodations, resulting in little reform of the entrenched agricultural support programs during NAFTA's lengthy tariff phase-out periods.

The 1986 U.S.-Japan semiconductor trade agreement often is cited in the public press as a victory for American business. Proponents of "managed trade" point to the attainment of the targeted 20 percent share of the Japanese domestic market for memory (DRAM) chips. However, **Irwin** shows that the results are mixed at best. Japanese manufacturers won windfall profits that were plowed back into research and product development. Higher world prices induced the South Koreans to enter the DRAM market. U.S. semiconductor firms shifted toward producing higher-margin microprocessor chips. And the U.S. microcomputer industry, stung by higher DRAM prices, weighed in against the trade agreement when it came up for renewal in 1991.

Staiger and **Wolak** study U.S. firms that file antidumping cases. They distinguish between "outcome filers," that is, firms that want relief via antidumping duties and/or trade suspension agreements, and "process filers," which file antidumping cases simply for the effect the filing will have on the offending country (typically, during the antidumping investigation, imports drop by 50 percent). The authors show that "outcome filers" dominate in industries facing com-

petition from Europe, Japan, and newly industrialized countries. "Process filers" dominate in industries facing competition from Canada and Mexico, and the rate of filing is driven by the industry's rate of capacity utilization.

"Despite a widespread belief that the United States had a comparative advantage in the production of grain, particularly wheat, real farm income fell by one-half from 1971 to the early 1980s and farm equity dropped by two-thirds.

The American steel industry was very successful in obtaining import protection through the 1970s and into the 1980s, but less successful beginning in the mid-1980s. **Moore** explains that this is the result of a combination of factors: the rise in the number of "mini-mills" made the big steel producers, who had dominated the industry in 1970, relatively less important. Also, increased competition and the lengthy recession in the early 1980s forced the big producers to become much more efficient. Further, some steel users became active opponents of steel protection. The effectiveness of this well-organized and cohesive group was important to the steel industry.

In the late 1970s, the U.S. auto industry faced slumping market share and profits, rising labor costs, and tough competition from Japanese imports. The industry fought for and won some protection from Japanese imports in the form of a voluntary export restraint (VER). **Nelson** shows that VERs on Japanese automobiles did not achieve

the results the automakers apparently hoped for: the VER largely was offset by an initial decline in demand (as a result of the recession), thus making it ineffective; later the VER resulted in higher profits for Japanese companies (thus strengthening their competitive position), and in increased imports from other countries. Nelson's analysis demonstrates convincingly that the turnaround for U.S. automakers was a result of competition, and not protection per se.

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



Bureau News

1994 Summer Institute

Over 660 economists from 173 universities and organizations around the world attended the NBER's 16th annual Summer Institute. This year's program was funded primarily by a grant from the Lynde and Harry Bradley Foundation, with additional support from the National Science Foundation and the National Institute on Aging. The papers presented at 26 different sessions covered a wide variety of topics. A list of all papers and work in progress can be obtained by writing to: Summer Institute Catalogue, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

Alan Krueger Becomes Chief Economist of Labor Department

Alan B. Krueger, who has been affiliated with the NBER since September 1987 and most recently was a research associate in the Bureau's labor studies program, went on leave in September to become the Chief Economist at the U.S. Department of Labor. Krueger is also the Bendheim Professor of Economics and Public Affairs at Princeton University. At the Department of Labor, he replaces Lawrence F. Katz, also an NBER research associate in the labor studies program, who has returned to Harvard University as a professor of economics.

Moskow to Head Chicago Fed

The Federal Reserve Bank of Chicago named NBER Director Michael H. Moskow, an economist and business executive who served as deputy U.S. Trade Representative in the Bush administration, as its new president. Moskow originally served on the NBER Board of Directors from 1979-91, resigned to assume a government position, and was reelected to the Board in 1993. Most recently a professor at Northwestern University's Kellogg School of Management, Moskow assumed the Fed presidency on September 1.

Moskow earned his doctorate in economics at the University of Pennsylvania, and has held positions in the Nixon and Ford administrations, including serving a stint as director of the Council on Wage and Price Stability. In the late 1970s and 1980s, he worked in strategic planning positions at several Chicago companies.

Research Meeting on Economic Fluctuations

About 80 members and guests of the NBER's Program on Economic Fluctuations gathered in Cambridge on July 16 for their summer research meeting. Robert G. King of the University of Virginia and Mark W. Watson of Northwestern University organized this program.

Ricardo J. Caballero, NBER and MIT,

Eduardo M. R. A. Engel, NBER and Harvard University, and

John C. Haltiwanger, NBER and University of Maryland, "Aggre-

gate Employment Dynamics: Building from Microeconomic Evidence"

Discussant:

Randall Wright, University of Pennsylvania

Maurice Obstfeld, NBER and University of California, Berkeley, and

Kenneth Rogoff, NBER and Princeton University, "Exchange Rate Dynamics Redux" (NBER Working Paper No. 4693)

Discussant:

Rüdiger Dornbusch, NBER and

MIT

Jeremy Greenwood, University of Rochester

Zvi Hercowitz, Tel Aviv University, and

Per Krusell, University of Pennsylvania, "Macroeconomic Implications of Investment-Specific Technological Changes"

Discussant:

Paul M. Romer, NBER and University of California, Berkeley

Paul Beaudry, Boston University, and

Michael Devereux, University of

British Columbia, "Monopolistic Competition, Price Setting, and the Effects of Real and Monetary Shocks"

Discussant:

Lawrence J. Christiano, NBER and Northwestern University

John Shea, University of

Wisconsin, "Complementarities and Comovements"

Discussant:

Michael Horvath, Stanford University

Orazio Attanasio, NBER and Stanford University, and

Steven J. Davis, NBER and

University of Chicago, "Relative Wage Movements and the Distribution of Consumption" (NBER Working Paper No. 4771)

Discussant:

Fumio Hayashi, NBER and Columbia University

Caballero, Engel, and Haltiwanger study the employment flows of approximately 10,000 large U.S. manufacturing establishments between the first quarter of 1972 and the last quarter of 1980. They find that firms adjust employment to large shocks proportionally more than to small ones. Employment adjustments are often either large or nil. About 70 percent of fluctuations in aggregate employment are caused by changes in the distribution of shocks, and only 30 percent by changes in microeconomic policies. Aggregate shocks also are the dominant source of job destruction, but they account for less than half of the fluctuations in job creation.

Obstfeld and Rogoff develop a two-country model that combines a full account of dynamics with a supply framework based on monopolistic competition and sticky prices. The model offers simple and intuitive predictions about exchange rates and current accounts, and leads to a novel perspective on the international welfare spillovers of monetary and fiscal policies.

Greenwood, Hercowitz, and Krusell investigate technological change in the postwar United States. Their premise is that the introduction of new, more efficient

capital goods was an important source of productivity change. They find that investment-specific technological change accounts for a large part of U.S. growth, and is a significant factor in U.S. business cycle fluctuations.

Baudry and Devereux confirm that increasing returns to scale and monopolistic competition are key elements in business cycle fluctuations. They develop a dynamic monopolistic competition model with increasing returns to scale in which it is optimal for firms to preset prices. They find that the model can explain many observations related to both monetary and real business cycles in a more pertinent manner

"Investment-specific technological change accounts for a large part of U.S. growth, and is a significant factor in U.S. business cycle fluctuations."

than existing dynamic general equilibrium models.

Shea assesses the importance of interindustry linkages (complementarities) to comovement among industries over the business cycle. He finds that transmission of shocks from producers of final goods to suppliers of upstream input is important, while transmission of

shocks from producers of intermediate goods to downstream users is not important to comovement. Spillovers running from the aggregate level of activity to individual industries also are not important to comovement; however, spillovers running from the level of activity in a city to individual industries in that city are important. Overall, Shea finds, a combination of complementarities and two common shocks (oil prices and monetary policy) can explain the observed pattern of interindustry comovement in the postwar United States quite well.

Attanasio and Davis analyze how relative wage movements across birth cohorts and education groups during the 1980s affected the distribution of household consumption. They examine the impact of systematic, publicly observable shifts in the hourly wage structure, and draw upon the best available cross-sectional data to construct synthetic panel data on consumption, labor supply, and wages. Attanasio and Davis find that low-frequency movements in the cohort-education structure of pretax hourly wages drove large changes in the distribution of household consumption.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-1894 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to Corporate Associates. **For all others there is a charge of \$5.00 per reprint requested. (Outside of the United States, add \$10.00 for postage and handling.) Advance payment is required on all orders. Please do not send cash.** Reprints must be requested by number, in writing, from: Reprints, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

1895. "A Reconsideration of the Uncovered Interest Parity Relationship," by **Bennett T. McCallum** (NBER Working Paper No. 4113)

1896. "Changes in the Demand for Skilled Labor Within U.S. Manufacturing: Evidence from the Annual Survey of Manufacturers," by **Eli Berman, John Bound, and Zvi Griliches** (NBER Working Paper No. 4255)

1897. "Specification of Policy Rules and Performance Measures in Multicountry Simulation Studies," by

Bennett T. McCallum (NBER Working Paper No. 4233)

1898. "Why the Legal System Is Less Efficient Than the Income Tax in Redistributing Income," by **Louis Kaplow and Steven Shavell** (NBER Working Paper No. 4457)

1899. "Accuracy in the Determination of Liability," by **Louis Kaplow and Steven Shavell** (NBER Working Paper No. 4203)

1900. "Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States," by **Steven N. Kaplan** (NBER Working Paper No. 4065)

1901. "An Empirical Analysis of Cigarette Addiction," by **Gary S. Becker, Michael Grossman, and Kevin M. Murphy** (NBER Working Paper No. 3322)

1902. "New Product Varieties and the Measurement of International Prices," by **Robert C. Feenstra** (NBER Working Paper No. 3610)

1903. "Business Cycle Velocity and Openness: An Exploratory Cross-Sectional Analysis," by **Assaf Razin and Andrew K. Rose** (NBER Working Paper No. 4208)

1904. "Convergence in Growth Rates: A Quantitative Assessment of the Role of Capital Mobility and International Taxation," by **Assaf Razin and Chi-Wa Yuen** (NBER

Working Paper No. 4214)

1905. "Optimal Law Enforcement with Self-Reporting of Behavior," by **Louis Kaplow and Steven Shavell** (NBER Working Paper No. 3822)

1906. "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions," by **Paul M. Romer** (NBER Working Paper No. 4452)

1907. "Fixed Exchange Rates as a Means to Price Stability: What Have We Learned?" by **Lars E. O. Svensson** (NBER Working Paper No. 4504)

1908. "The Logic of Currency Crises," by **Maurice Obstfeld** (NBER Working Paper No. 4640)

1909. "Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy," by **Robert W. Fogel** (NBER Working Paper No. 4638)

1910. "Effects of Alcohol Price Policy on Youth: A Summary of Economic Research," by **Michael Grossman, Frank J. Chaloupka, Henry Saffer, and Adit Laixuthai** (NBER Working Paper No. 4385)

1911. "Macroeconomics After Two Decades of Rational Expectations," by **Bennett T. McCallum** (NBER Working Paper No. 4367)

Additional Papers

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States, add \$10.00 for postage and handling.) Advance payment is required on all orders. Please do not send cash. Request Additional Papers by name, in writing, from Additional Papers, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

"Swords or Plowshares? A Theory of the Security of Claims to Property," by **Herschel I. Grossman** and

Minseong Kim

"The Economics and Politics of Scholarships," by **Herschel I. Grossman**

"Rival Kleptocrats: The Mafia Versus the State," by **Herschel I. Grossman**

"Takeover Defenses and Dilution: A Welfare Analysis," by **Atreya Chakraborty and Richard J. Arnott**

Bureau Books

Ninth Macroeconomics Annual Is Published

NBER Macroeconomics Annual 1994, edited by Stanley Fischer and Julio J. Rotemberg, will be available this autumn from the MIT Press. This volume examines: economic transition in Eastern Europe; business cycles in incomplete markets; the outlook for the budget deficit; the East Asian "miracle economies"; the role of monetary policy in ending recessions; and a macroeconomic model for policy analysis.

This book's purpose is to stimulate research on problems in applied economics, bring new theories to a wider audience, and improve coordination between analytical and empirical research.

Fischer recently has gone on leave from his position as an NBER research associate in the economics fluctuations program to serve as First Deputy Managing Director of the International Monetary Fund. Rotemberg is a research associate in the economics fluctuations program at the NBER, and a professor of applied economics at the Sloan School of Management at MIT.

The clothbound version is \$40.00; the paperback is \$20.00. Order directly from the MIT Press, 55 Hayward Street, Cambridge, MA 02142; (617) 253-2884.

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.

The International- alization of Equity Markets

The Internationalization of Equity Markets, edited by Jeffrey A. Frankel, will be available this fall from the University of Chicago Press for \$41.00. This volume presents recent empirical work on international equity markets originally presented at an NBER conference in San Francisco last October. The papers use new models of investor behavior that take into account differences in national laws, regulations, and customs. The first half of the book concentrates on asset pricing and home country bias in markets that are internationally integrated. The second half focuses on emerging markets, trading volume and location, taxes, controls, and other imperfections in the market.

Frankel is a professor of economics at the University of California at Berkeley, and director of the international finance and macroeconomics program at the NBER.

International Comparisons of Household Saving

International Comparisons of Household Saving, edited by James M. Poterba, will be available this autumn from the University of Chicago Press for \$37.00. These papers were originally presented at an NBER conference in Florida in March 1993. This volume is the companion to **Public Policies and Household Saving**, published in Summer 1994, and presents the most current information available on household saving in the United States, United Kingdom, Canada, Japan, Italy, and Germany. The authors provide detailed statistical studies of the relationship of saving to income and age in each country.

The country studies seem not to support the life-cycle model of saving: in virtually all nations, the saving rate is positive even after retirement. Further, most households build up only limited financial reserves against emergencies, or "precautionary savings." Finally, because of the complex relationship between saving and social insurance, it appears that a bequest motive, or similar factors, may be important in explaining saving behavior.

Poterba is a professor of economics at MIT and director of the public economics program at the NBER.

The Federal Civil Service System and the Problem of Bureaucracy

The Federal Civil Service System and the Problem of Bureaucracy, by Ronald N. Johnson and Gary D. Libecap, is now available from the University of Chicago Press for \$49.95 in hardcover and \$17.95 in paperback. This Bureau monograph investigates the historic origins of the lack of both productivity and accountability within the federal work force—the outcome of decades of rivalry between the executive and legislative branches over control of the bureaucracy. Johnson and Libecap's contribution is important because it helps us to understand why we have a civil service system, and that the real problem of government is in congressional-presidential politics.

This volume is part of the NBER Series on Long-Term Factors in Economic Development. It should be of interest to "students" of history, government, politics, and economics.

Johnson is a professor of agricultural economics and economics at Montana State University, Bozeman; Libecap is a professor of economics and director of the Karl Eller Center at the University of Arizona and a research associate in the NBER's Program in Development of the American Economy.

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 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 July 1994 are presented below. A complete list of NBER Working Papers and Reprints can be accessed on the Internet by using our gopher at nber.harvard.edu. 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

Work and Crime: An Exploration Using Panel Data

Ann Dryden Witte and
Helen V. Tauchen

NBER Working Paper No. 4794

July 1994

JEL Nos. K42, J2

Labor Studies

Using data for a cohort sample of young men, we find that working and going to school both signif-

icantly decrease the probability of committing criminal acts, and by virtually identical amounts. Parochial school education and higher IQ also are significantly associated with lower criminal proclivities, but a high school degree has no significant effect. In conjunction with other research, these findings suggest that participation in legitimate activities (whether employment or school) per se has a greater effect on criminal behavior than does the higher income associated with employment or educational attainment.

Is Consumption Growth Consistent with Intertemporal Optimization? Evidence from the Consumer Expenditure Survey
Orazio P. Attanasio and
Guglielmo Weber

NBER Working Paper No. 4795
July 1994
JEL Nos. D30, D91, E14
Economic Fluctuations

We show that some of the predictions of models of consumer intertemporal optimization are consistent with the patterns of expenditure on nondurables observed among U.S. households. Our results and our approach are new in several respects: first, we use the only U.S. microdataset with direct and complete information on household consumption. Second, we propose a flexible and novel specification of preferences that can be estimated easily, and allows a general treatment of multiple commodities. Third, our empirical results show that it is possible to find a reasonably simple specification of preferences, which controls for the effects of changes in demographics and labor supply behavior over the life cycle, and which is not rejected by the available data.

Our results contrast sharply with most of the previous evidence, which typically has been interpreted as rejection of the theory. We show that previous rejections can be explained by the simplifying assumptions made to derive empirically tractable equations. We also show that results obtained using food consumption, or aggregate data, can be extremely misleading.

Why Is Capital So Immobile Internationally? Possible Explanations and Implications for Capital Income Taxation

Roger H. Gordon and
A. Lans Bovenberg
NBER Working Paper No. 4796
July 1994

JEL Nos. D82, F21
International Trade and Investment,
International Finance and
Macroeconomics

There is extensive evidence on the immobility of international capital, ranging from the correlations between domestic savings and investment pointed out by Feldstein-Horioka (1980), to the real interest differentials across countries, to the lack of international portfolio diversification. To what degree does the immobility of capital modify past results that small open economies should not tax savings or investment? The answer depends on the cause of the immobility: we argue that asymmetric information between countries is the most plausible explanation. When we examine optimal tax policy in a open economy and allowing for asymmetric information, rather than simply finding that savings and investment should not be taxed, we forecast government subsidies to the foreign acquisitions of domestic firms.

Do Unions Make Enterprises Insolvent?

Richard B. Freeman and
Morris M. Kleiner
NBER Working Paper No. 4797
July 1994
Labor Studies

We investigate the impact of unionization on the survival of firms, business lines, or establishments. Unions do raise wages

above those found in nonunion firms, and in a competitive product market, unionized firms should go out of business more than nonunion firms. However, if unions share economic rents, then during periods of hardship, unionized firms may be able to remain solvent by giving back some of these rents.

We analyze three datasets: one on the union status of solvent and insolvent enterprises and business lines from the Compustat files; one on the union status of workers who have lost their jobs because of permanent plant closings or business failures, obtained by matching files from the Current Population Survey; and one from the Federal Mediation and Conciliation Service on the outcomes of elections won by unions, and the outcomes of labor-management disputes. Overall, we find that unions behave in an economically rational manner, pushing wages to the point at which union firms may expand less rapidly than nonunion firms, but not to the point at which the firm, plant, or business line closes down.

Education, Income Distribution, and Growth: The Local Connection

Roland Bénabou
NBER Working Paper No. 4798
July 1994
JEL Nos. D31, I22, O40
Labor Studies

This paper develops a simple model of the accumulation of human capital and the formation of communities by heterogeneous families, which provides an integrated framework for analyzing the local determinants of inequality and growth. I conclude first that minor differences in education technologies, preferences, or wealth

can lead to a high degree of stratification. Imperfect capital markets are not necessary, but will compound these other sources.

Second, stratification makes inequality in education and income more persistent across generations. Whether or not the same is true of inequality in total wealth depends on the ability of the rich to appropriate the rents created by their secession.

Third, the polarization of urban areas resulting from individual residential decisions can be quite inefficient, both from the point of view of aggregate growth and in the Pareto sense, especially in the long run. Fourth, when statewide equalization of school expenditures is not sufficient to reduce stratification, it may improve educational achievement in poor communities much less than it lowers achievement in richer communities; thus, average academic performance and growth of income both fall. Yet it may still be possible for education policy to improve equity and efficiency.

Finally, because of the cumulative nature of the stratification process, it is probably much harder to reverse once it has run its course than to arrest at an early stage.

Trade Barriers and Trade Flows Across Countries and Industries

**Jong-Wha Lee and
Phillip Swagel**

NBER Working Paper No. 4799

July 1994

JEL Nos. F12, F13

Growth, International Trade
and Investment

We use disaggregated data on trade flows, production, and trade barriers for 41 countries in 1988 to examine the political and econom-

ic determinants of nontariff barriers, as well as the impact of protection (both tariff and nontariff) on trade flows. Our results are consistent with political-economy theories of the determinants of protection: even after accounting for industry-specific factors, we find that nations tend to protect industries that are weak, in decline, and threatened by import competition. Countries also give more protection to large industries; these might be thought of as politically important. Nations use tariffs, nontariff barriers, and exchange rate controls as complementary instruments of protection.

Leverage as a State Variable for Employment, Inventory Accumulation, and Fixed Investment

**Charles W. Calomiris,
Athanasios Orphanides, and
Steven A. Sharpe**

NBER Working Paper No. 4800

July 1994

Corporate Finance

The importance of a firm's balance sheet for determining its investment and employment decisions is the central assumption of macroeconomic models of "debt deflation" or "debt overhang." According to these models, firm investment decisions are influenced not only by the fundamental opportunity set of the firm, but also by the firm's existing financial condition, especially its leverage. We ask whether the responsiveness of employment, investment, and inventory accumulation to exogenous changes in sales depends on the leverage of the firm.

We find that leverage is important in conditioning the response of all three variables to changes in sales. This effect also varies depending on the state of the econo-

my. During recessions, higher leverage magnifies the contractionary effect of declines in sales on investment; during times of positive sales growth, higher leverage tends to dampen the expansionary effect of growth in demand. The size and significance of the conditioning effects of leverage are larger during recessions. These results support the potential importance of "debt overhang" effects. Firms that use debt to finance expansion during times of increasing demand suffer a reduced ability to maintain growth during recessions as a consequence of their higher leverage.

Over-the-Counter Derivatives and Systemic Risk to the Global Financial System

Michael R. Darby

NBER Working Paper No. 4801

July 1994

JEL No. G15

Asset Pricing, International
Finance and Macroeconomics

Over the last decade, dealing in derivative financial instruments (basically forwards, futures, options, and combinations thereof), particularly in the over-the-counter (OTC) derivatives' market, has become a central activity for major wholesale banks and financial institutions. Measured in terms of notional principal amount, there are around \$10 trillion (U.S. dollars) in OTC derivatives outstanding, even after deduction of doublecounting for intradealer transactions. Major new regulatory initiatives, including proposed new capital requirements, are under consideration as a means of reducing systemic risk. This paper examines the concept of systemic risk: that failure of one firm will lead to the failure of a large number of other firms, or indeed the collapse of the interna-

tional financial system. I consider and integrate alternative proposed definitions, and discuss the effects of OTC derivatives on these risks. My main conclusion is that systemic risk has been reduced by the development of the OTC derivatives' market, which shifts economic risks to those better able either to bear them or, in many cases, cancels offsetting risks. I analyze the Basel II capital proposals for systemic risk; they increase this risk by encouraging transactions that increase portfolio risks of the dealers and discouraging transactions that decrease their portfolio risk.

An Evaluation of the Swedish Active Labor Market Policy: New and Received Wisdom

Alan B. Krueger and Anders Forslund

NBER Working Paper No. 4802

July 1994

JEL No. J68

Labor Studies

In Sweden, about 3 percent of GNP is spent on government labor market programs, compared to 2 percent in Germany and less than 0.5 percent in the United States. In Sweden, these programs include extensive job training, public sector relief work, recruitment subsidies, youth programs, mobility bonuses, and unemployment benefits. Using county-level data, we show that public relief workers displace other workers, especially in the construction sector. Our review of the previous literature suggests that job training programs have small effects on wages and reemployment in Sweden, but we cannot make precise inferences because of small sample sizes. We also investigate alternative reasons for the stability of the Beveridge Curve in Sweden, and compare regional evolutions of

employment and unemployment in Sweden and the United States. Finally, we present a cross-country analysis for 1993 that, contrary to studies that use earlier data, shows that a country's active labor market programs are associated positively with the national unemployment rate.

A Working Model for Predicting the Consumption and Revenue Impacts of Large Increases in the U.S. Federal Cigarette Excise Tax

Jeffrey E. Harris

NBER Working Paper No. 4803

July 1994

JEL Nos. I10, I12

Health Care, Public Economics

This report describes an easily computable model of the relationship between cigarette prices and cigarette consumption in the United States. I use the model to predict the revenue impacts of federal excise tax hikes, ranging from \$0.45 to \$1.76 per pack. With the highest tax increase, I predict that 18.6 percent of adults will smoke in 1999, versus 22 percent with no tax increase. The net gain in federal revenue during 1995–9 from that tax rise would be \$98.9 billion.

High-Cost Domestic Joint Ventures and International Competition: Do Domestic Firms Gain?

Ruth R. Raubitschek and Barbara J. Spencer

NBER Working Paper No. 4804

July 1994

JEL Nos. F12, L22

International Trade and Investment

This paper develops the idea that when markets are not perfectly competitive, final producers may gain from a joint venture that produces part of their input require-

ments, even though marginal cost exceeds the market price of the input. Production by the joint venture lowers the market price of the input; this can raise profits sufficiently from sales of final product to make the joint venture worthwhile. Also, use of a joint venture internalizes the positive externality from a lower input price. These results are motivated by a setting in which domestic firms are dependent on foreign oligopolistic suppliers for a key input.

How Many Monies? A Genetic Approach to Finding Optimum Currency Areas

Atish R. Ghosh and Holger C. Wolf

NBER Working Paper No. 4805

July 1994

JEL Nos. C63, F31, F33

International Finance and Macroeconomics

Recent moves toward greater monetary integration in Western Europe—and disintegration in Eastern Europe and the former Soviet Union—have rekindled interest in the theoretical and empirical aspects of optimal currency areas. In this paper, we examine the marginal benefit of increasing the number of currency unions within a given geographical area. We look at six regions: the United States, Europe, the G7, the CFA zone, the Former Soviet Union, and the world at large. Our results suggest that: 1) contiguous monetary unions typically are dominated by noncontiguous unions; 2) neither Europe nor the United States forms an optimum currency area; for both regions the costs of adopting a single currency exceeds estimates of the transaction cost savings; 3) Germany and the United States almost never will find it to their (economic) advantage to join monetary unions.

Pricing in International Markets: Lessons from *The Economist*

**Atish R. Ghosh and
Holger C. Wolf**

NBER Working Paper No. 4806

July 1994

JEL Nos. D4, F31, L82

International Trade and Investment,
International Finance and
Macroeconomics

Export firms often are assumed to stabilize destination market prices in the face of changes in nominal exchange rates in order to protect market share. We show that standard tests of such *pricing to market* fail to discriminate against the alternative hypothesis of *menu costs*. As a case study, we examine the characteristics and determinants of changes in the cover prices of *The Economist* magazine in a sample of 12 countries during the floating rate period. We find that, while the law of one price fails, there is no evidence of systematic attempts to offset movements in nominal exchange rates. Instead, our findings are consistent with pricing behavior that is driven by menu costs.

Terms of Trade, Productivity, and the Real Exchange Rate

**José De Gregorio and
Holger C. Wolf**

NBER Working Paper No. 4807

July 1994

JEL Nos. F31, F41

International Finance and
Macroeconomics

This paper examines the effects of movements in the terms of trade and productivity differentials across sectors on the behavior of the real exchange rate. We develop a simple model of a small open economy producing exportable and nontradable goods and consuming im-

portable and nontradable goods, and present empirical evidence for a sample of 14 OECD countries. The evidence broadly supports the predictions of the model, namely that faster productivity growth in the tradable relative to the nontradable sector, and an improvement in the terms of trade, induce a real appreciation.

Why Do Americans and Germans Work Different Hours?

**Linda Bell and
Richard B. Freeman**

NBER Working Paper No. 4808

July 1994

Labor Studies

This paper documents and attempts to explain the difference between the hours worked annually by employed Americans and Germans, decomposing it into differences between vacation and holiday time and differences in hours worked while on the job. Employed Americans work roughly 10–15 percent more hours than Germans. Since American employment-to-population rates exceed those of Germans, adult Americans average some 20 percent more work time than adult Germans. At the same time, Americans show a greater preference for additional hours worked than Germans do. Both of these differences developed in the past 20 years. Two decades ago, Americans worked less than Germans, and it was the Germans who wanted to work more hours. Standard labor supply analyses do not appear to explain this difference. We show that differences in hours worked are related to differences in earnings inequality across countries, and we hypothesize that the high rewards to success in the United States, the lack of job security, and the low social

safety net compared to Germany or other European countries may explain the cross-country differences.

The Real Exchange Rate and Fiscal Policy During the Gold Standard Period: Evidence from the United States and Great Britain

**Graciela L. Kaminsky and
Michael Klein**

NBER Working Paper No. 4809

July 1994

JEL Nos. F31, N1

International Finance and
Macroeconomics

We study the determinants of the dollar/pound real exchange rate from 1879 to 1914, focusing on the role of fiscal policy. We present a simple dynamic model of the real exchange rate to frame our analysis. The econometric results are based upon the decomposition of the sources of the innovation of the real exchange rate drawn from a structural vector autoregression model. We find little evidence that changes in tariffs and government spending affected the real exchange rate. There is some stronger empirical evidence that shocks to deficits were associated with the fluctuations in the real exchange rate.

The Welfare State and Competitiveness

**Alberto Alesina and
Roberto Perotti**

NBER Working Paper No. 4810

July 1994

Monetary Economics,
Public Economics

In all modern industrial countries, redistributive expenditures are a larger component of the government budget than consumption of goods and services. We use a general-equilibrium, two-country mod-

el with exportables, importables, and nontradables to study redistribution across different types of agents in a world with labor unions and distortionary taxation. We show that an increase in transfers to retirees, for example, financed by distortionary taxation, can generate a loss of competitiveness (defined as an increase in relative unit labor costs for tradable goods), an appreciation of the relative price of nontradables, and a decrease in employment in all sectors of the domestic economy. An increase in transfers toward the unemployed, even if financed by nondistortionary taxation, would produce the same effects. Moreover, all of these effects of labor taxation depend on the degree of centralization of the wagesetting process in the labor market. We estimate the effects of labor taxation on both unit labor costs and the relative price of nontradables in a sample of 14 OECD countries and we find considerable empirical support for our model.

The Intertemporal Allocation of Consumption: Theory and Evidence

Orazio P. Attanasio

NBER Working Paper No. 4811

July 1994

JEL Nos. D30, D91, E14

Economic Fluctuations

Liquidity constraints and, more generally, imperfections in credit markets can be extremely important for the intertemporal allocation of consumption. Unfortunately, it is not easy to test for the presence of liquidity constraints. Aggregation issues preclude the use of aggregate time-series data for this purpose, while tests based on microdata are complicated by some serious identification problems.

If a simple equilibrium model does not fit some dataset, one can change the assumptions about the opportunity set available to the economic agents, or the specification of their preferences. For instance, excess sensitivity of consumption to income could be explained by liquidity constraints or by nonseparability between consumption and leisure. However, the available evidence shows that it is possible to find flexible specifications of preferences that fit consumption movements at business cycle frequencies. Some of my simulation evidence also shows that, for many plausible parameter configurations, liquidity constraints are relevant only for a small proportion of economic agents.

Finally, I present some new evidence on the relevance of liquidity constraints based on data on debt holding. The data indicate that the demand for debt of individuals who are more likely to be liquidity constrained is less elastic to changes in the interest rate than other types of debt are.

Productivity Measurement for a Distribution Firm

W. Erwin Diewert and Ann Marie Smith

NBER Working Paper No. 4812

July 1994

JEL Nos. C43, C81, D24

Productivity

We derive a consistent accounting framework for the treatment of inventories in measuring the productivity of a distribution firm. The average purchase price of an inventory item during an accounting period must be distinguished from its average selling price, and these two average prices should be distinguished from the corresponding balance sheet prices. We implement the accounting framework for

a distribution firm that sold 76,000 separate items. We find that the firm achieved a 9.6 percent per quarter growth rate in total factor productivity over six quarters.

Retirement Research Using the Health and Retirement Survey

Alan L. Gustman, Olivia S. Mitchell, and Thomas L. Steinmeier

NBER Working Paper No. 4813

August 1994

JEL Nos. J14, J26

Labor Studies

This paper highlights unanswered research questions in the economics of retirement, and shows how these issues can be addressed using the new Health and Retirement Survey (HRS). We describe unique features of the survey including administrative records on earnings and Social Security benefits, and employer-provided data on pensions and health insurance. There are also indicators of retirement plans, health status, family structure, income, wealth, and employer policies affecting job opportunities and constraints. We use data from the first wave of the HRS to analyze retirement outcomes and constraints that shape retirement behavior.

The Macroeconomics of the Great Depression: A Comparative Approach

Ben S. Bernanke

NBER Working Paper No. 4814

August 1994

JEL Nos. N10, E3

Economic Fluctuations,
Monetary Economics

Recently, research on the causes of the Great Depression has shifted from a heavy emphasis on events in the United States to a broader,

more comparative approach that examines the interwar experiences of many countries simultaneously. This paper surveys the current state of our knowledge about the Depression from a comparative perspective. On the aggregate demand side of the economy, comparative analysis has strengthened the empirical case for monetary shocks as a major driving force of the Depression greatly; an interesting possibility suggested by this analysis is that the worldwide monetary collapse that began in 1931 may be interpreted as a jump from one Nash equilibrium to another. On the aggregate supply side, comparative empirical studies support both induced financial crisis and sticky nominal wages as mechanisms by which nominal shocks had real effects. Still unresolved is why nominal wages did not adjust more quickly in the face of mass unemployment.

Foreign Direct Investment, Exchange Rate Variability, and Demand Uncertainty

Linda S. Goldberg and Charles D. Kolstad

NBER Working Paper No. 4815

August 1994

International Finance and Macroeconomics

Variable real exchange rates influence the choice of a country in which a multinational enterprise will locate production facilities. With risk-averse investors and fixed productive factors, a parent company should not be indifferent to the choice of location, even when the expected costs of production are identical across countries. If there is a correlation between shocks to real export demand and shocks to the real exchange rate, then the multinational optimally will locate some of its productive capacity abroad. The

share of production capacity located abroad increases as exchange rate volatility rises, and as export demand shocks become more correlated. We confirm the theory with an analysis of quarterly U.S. bilateral flows of foreign direct investment with Canada, Japan, and the United Kingdom.

Reference Point Dependence for Specification Bias from Quality Upgrading

Eric Hutton and John Whalley

NBER Working Paper No. 4816

August 1994

International Trade and Investment

We argue that estimates of the welfare cost of natural or artificial trade barriers that do not discriminate by quality may be subject to either positive or negative specification bias in models that do not recognize quality variation explicitly, depending on the reference point used in counterfactual equilibrium analysis. We use numerical general equilibrium techniques to generate counter examples to the widely held view that (in the competitive case) incorporating quality upgrading will tend to reduce the welfare costs of quality-invariant trade barriers. We use a trade-distorted equilibrium as the reference point, rather than free trade.

Intermediate Goods and Business Cycles: Implications for Productivity and Welfare

Susanto Basu

NBER Working Paper No. 4817

August 1994

JEL Nos. E32, E23

Monetary Economics

This paper presents an aggregate, demand-driven model of business cycles that explains the

procyclicality of productivity and predicts large welfare losses from the nonneutrality of money. The key features of the model are an input-output production structure, imperfect competition, countercyclical markups, and, for some results, state-dependent price rigidity. True technical efficiency is procyclical, even though production takes place with constant returns, and without technology shocks or technological externalities. The empirical implications in the paper generally are supported by data from U.S. manufacturing industries.

The Time Variation of Risk and Return in Foreign Exchange Markets: A General Equilibrium Perspective

Geert Bekaert

NBER Working Paper No. 4818

August 1994

Asset Pricing

This paper investigates the statistical properties of high-frequency nominal exchange rates and forward premiums in the context of a dynamic two-country general equilibrium model. The focus is on the persistence, variability, leptokurtosis, and conditional heteroskedasticity of exchange rates, and on the behavior of foreign exchange risk premiums. The model combines preferences that depend on time with a technology for transaction costs that generates a role for money. Agents in the economy make decisions weekly, and face shocks that are uncertain over time. The model explains the statistical properties of exchange rate data much more accurately than previous structural models have.

Financial Intermediation and Aggregate Fluctuations: A Quantitative Analysis

Russell Cooper and João Ejarque

NBER Working Paper No. 4819

August 1994

Economic Fluctuations

We investigate the quantitative implications of two business cycle models in which aggregate fluctuations arise in response to variations in the process of financial intermediation. In the first model, fundamental shocks in the process of capital accumulation lead to fluctuations in the real returns from intermediated investment. However, we find that the correlations produced by this model are not consistent with observations of the U.S. economy. In particular, consumption is not smoother than output, investment is negatively correlated with output, variations in the capital stock are quite large, and interest rates are procyclical. With both intermediation and shocks to total factor productivity, the correlations we produce are closer to those observed in the U.S. economy only when the intermediation shock is relatively unimportant.

In the second model, variations in the returns to intermediation are part of a sunspot equilibrium. Here, fluctuations are driven by self-fulfilling beliefs of private agents regarding the returns to intermediation, as in an economy beset by banking crises. For this nonlinear economy, the correlations are closer to those observed, but the variability of capital relative to output is still too large.

The Tax Unit and Household Production

John Piggott and John Whalley

NBER Working Paper No. 4820

August 1994

Public Economics

The conventional wisdom is that taxing individuals rather than households is superior from an efficiency point of view under progressive income taxation. This is because it leads to secondary workers, whose labor supply elasticity is high, being taxed at a lower marginal rate than primary workers, whose labor supply elasticity is low. But once household production is taken into account, things are more complicated, since tax design also should not distort the input use of family members' time in household production.

We use a simple general equilibrium model of household production and Australian data to show that welfare effects can be either positive or negative when changing an existing income tax from an individual to a household basis. We also are able to investigate the comparative static effects of changing the tax unit from an individual to the household basis in a richer model than what had been used thus far in the literature, since we capture both Ramsey considerations from differential labor supply elasticities, and factor input distortions into household production. Our results challenge conventional wisdom, and suggest that household unit taxation deserves more sympathetic consideration than is currently the case.

The Impact of Monetary Policy on Bank Balance Sheets

Jeremy C. Stein and Anil K. Kashyap

NBER Working Paper No. 4821

August 1994

Corporate Finance,
Monetary Economics

We use disaggregated data on

bank balance sheets to test the lending view of monetary policy transmission. We argue that if the lending view is correct, one should expect the loan and security portfolios of large and small banks to respond differently to a contraction in monetary policy. We develop this point first with a theoretical model; then we test to see if the model's predictions are borne out in the data.

Optimal Regulation of Multiply Regulated Industries: The Case of Physician Services

John A. Rizzo and Jody L. Sindelar

NBER Working Paper No. 4822

August 1994

JEL Nos. I1, I11, I18

Health Economics

This paper models the market for physician services that is regulated by two government agencies: the Health Care Financing Administration sets Medicare physician fees through the newly implemented Resource Based Relative Value Scale; the Agency for Health Care Policy and Research sets practice guidelines for quality. We analyze the welfare losses—in terms of cost, quality, practice characteristics, and quantity of care—that occur when agencies fail to coordinate their regulatory activities.

Perceived ills in the market for physician services, such as excessive expenditures and overly intensive treatment, may be traced to failures of coordination. Thus, even if physicians were to act as perfect agents for their patients, and even if moral hazard were to be eliminated, coordination failure could cause the critical problems associated with the physician services market to persist. Although we apply the model to the market for physi-

cian services, it can be generalized readily to other settings involving multiple regulators.

The Transfer of Human Capital **Boyan Jovanovic and** **Yaw Nyarko**

NBER Working Paper No. 4823

August 1994

JEL No. J24

Productivity

Most of our productive knowledge was handed down to us by previous generations. The transfer of knowledge from the old to the young therefore is a cornerstone of productivity growth. We consider a model in which the old sell knowledge to the young: old workers train the young, and charge them for this service. Training occurs if a young agent watches an old worker perform a task; this assumption has plenty of empirical support—in their first three months on the job, young workers spend about five times as long watching others work as they do in formal training programs.

The old have private information, and this gives rise to an adverse selection problem: some old agents manage to sell skills that the young would not buy (if only they knew exactly what they were buying). We derive the implications for the lifetime of technological lines, and we show that the model generates a negative relationship between a firm's productivity and its probability of failure.

Infrastructure in a Structural Model of Economic Growth **Douglas Holtz-Eakin and** **Amy Ellen Schwartz**

NBER Working Paper No. 4824

August 1994

JEL Nos. E62, H54, H72

Public Economics

Researchers, commentators, and politicians have devoted steadily more attention to infrastructure in response to claims that inadequate accumulation of public capital has contributed to substandard U.S. economic growth. Despite this, the link between infrastructure and productivity growth remains controversial. In this regard, it is somewhat surprising that infrastructure research has developed in isolation from the large literature on economic growth. We develop a neo-classical growth model that explicitly incorporates infrastructure and is designed to provide a tractable framework within which to analyze the empirical importance of public capital accumulation to productivity growth. We find little support for claims of a dramatic productivity boost from increased infrastructure outlays. In a specification designed to provide an upper bound for the influence of infrastructure, we estimate that raising the rate of infrastructure investment would have had a negligible impact on annual productivity growth between 1971 and 1986.

Firing Costs, Employment Fluctuations, and Average Employment: An Examination of Germany **Jennifer Hunt**

NBER Working Paper No. 4825

August 1994

JEL Nos. J21, J23

Labor Studies

In West Germany, the Employment Promotion Act of 1985 facilitated the use of fixed-term contracts and increased the number of dismissals that require the employer to establish a "social plan" (involving severance payments). I assess the effect of this reduction in

"firing costs" on movements in employment. I use manufacturing data by detailed industry for 1977–92, and a dynamic specification, allowing coefficients to vary by industry (random coefficients). Compared to 1977–81, the adjustment of blue collar hours was more flexible from 1982–8, and was less flexible in the subsequent period. There is weaker evidence that adjustment of blue collar workers became less flexible in the years following the new legislation, and that white collar workers' flexibility fluctuated over the period examined. The timing and direction of these changes, as well as the direction of relative changes in flexibility between industries with high and low sales variability, suggest that they are not the result of the Employment Promotion Act.

Costs, Institutional Mobility Barriers, and Market Structure: Advertising Agencies As Multiproduct Firms

Alvin J. Silk and Ernst R. Berndt

NBER Working Paper No. 4826

August 1994

JEL Nos. L11, L84

Productivity

What accounts for the diversity and limited concentration that long has characterized the organization of the advertising agency industry? We treat an advertising agency as a multiproduct firm. The firm's product line, or service mix, is defined in terms of the set of different media categories in which an agency places the messages it creates on behalf of its clients. The structure of demand and costs in the advertising agency industry conforms to the conditions that MacDonald and Slivinski (1987) showed were required for an industry to sustain an equilibrium with diversified firms, we find.

Building on this framework, we formulate a set of three hypotheses relating to the realization of product-specific scale and scope economies. The first two hypotheses posit that, given low fixed costs and minimal entry barriers, both media-specific scale and scope economies are available and can be exploited by relatively small agencies. The third hypothesis suggests that large agencies may experience diseconomies of scope as a consequence of excessive diversification induced by two pervasive industry institutional phenomena: 1) "bundling" of agency services to match client demand for a mix of media advertising; and 2) "conflict policy" that prohibits an agency from serving competing accounts and operates as a mobility constraint.

Using a multiproduct cost function, we estimate media-specific scale and scope economies for a cross-section of 401 U.S. agencies in 1987. Our results support the three hypotheses outlined above.

The paper concludes with a discussion of the implications of these findings for the restructuring currently underway in the industry. In particular, the resurgence of interest in small agencies and the trend away from the long-standing reliance on fixed commission rates as the preferred method of agency compensation are in line with our findings on the presence of size-related cost economies. Furthermore, we interpret the abandonment of "one-stop shopping" and the "unbundling" of the traditional mix of services in light of institutional practices that may influence decisions relating to agency efficiency and diversification.

Young Workers, Old Workers, and Convergence

Michael Kremer and Jim Thomson

NBER Working Paper No. 4827

August 1994

Growth

The human capital of young and old workers are imperfect substitutes both in production and in on-the-job training. This helps explain why capital does not flow from rich to poor countries, causing instantaneous convergence of per capita output. If each generation chooses its human capital optimally, given that of the previous and succeeding generations, then capital follows a unique rational expectations path. For moderate substitutability, human capital within each sector oscillates relative to that in other sectors, but aggregate human capital converges to the steady state monotonically, at rates consistent with those observed empirically.

The New Economics of Teachers and Education

Frederick Flyer and Sherwin Rosen

NBER Working Paper No. 4828

August 1994

Labor Studies

We study the rapidly growing costs of elementary and secondary education in the context of the rising value of women's time. The threefold increase in the direct costs of education per student in the past three decades was caused by increasing demand for and utilization of teacher and staff inputs, attributable to the growing market opportunities for women and to changes in the structure of families. Substitution of purchased teacher and staff inputs for household time

in the total production of children's education and maturation is a predictable economic response to these forces.

On the supply side, the "flexibility option"—that female teachers who take temporary leaves to raise children do not suffer subsequent wage loss upon reentry—is an important attraction of the teaching profession to women. Other college-educated women suffer wage losses upon reentry of 10 percent per each year of leave. The estimated value of flexibility in teaching is 5 percent of life-cycle earnings, and will fall as labor force interruptions of women for childrearing become less frequent. Both supply and demand considerations suggest that the direct costs of education per student will continue to increase in the future, independent of political and other organizational reforms of schools.

How Wide Is the Border?

Charles M. Engel and John H. Rogers

NBER Working Paper No. 4829

August 1994

International Finance and Macroeconomics

Failure of the law of one price explains much of the variation in real Consumer Price Index (CPI) exchange rates. We use CPI data for U.S. and Canadian cities and 14 categories of consumer prices to examine the nature of the deviations from the law of one price. The distance between cities explains a significant amount of the variation in the prices of similar goods in different cities. But, the variation of the price is much higher for two cities located in different countries than for two equidistant cities in the same country. By our most conservative measure, crossing the border lends as much to

the volatility of prices as adding 2500 miles between cities.

Home Equity Insurance

**Robert J. Shiller and
Allan N. Weiss**

NBER Working Paper No. 4830

August 1994

JEL No. G22

Asset Pricing

Home equity insurance policies—policies insuring homeowners against declines in the price of their homes—would bear some resemblance both to ordinary insurance and to financial hedging vehicles. We present a menu of choices for the design of such policies. The choices include: 1) pass-through futures and options, in which the insurance company in effect serves as a retailer to homeowners of short positions in real estate futures markets, or of put options on real estate; and 2) a life-event-triggered insurance policy, in which the homeowner pays regular fixed insurance premiums and is entitled to a claim if there is a sufficient decline in the real estate price index and if a specified life event (such as a move beyond a certain geographical distance) occurs. We derive pricing of the premiums to cover loss experience, and tables of breakeven policy premiums based on estimated models of Los Angeles housing prices in 1971–91.

New Evidence on Workplace Education

**Alan B. Krueger
and Cecilia Rouse**

NBER Working Paper No. 4831

August 1994

JEL No. I21

Labor Studies

We analyze the impact of a workplace education program that was administered by a community

college at two companies, one in the manufacturing sector, and the other in the service sector. Using longitudinal administrative data and cross-sectional survey data, we examine a broad range of variables, including workers' earnings, performance awards, job attendance, and certain subjective measures of performance. Our main finding is that the education program had a small, positive impact on earnings at the manufacturing company, but no significant impact at the service company. We also find that the program was associated positively with the job bids, upgrades, performance awards, and attendance on the job. At the manufacturing company, occupational courses—such as blueprint reading—had the largest impact.

Earnings, Schooling, and Ability Revisited

David Card

NBER Working Paper No. 4832

August 1994

JEL No. I20

Labor Studies

This paper surveys and interprets recent research on the returns to education. A series of current papers suggests that the causal effect of education on earnings is *understated* by standard methods of estimation. Using a simple model of optimal schooling that was developed by Gary S. Becker (1967), I derive an explicit formula for conventional estimation of the return to schooling, and for alternative instrumental variables and fixed-effects estimators. My analysis suggests that instrumental variables estimates based on "interventions" that affect the schooling choices of children from relatively disadvantaged family backgrounds tend to exceed the corresponding ordinary least squares estimates.

Putty-Clay Capital and Energy

**Andrew Atkeson and
Patrick J. Kehoe**

NBER Working Paper No. 4833

August 1994

Economic Fluctuations

We build a version of the putty-clay model in which a variety of capital goods are combined with energy in different fixed proportions. We establish conditions that can be checked easily so that solving for the equilibrium of the model economy reduces to a dynamic programming problem with only two endogenous state variables. In appropriate applications, this result allows us to avoid the "curse of dimensionality" that typically plagues attempts to analyze the dynamics of economies with many capital goods and binding nonnegativity constraints on investment. We apply our results to the equilibrium dynamics of value-added, investment, wages, and energy use.

The Distribution of Exchange Rates in the EMS

**Charles M. Engel and
Craig S. Hakkio**

NBER Working Paper No. 4834

August 1994

JEL Nos. F3, F4

International Finance and
Macroeconomics

Exchange rates of currencies in the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) are characterized by long periods of stability interrupted by periods of extreme volatility. The periods of volatility occur during realignments of the central parities, and when the exchange rate is within the ERM bands. We consider a procedure for finding outliers that is based on measuring

distance as a quadratic form. The evidence suggests that the exchange rates of the EMS can be described by a combination of two distributions. Therefore, we model the exchange rate as a switching between the two: one that holds in stable times, and the other that holds in volatile times. We then extend Hamilton's Markov-switching model by allowing switching from one state to another to depend on the position of the exchange rate within its EMS band. This model has the interesting implication that near the edge of the band, large movements—either realignments, or large jumps to the center of the band—are more likely if the move to the edge of the band has been precipitous.

Economic Consequences of a Changing Litigation Environment: The Case of Patents

Jean Olson Lanjouw

NBER Working Paper No. 4835

August 1994

JEL Nos. O34, K41

Law and Economics, Productivity

I develop a model of patent infringement to analyze the relationship between litigation and aspects of the legal environment, such as the probability that the patent is found to be valid, the size of legal fees, and their allocation across agents. Potential challengers first decide whether to infringe; then the patentee decides whether or not to prosecute. The outcome of this game has a fundamental impact on the value of patent protection to a patentee. I then link this model to a patent renewal model that explicitly incorporates the legal parameters of interest from the litigation game. Estimates of the renewal model allow me to estimate the private value of patent protec-

tion. I present simulations for Germany that show the quantitative impact of changes in the legal environment on the value generated by the patent system, and hence the incentives for innovation.

Trade, Multinationals, and Labor

Robert Z. Lawrence

NBER Working Paper No. 4836

August 1994

International Trade and Investment

This paper summarizes and extends previous research on the relationship between low-wage international competition and wage performance in the developed countries in the 1980s. The first section argues that poor average U.S. wage performance reflects slow domestic productivity growth, rather than international competition. The second section presents evidence that rejects the view that Stolper-Samuelson effects are important in the United States, Germany, and Japan. In all three countries, neither the wholesale nor the import prices of unskilled-labor-intensive products have experienced relative declines. At the same time, despite the rise in relative wages of skilled workers in the United States over the 1980s, the ratio of nonproduction to production workers grew faster than in the 1960s and 1970s. This suggests that technological change in U.S. manufacturing was particularly biased in favor of white collar workers.

The third section explores the employment and wage behavior in U.S. multinational parents and their foreign-owned manufacturing affiliates between 1977 and 1989. Overall, the data point to the dominance of a commonly shared technological change, rather than to the impact of trade and increased international sourcing. Develop-

ments at home and abroad were remarkably similar. Employment fell, both in U.S. parents and in affiliates in developed countries, and grew only modestly in developing countries. In foreign affiliates in both developed and developing countries, the relative compensation of nonproduction workers increased, and the ratio of production to nonproduction workers fell. While U.S. parent sourcing from overseas affiliates grew rapidly, the increase accounted for only a small share of total sales. The final section of the paper discusses the issue of international labor standards.

Why Is Inflation Skewed? A Debt and Volatility Story

Joshua Aizenman and Ricardo Hausmann

NBER Working Paper No. 4837

August 1994

JEL Nos. F34, F4

International Trade and Investment,
International Finance and
Macroeconomics

This paper studies the skewness of inflation in 56 countries. Monthly data suggest that inflation is skewed positively. We investigate linkages between skewness and nonlinearity, showing that concavity (convexity) will lead to negative (positive) skewness if the independent variable is distributed symmetrically. We then construct a public finance model for a developing country that uses inflation tax and external borrowing as the residual means for fiscal financing. The model predicts a convex dependency of inflation on output, in which inflation skewness depends positively on inflation volatility, and external debt difficulties magnify the skewness. We conclude with an assessment of the patterns of inflation between 1979 and 1993 for the 56 countries. Overall, the patterns are consistent with the predictions of the model.

The Production of Human Capital and the Life Cycle of Earnings: Variations on a Theme

Jacob A. Mincer

NBER Working Paper No. 4838

August 1994

JEL No. J24

Labor Studies

After briefly summarizing Ben Porath's 1967 approach, I inquire into the empirical validity and implications of his insights. In section two, I attempt to answer this question: are the shapes and magnitudes of growth in wage profiles attributable largely to investments in human capital?

Section three tests the proposition that, over the working age, capacity wages (that is, wages before investment is netted out) decline before observed wages do. Implied timing of labor supply provides the test for that proposition, and my findings shed light on developments in the U.S. labor market in the past several decades.

In section four, I draw from Porath's model some implications for interpersonal differences and historical changes in life-cycle investments in human capital. I find the positive correlation between schooling and training predicted by the model in cross sections. It also shows up in parallel movements in schooling and training in the 1980s as the demand for human capital increases. Once again, I highlight observed U.S. patterns.

Are Windfalls a Curse? A Nonrepresentative Agent Model of the Current Account and Fiscal Policy

Aaron Tornell and Philip Lane

NBER Working Paper No. 4839

August 1994

JEL Nos. E62, F32

International Finance and
Macroeconomics

In several countries, temporary improvements in the terms of trade have led to a deterioration of the current account. Furthermore, many of these countries failed to attain greater growth rates after the boom. The point we make is that the structure of the fiscal process is critical in determining outcomes. If fiscal control is unitary, then the consumption-smoothing effect occurs, and representative-agent models of the current account have predictive power. However, if control is divided among several fiscal claimants, then a voracity effect appears that counteracts the consumption-smoothing effect, leading to a deterioration of the current account in response to a positive shock. We model the interaction among fiscal claimants as a dynamic game, and show that in equilibrium aggregate appropriation increases more than the windfall itself. This results in a deterioration of the current account. We also show that all the windfall is dissipated, with the country experiencing no increase in its growth rate. Finally, we analyze the experiences of seven countries that have enjoyed large windfalls.

Geographic Concentration in U.S. Manufacturing Industries: A Dartboard Approach

**Glen Ellison and
Edward L. Glaeser**

NBER Working Paper No. 4840

August 1994

JEL Nos. O40, L11, R10

Growth

This paper discusses the prevalence of Silicon Valley-style localizations of individual manufacturing industries in the United States. We use several models in which

firms choose locations by throwing darts at a map to test whether the degree of localization is greater than what would arise randomly, and to motivate a new index of geographic concentration. The proposed index controls for differences in the size distribution of plants, and for differences in the size of the geographic areas for which data are available. As a consequence, comparisons of the degree of geographic concentration across industries can be made with more confidence. We reaffirm previous observations in finding that almost all industries are localized, although the degree of localization appears to be slight in about half of the industries in our sample. We explore the nature of agglomerative forces in describing patterns of concentration, the geographic scope of localization, and the extent to which agglomerations involve plants in similar rather than identical industries.

Bias in U.S. Import Prices and Demand

**Robert C. Feenstra and
Clinton R. Shiells**

NBER Working Paper No. 4841

August 1994

JEL Nos. F14, C43

International Trade and Investment

This paper measures the potential bias in the U.S. import price index that is caused by the appearance of new types of products or new foreign suppliers, and determines the effect of this bias on the estimated income elasticity of import demand. Existing import price indexes are based on a sample of products from importing firms. We argue that if the share of import expenditure on the sampled products is falling over time, this will lead to an upward bias in the measured index. Using a correction based on

the falling share of expenditures in a sample of countries, we find that the income elasticity of aggregate U.S. import demand falls from 2.5 to 1.7. Our estimates suggest that the aggregate import price index is biased upward by about 1.5 percentage points annually.

Pass-Through of Exchange Rates and Purchasing Power Parity

**Robert C. Feenstra and
Jon D. Kendall**

NBER Working Paper No. 4842

August 1994

JEL No. F31

International Trade and Investment

We develop and test two hypotheses about purchasing power parity (PPP) derived from the pricing behavior of profit-maximizing, exporting firms: 1) that changes in the price of traded goods relative to domestic substitutes, attributable to partial pass-through of exchange rates, will affect the PPP relationship; and 2) that PPP should hold on forward rather than spot exchange rates, because of hedging by firms. Using quarterly data for the United States, Canada, France, Germany, Japan, and the United Kingdom, we find considerable support for the first but not for the second hypothesis.

Time-Varying World Market Integration

**Geert Bekaert and
Campbell R. Harvey**

NBER Working Paper No. 4843

August 1994

JEL Nos. F3, G0, G1

Asset Pricing

We propose a conditional measure of capital market integration that allows us to characterize both the cross section and the time series of expected returns in devel-

oped and emerging markets. Our measure, which arises from a conditional regime-switching model, allows us to describe expected returns in countries that are segmented from world capital markets in one part of the sample and become integrated later in the sample. Our results suggest that a number of emerging markets exhibit time-varying integration. Interestingly, some markets appear to be more integrated than one might expect based on prior knowledge of investment restrictions. Other markets appear segmented, even though foreigners have relatively free access to their capital markets.

Investment in U.S. Education and Training

Jacob A. Mincer

NBER Working Paper No. 4844

August 1994

JEL No. I22

Labor Studies

The current high rates of return to human capital stimulate a supply response through increased investments in education and training. The increased human capital stock then exerts downward pressure on the rates of return, reducing the skill differential in wages. This paper estimates: the responses of investments in post-secondary education, measured by enrollments, to changes in the rate of return; responses of investment in job training, measured by incidence; and the effects of accumulated human capital stocks, measured by educational attainment, on educational wage differentials. Enrollment responses and attainment effects are separated by a time lag of about a decade.

The parameter estimates are based on the annual Current Population Survey and National Consumer Expenditure Survey, cover-

ing a recent 25-year period. If demands for human capital cease to accelerate, then the rate of return is expected to decline about 25 percent over the current decade, judging by the estimated parameters and lags.

Infrastructure and Public R and D Investments, and the Growth of Factor Productivity in U.S. Manufacturing Industries

M. Ishaq Nadiri and

Theofanis P. Mamuneas

NBER Working Paper No. 4845

August 1994

JEL Nos. D24, L11, O47

Productivity

We examine the effects of publicly financed infrastructure and R and D capital on the cost structure and productivity performance of 12 two-digit U.S. manufacturing industries. We develop a general framework to measure the contribution of demand, relative input prices, technical change, and publicly financed capital on total factor productivity (TFP) growth. The magnitude of the contribution of these sources varies considerably across industries: in some, changes in demand dominate, while in others, changes in technology or relative prices are the main contributors. Publicly financed infrastructure and R and D capital contribute to productivity growth. However, the magnitudes of their contribution vary considerably across industries, and on the whole they are not the major contributors to TFP in these industries.

Differences in the Uses and Effects of Antidumping Law Across Import Sources

Robert W. Staiger and Frank A. Wolak

NBER Working Paper No. 4846

September 1994

JEL No. F13

International Trade and Investment

We study the differences in the uses and effects of U.S. antidumping law on imports and domestic output across the major regions that export to the United States. Building on our 1994 work, we extend our attempt to characterize the implications of the use of antidumping law for the behavior of U.S. imports and domestic output, and to distinguish between "outcome filers" (firms for which the prospect of an antidumping duty is an important ingredient in the decision to file) and "process filers" (firms for which filing is driven largely by a desire to secure the trade-restricting effects of the investigation process itself). In our earlier work we allowed for the coexistence of outcome- and process-filing industries, and found process filers in some industries. However, we restricted the filing strategy of firms in a given domestic industry to be the same across all imports in that industry, regardless of their country of origin.

In this paper, we abstract from cross-industry heterogeneity in antidumping filing strategies, and instead explore the heterogeneity of filing strategies against different import-source countries. We allow for the possibility that domestic firms may pursue independent filing strategies with respect to imports from different countries. We argue that the most likely target countries for process filers are those whose export production is

destined primarily for the U.S. market and that accounts for a relatively large and stable U.S. market share. These characteristics point to Canada and Mexico as countries against which process filing by U.S. firms is likely to occur. Analyzing the filing behavior against Canada and Mexico as well as four other regions, we find that Mexico and Canada are indeed the most likely targets of antidumping petitions filed by process filers in the United States.

Trade Liberalization and Trade Adjustment Assistance

K. C. Fung and Robert W. Staiger

NBER Working Paper No. 4847

September 1994

JEL No. F13

International Trade and Investment

We explore the relationship between trade adjustment subsidies and successful reciprocal trade liberalization. We consider economies that are faced with a periodic need to move resources out of a declining import-competing sector, and that are attempting to sustain cooperative but self-enforcing trade agreements in the face of these adjustment needs. If the limitations associated with enforcement of international trade agreements are sufficiently severe, trade adjustment assistance can facilitate reciprocal trade liberalization. We argue that this suggests a possible efficiency rationale for adjustment policies that treat resources differently when traded sectors are involved.

Commercial Paper, Corporate Finance, and the Business Cycle: A Microeconomic Perspective

Charles W. Calomiris, Charles P. Himmelberg, and Paul Wachtel

NBER Working Paper No. 4848

September 1994

Development of the American Economy, Monetary Economics

We know very little about the characteristics or behavior of individual issuers of commercial paper, or about the reasons for the countercyclical issuance of commercial paper in the aggregate. To address these issues, we construct a new panel dataset linking Moody's data on issues of commercial paper with Standard & Poor's Compustat.

High credit quality is a requirement for entry into the commercial paper market, but long-term credit quality (bond rating) is not a sufficient statistic for short-term quality. Holding constant long-term credit quality, access to the commercial paper market depends on large size, low earnings variance, high earnings, and large stocks of liquid assets. These characteristics allow firms to issue near-riskless short-term debt, and to supply a near-money asset to the market, thereby reducing their interest costs by the amount of the commercial paper liquidity premium.

We find that low-credit-quality firms have higher stocks of inventories and financial assets. Low-quality firms also display greater cash flow sensitivity of inventories and financial assets. This suggests that, in contrast to commercial paper issuers, lower-quality firms face financing constraints that lead them to accumulate "buffer stocks" of liquid assets.

In contrast to the countercyclicity of aggregate commercial paper, firm-level commercial paper is procyclical. Our data support three explanations for this apparent contradiction, all of which recognize that commercial paper issuers are atypical. First, firms of high credit quality can use commercial paper

to finance inventory accumulation during downturns. Second, they also can use commercial paper to finance countercyclical increases in accounts receivable. This suggests that commercial paper issuers serve as intermediaries for other firms during downturns. Third, it may be that portfolio demand for commercial paper—a highly liquid, safe asset—increases during downturns.

Threats and Promises

**Jonathan Eaton and
Maxim Engers**

NBER Working Paper No. 4849

September 1994

JEL No. F02

International Trade and Investment

Global environmental concerns have increased the sensitivity of governments and other parties to the actions of those outside their national jurisdiction. Some parties have tried to extend their influence extraterritorially, both by promising to reward desired behavior and by threatening to punish undesired behavior. If information were perfect, the Coase theorem would suggest that either method of seeking influence could provide an efficient outcome. If the parties in question have incomplete information about each other's costs and benefits from different actions, though, then either method can be costly, both to those seeking influence and in terms of overall efficiency. We compare various methods of seeking influence. A particular issue is dissembling: we find that by creating an incentive to dissemble—that is, mislead the other party about the cost or benefit of an action—attempts to influence the behavior of another can have the perverse effect of actually encouraging the action that one is trying to discourage.

Issues Concerning Nominal Anchors for Monetary Policy

**Robert P. Flood and
Michael L. Mussa**

NBER Working Paper No. 4850

September 1994

JEL Nos. F30, E42

International Finance and

Macroeconomics, Monetary Economics

We present a selective survey of issues relevant to the choice of nominal anchors for monetary policy. In Section I, we review long price-level histories for the United Kingdom and the United States that reveal that the price level behaved very differently following World War II than in earlier postwar periods. In particular, after World War II the responsibilities of monetary policy expanded to encompass a role of business cycle stabilization. Also, the nominal anchor shifted from the fixed anchor, or price-level stability, to the moving anchor, or inflation-rate stability. In the remaining sections of the paper, we review some of the considerations that are relevant to setting the average inflation rate in countries without a fixed nominal anchor.

Tax Policy and International Capital Flows

Martin Feldstein

NBER Working Paper No. 4851

September 1994

JEL Nos. F21, H2

International Finance and

Macroeconomics, International Trade
and Investment, Public Economics

Although capital now is generally free to move across national borders, there is strong evidence that savings tend to remain and be invested in the country where the saving takes place. This paper examines the apparent conflict between the potential mobility of

capital and the observed de facto segmentation of the global capital market.

The key to reconciling this "Feldstein-Horioka paradox" is that, although capital is free to move, its owners, and especially the agents who are responsible for institutional investments, prefer to keep funds close to home because of a combination of risk aversion, ignorance, and a desire to show prudence in their investing behavior.

This paper presents evidence on both capital mobility and segmentation of the capital market. I discuss the role of hedging and the difference between gross and net capital movements for individual investors and borrowers. I also consider the special role of foreign direct investment.

In the final section of the paper I discuss the segmentation of the global capital market that affects the impact of capital income taxes and subsidies.

(This paper was presented at the 1994 Bernhard Harms lecture.)

A Major-Risk Approach to Health Insurance Reform

**Martin Feldstein and
Jonathan Gruber**

NBER Working Paper No. 4852

September 1994

JEL Nos. H4, I1

Health Care, Health Economics,
Public Economics

This paper examines the implications of a "major-risk" approach to health insurance. Using data from the National Medical Expenditure Survey, we consider the impact of switching from existing coverage to a policy with a 50 percent coinsurance rate and a limit of 10 percent of income on out-of-pocket expenditures, as well as several alternative combinations of

a high-coinsurance rate with a limited out-of-pocket payment. We limit our analysis to the population under age 65.

Although 80 percent of spending on physicians and hospital care is done by the 20 percent of families who spend over \$5000 in a year, our analysis shows that shifting to a major-risk policy could reduce aggregate health spending by nearly 20 percent. The reductions would be greatest among higher-income individuals.

By reducing the excess consumption of health services, the major-risk policy increases aggregate economic efficiency. The extent of the increase in efficiency depends on demand elasticities and on the extent of risk aversion. Assuming modest values of both demand sensitivity and risk aversion, we find that shifting to a major-risk policy would raise aggregate national efficiency by \$34 billion a year. Greater demand sensitivity and/or greater risk sensitivity imply even larger gains.

Government provision of a major-risk policy to everyone under the age of 65 could be financed with a premium of about \$150 per person because of the increased tax revenue and reduced Medicare outlays that would result from providing universal major-risk insurance for everyone under age 65. Even without government provision, individuals might be induced to select major-risk policies if existing tax rules were changed to eliminate the advantage of insurance, either by including employer-provided insurance in taxable income or by permitting a tax deduction for out-of-pocket medical expenditures.

State Abortion Rates: The Impact of Policies, Providers, Politics, Demographics, and Economic Environment

**Rebecca M. Blank,
Christine C. George, and
Rebecca A. London**

NBER Working Paper No. 4853

September 1994

JEL No. I18

Health Economics, Labor Studies

This paper uses data on abortion rates, by state and year from 1974–88, to estimate two-stage least squares models with fixed state and year effects. The results indicate that implementing restrictions on Medicaid funding for abortion results in lower aggregate abortion rates in-state and higher abortion rates among nearby states. This suggests that one of the main effects of these policies is to induce cross-state migration for abortion services.

The effect of these restrictions on actual abortions among state residents is much smaller, a maximal estimate suggests that 22 percent of the abortions among low-income women that are publicly funded would not take place if funding were eliminated. We also have substantial evidence that a larger number of abortion providers in a state increases the abortion rate within the state, primarily through inducing cross-state migration. Nonhospital providers are particularly important. Variables reflecting political affiliation have mixed effects and are difficult to interpret. Controlling for state fixed effects, the effect of changes in demographic and economic variables over time is typically small, although a rise in unemployment has consistently positive effects on abortion rates.

A Time to Sow and a Time to Reap: Growth Based on General Purpose Technologies

**Manuel Trajtenberg and
Elhanan Helpman**

NBER Working Paper No. 4854

September 1994

JEL Nos. O3, O4

Productivity

We develop a model of growth driven by successive improvements in "General Purpose Technologies" (GPTs), such as the steam engine, electricity, and microelectronics. Each new generation of GPTs prompts investments in complementary inputs, and affects the economy after enough of such compatible inputs become available. The long-run dynamics take the form of recurrent cycles: during the first phase of each cycle, output and productivity grow slowly or even decline; it is only in the second phase that growth begins in earnest. The historical record of productivity growth associated with electrification, and perhaps lately also of computerization, may offer supportive evidence for this pattern. In lieu of analytical comparative dynamics, we conduct simulations of the model over a wide range of parameters, and analyze the results statistically. We extend the model to allow for skilled and unskilled labor, and explore the implications for the behavior over time of their relative wages. We also explore diffusion in the context of a multisector economy.

Sticky Prices: New Evidence from Retail Catalogs

Anil K. Kashyap

NBER Working Paper No. 4855

September 1994

JEL No. E31

Monetary Economics

This paper presents new results on the size, frequency, and synchronization of price changes for 12 selected retail goods over the past 35 years. I uncover three basic facts about the data: 1) nominal prices typically are fixed for more than one year, although the time between changes is very irregular; 2) prices change more often during periods of high overall inflation; and 3) when prices do change, the sizes of the changes are widely dispersed. Both "large" and "small" changes occur for the same item, and the sizes of these changes do not depend closely on overall inflation.

A Theory of the Welfare State

Hans-Werner Sinn

NBER Working Paper No. 4856

September 1994

JEL Nos. H55, D6

Public Economics

The welfare state can be seen as an insurance device that makes lifetime careers safer, increases risktaking, and suffers from moral hazard effects. Adopting this view, I study the trade-off between average income and inequality, evaluating redistributive equilibria from an allocative point of view. I identify the properties of an optimal welfare state, and show that constant returns to risktaking are likely to imply a redistribution paradox, in which more redistribution results in more inequality. In general, optimal taxation either will imply that the redistribution paradox is present, or that the economy operates at a point of its efficiency frontier where more inequality implies a lower average income.

An Asset Allocation Puzzle

Niko Canner,

N. Gregory Mankiw, and

David N. Weil

NBER Working Paper No. 4857

September 1994

JEL No. G11

Asset Pricing, Monetary Economics

This paper examines popular advice on portfolio allocation among cash, bonds, and stocks. It documents that this advice is not consistent with the mutual-fund separation theorem, which states that all investors should hold the same composition of risky assets. In contrast to that theorem, the popular advice is that aggressive investors hold a lower ratio of bonds-to-stocks than conservative investors. We explore various possible explanations of this puzzle, and conclude that the portfolio recommendations can be explained if popular advisors base their advice on the unconditional distribution of nominal returns. We also find that the cost of this money illusion is small, as measured by the distance of the recommended portfolios from the mean-variance efficient frontier.

Noise Trading, Delegated Portfolio Management, and Economic Welfare

Gary Gorton and James Dow

NBER Working Paper No. 4858

September 1994

JEL Nos. G10, G23

Asset Pricing, Corporate Finance

We consider a model of the stock market with delegated portfolio management. All agents are rational: some trade for hedging reasons; some investors contract optimally with portfolio managers who may have stock-picking abilities; and portfolio managers trade optimally, given the incentives pro-

vided by this contract. Managers try, but sometimes fail, to discover profitable trading opportunities. Although it is best not to trade in this case, their clients cannot distinguish "actively doing nothing" in this sense from "simply doing nothing." Because of this problem, some portfolio managers trade, even though they have no reason to prefer one asset to another (noise trade). We also show that the amount of such noise trade can be large compared to the amount of hedging volume. Perhaps surprisingly, noise trade may be Pareto-improving, and it may be viewed as a public good. These results are compatible with observed high levels of turnover in securities markets, and illustrate some of the possible subtleties of the welfare economics of financial markets.

Job Stability in the United States

Francis X. Diebold,

David Neumark, and

Daniel Polsky

NBER Working Paper No. 4859

September 1994

JEL Nos. C81, E24, J21

Labor Studies

Two key attributes of a job are its wage and its duration. Much has been made of changes in the wage distribution in the 1980s, but little attention has been given to job durations since Hall (1982). We fill this void by examining the temporal evolution of job retention rates in U.S. labor markets, using data assembled from the sequence of Current Population Survey job tenure supplements. In contrast to the distribution of wages, which clearly changed in the 1980s, job retention rates have remained stable.

**The Specie Standard
as a Contingent Rule:
Some Evidence for
Core and Peripheral
Countries, 1880–1990**

**Michael D. Bordo and
Anna J. Schwartz**

NBER Working Paper No. 4860

September 1994

JEL Nos. E42, F33, N10

Development of the American
Economy, Monetary Economics

The specie standard that prevailed before 1914 was a contingent rule. Under the rule, specie convertibility could be suspended in the event of a well-understood, exogenously produced emergency, such as a war, on the understanding that after the emergency had safely passed, convertibility would be restored at the original parity. Market agents would regard successful adherence as evidence of a credible commitment, and would allow the authorities access to seigniorage and bond finance at favorable terms.

This paper surveys the history of the specie standard as a contingent rule for 21 core and peripheral countries. As a comparison, we also briefly consider the Bretton Woods system and the recent managed floating regime.

We offer some evidence on capital flows from 1865 to 1914 between England and two countries of recent settlement—Argentina and the United States—during episodes of both suspension and adherence to convertibility. We suggest that adherence to the rule may have had some influence on the decision by England to invest abroad.

We then present evidence across four regimes (pre-1914 gold standard; interwar gold standard; Bretton Woods; the subsequent

managed exchange rate float) for the 21 countries on the stability of macrovariables as well as on demand shocks (reflecting policy actions specific to the regime) and supply shocks (reflecting shocks to the environment independent of the regime). These measures allow us to determine whether adherents to the rule consistently pursued different policy actions from nonadherents, and whether persistent adverse shocks to the environment may, for some countries, have precluded adherence to the rule.

**Equity and Time to Sale
in the Real Estate Market**

**David Genesove and
Christopher J. Mayer**

NBER Working Paper No. 4861

September 1994

JEL No. L13

Industrial Organization

Recent research has proposed a procyclical link between sales volume and prices in the real estate market through changes in the equity of existing homeowners. This paper uses data from the Boston condominium market to show that owners with high loan-to-value ratios take longer to sell their properties than owners with low loan-to-value ratios. Properties with high loan-to-value ratios are listed at higher asking prices; when sold, they receive higher prices than units with less debt. Together, these results are consistent with a search model in which owners “constrained” by large amounts of debt set a higher reservation price than “unconstrained” owners, accepting a lower probability of sale in exchange for a higher final sales price.

**Distributional Effects
on a Lifetime Basis**

**Don Fullerton and
Diane Lim Rogers**

NBER Working Paper No. 4862

September 1994

JEL Nos. D58, H22

Public Economics

All government agencies charged with the responsibility of estimating distributional effects use annual income to classify households and one year's tax to characterize tax burdens. In this paper, we describe an alternative procedure to estimate lifetime tax burdens as proportions of lifetime income. To illustrate this model, we calculate the lifetime effects of a uniform consumption tax and a wage tax. This kind of analysis can supplement existing annual analyses, since policymakers might want to ensure both that current taxes reflect current ability to pay and that lifetime taxes reflect lifetime ability to pay.

**Markup Pricing in Mergers
and Acquisitions**

G. William Schwert

NBER Working Paper No. 4863

September 1994

Asset Pricing

This paper studies the premiums paid from 1975–91 in successful tender offers and mergers involving NYSE- and AMEX-listed target firms in relation to preannouncement stock price runups. It has been conventional to measure corporate control premiums including the price runups that occur before the initial formal bid. There has been little evidence on the relationship between the prebid runup and the postannouncement premium (that is, the premium paid to target stockholders measured from the date of the first bid). Under what

circumstances are runups associated with larger total premiums? This paper shows that in most cases, the prebid runup and the postannouncement premium are not correlated (that is, there is little or no substitution between the runup and the postannouncement premium), so the runup is an added cost to the bidder. This has important implications for assessing the costs of illegal insider trading based on private information about a potential bid.

Effective Tax Rates in Macroeconomics: Cross-Country Estimates of Tax Rates on Factor Incomes and Consumption

Enrique G. Mendoza, Assaf Razin, and Linda L. Tesar

NBER Working Paper No. 4864

September 1994

JEL Nos. E62, F41, H2

International Finance and

Macroeconomics

We compute tax rates using national accounts and revenue statistics. Using this method, we construct a time series of tax rates for large industrial countries. The method identifies the revenue raised by different taxes at the general government level, and defines aggregate measures of the corresponding tax bases. This method yields estimates of effective tax rates on factor incomes and consumption that are consistent with the tax distortions faced by a representative agent in a general equilibrium framework. These tax rates compare favorably with existing estimates of marginal tax rates, and highlight important international differences in tax policy.

A Survey of Empirical Research on Nominal Exchange Rates

Jeffrey A. Frankel and Andrew K. Rose

NBER Working Paper No. 4865

September 1994

JEL No. F31

International Finance and

Macroeconomics

We survey the empirical literature of the past decade on floating nominal exchange rates. Exchange rates are difficult to forecast at short- to medium-term horizons. Monetary models, such as the Dornbusch "overshooting" theory, have a bit of explanatory power in the form of reaction to "news" and in forecasts at long-run horizons. Nevertheless, at short horizons, a driftless random walk characterizes exchange rates better than standard models based on observable macroeconomic fundamentals. Then, logically, unexplained large shocks to floating rates must be caused either by innovations in unobservable fundamentals, or by nonfundamental factors, such as speculative bubbles. The observed difference in exchange rate and macroeconomic volatility under different nominal exchange rate regimes makes us skeptical of the first view. However, the theory and evidence on speculative bubbles is not conclusive. Still, promising new studies of the microstructure of the foreign exchange market eventually might rise to insights into these phenomena.

Assimilation and Changes in Cohort Quality Revisited: What Happened to Immigrant Earnings in the 1980s?

George J. Borjas

NBER Working Paper No. 4866

September 1994

JEL Nos. J1, J6

Labor Studies

This paper uses the 1970, 1980, and 1990 Public Use Samples of the U.S. Census to document what happened to immigrant earnings in the 1980s, and to determine if pre-1980 immigrant flows reached earnings parity with natives. The relative entry wage of successive immigrant cohorts declined by 9 percent in the 1970s, and by an additional 6 percent in the 1980s. Although the relative wage of immigrants grows by 10 percent during the first two decades after arrival, the relative wage of post-1970 immigrants will remain 15 to 20 percent below those of natives throughout much of their working lives.

The Seesaw Principle in International Tax Policy

Joel B. Slemrod, Carl Hansen, and Roger Procter

NBER Working Paper No. 4867

September 1994

JEL Nos. H20, F21

International Trade and Investment,

Public Economics

The standard analysis of the optimal international tax policy of a small country typically assumes that the country either imports or exports capital, but does not do both. This paper considers the situation in which a small country both exports and imports capital and can alter its tax on one or the other, but not both. In each case, there is a "seesaw" relationship, in which the optimal tax on the income from capital exports (imports) is related inversely to the given tax rate on income from capital imports (exports). The standard results for optimal taxation of capital exports and imports are special cases of the more general seesaw principle.

A Note on Subsidizing Gifts

Louis Kaplow

NBER Working Paper No. 4868

September 1994

JEL No. H23

Law and Economics, Public Economics

Altruistically motivated gifts involve a type of consumption externality. Donors gain an altruistic benefit from the effect of their gifts on donees' utility, but do not take into account that the benefit to donees itself is relevant to social welfare. Thus the level of gift-giving will be lower than is optimal. A subsidy can correct this problem, while compulsory transfers (assuming that the state lacks information about who is altruistic) and bargaining between donors and donees cannot. The rationale for subsidizing gifts offered here does not depend on whether the donee's activity is a public good (as with gifts for medical research), or whether the transfer tends to equalize the wealth of donors and donees, two factors that are emphasized in the existing literature on the subject.

The Effect of Taxes on Investment and Income Shifting to Puerto Rico

**Harry Grubert and
Joel B. Slemrod**

NBER Working Paper No. 4869

September 1994

JEL Nos. H25, F21

International Trade and Investment,
Public Economics

The income of Puerto Rican affiliates of U.S. corporations essentially is untaxed by either Puerto Rico or the United States. This lowers the tax penalty on real investment there, and also makes it attractive to shift reported taxable income from the U.S. parent corporation to the Puerto Rican affiliate.

Because the ability to shift income is affected by the presence of real operations, the true marginal effective tax rate on investment in Puerto Rico depends on the income-shifting opportunities.

This paper investigates these two avenues by first developing a structural econometric model of the joint decisions regarding investment and income shifting, and then estimating the model using firm-level data on U.S. corporations' activity in Puerto Rico. The empirical results suggest that the advantages of income shifting are the predominant reason for U.S. investment in Puerto Rico.

What Does the Political Economy Literature on Trade Policy (Not) Tell Us That We Ought to Know?

Dani Rodrik

NBER Working Paper No. 4870

September 1994

JEL No. F13

International Trade and Investment

Three questions lie at the core of the large and distinguished literature on the political economy of trade policy. First, why is international trade not free? Second, why are trade policies universally biased against (rather than in favor of) trade? Third, what are the determinants of the variation in protection levels across industries, countries, and institutional contexts? These questions are handled only imperfectly by the existing literature. Current models treat trade policy as a redistributive tool, but do not explain why it emerges in political equilibrium in preference over more direct policy instruments. Further, existing models do not generate a bias against trade, implying that protrade interventions are as likely as trade-restricting interventions. The greatest con-

tribution of the political economy literature may lie in developing a better grasp of normative economic analysis: that is, in helping to design policies, rules, and institutions.

Estimating and Interpreting Forward Interest Rates: Sweden 1992-4

Lars E. O. Svensson

NBER Working Paper No. 4871

September 1994

JEL Nos. E50, E52, F31, G12

International Finance and

Macroeconomics, Monetary Economics

I demonstrate the use of forward interest rates as a monetary policy indicator, using Sweden in 1992-4 as an example. Forward rates indicate market expectations of the time path of future interest rates, future inflation rates, and future currency depreciation rates. They separate market expectations for the short, medium, and long term more easily than the standard yield curve does. I estimate forward rates with an extended and more flexible version of Nelson and Siegel's functional form.

Immigration and Welfare, 1970-90

George J. Borjas

NBER Working Paper No. 4872

September 1994

JEL Nos. J1, J6

Labor Studies, Public Economics

This paper uses the 1970, 1980, and 1990 Public Use Samples of the U.S. Census to trace the evolution of immigrant participation in welfare programs during the past two decades. The data indicate that immigrant participation in welfare programs is on the rise, and that the dollar costs associated with this trend are rising even faster. By 1990, immigrant households re-

ceived a disproportionately high share of the cash benefits distributed in the United States. Even though only 8.4 percent of the households are foreign-born, these households accounted for 10.1 percent of all households that received public assistance, and for 13.1 percent of the total cash assistance distributed.

Credit Markets and the Welfare Costs of Inflation

José De Gregorio and Federico Sturzenegger

NBER Working Paper No. 4873

October 1994

JEL Nos. E31, E44

International Finance and Macroeconomics

We construct a simple model in which high inflation imposes welfare costs because it affects the ability of the financial sector to screen between high- and low-cost producers. Consumers search for a low price, and inflation reduces the incentives to search, resulting in an increase in the demand for high-cost producers. We show that beyond a certain level of inflation, there is a switch from a separating to a pooling equilibrium, in which financial institutions are unable to distinguish among clients. In this pooling equilibrium, a larger share of credit is allocated to less efficient firms.

Following in Her Footsteps? Women's Choices of College Majors and Faculty Gender Composition

Brandice J. Canes and Harvey S. Rosen

NBER Working Paper No. 4874

October 1994

JEL Nos. J24, H52

Labor Studies

It is asserted frequently that a

college's female undergraduate enrollment in the sciences and engineering can be increased by raising female representation on the faculties in these areas. Despite widespread acceptance of this proposition, it does not appear to have been subjected to any kind of serious statistical analysis. In this paper, we assemble panel data from three rather different educational institutions, and use the data to examine the relationship between the gender composition of the students in an academic department and the gender composition of its faculty at the time those students were choosing their majors. We find no evidence for the conventional view that an increase in the share of females on a department's faculty leads to an increase in its share of female majors.

What Do We Know About Capital Structure? Some Evidence from International Data

Raghuram G. Ragan and Luigi Zingales

NBER Working Paper No. 4875

October 1994

JEL Nos. G32, G15

Corporate Finance

We investigate the determinants of choice of capital structure by analyzing the financing decisions of public firms in the major industrialized countries. At an aggregate level, firm leverage is fairly similar across the G-7 countries. We find that factors identified by previous studies as important in determining the cross section of capital structure in the United States affect firm leverage in other countries as well. However, a deeper examination of the U.S. and foreign evidence suggests that the theoretical underpinnings of the observed correlations are still largely unresolved.

Foreign Investment with Endogenous Protection

Gene M. Grossman and Elhanan Helpman

NBER Working Paper No. 4876

October 1994

JEL Nos. F23, F13, D78

International Trade and Investment

Jagdish Bhagwati coined the phrase *quid pro quo foreign investment* to describe international investments made in anticipation of host country trade policy, and perhaps with the intention of defusing a protectionist threat. We apply Bhagwati's notion to situations in which: 1) foreign investment is best described as the (uncoordinated) opening of branch plants by multinational corporations; and 2) protection is a political response by an incumbent government to offers of policy-contingent campaign contributions by domestic firms. We examine the determinants of anticipatory foreign investment, and study some of its welfare implications. We also allow for lobbying by workers with sector-specific skills, and show how the conflicting interests of these workers and the industrialists are resolved in determining policy toward foreign investment.

Electoral Competition and Special Interest Politics

Gene M. Grossman and Elhanan Helpman

NBER Working Paper No. 4877

October 1994

JEL No. D72

International Trade and Investment

We study the competition between two political parties for seats in a parliament. The parliament will set two types of policies: ideological and nonideological. The parties have fixed positions on the ideological issues, but choose their

nonideological platforms to attract voters and campaign contributions. In this context, we ask: how do the equilibrium contributions from special interest groups influence the platforms of the parties? We show that each party is induced to behave as if it were maximizing a weighted sum of the aggregate welfare of informed voters and members of special interest groups. The party that is expected to win a majority of seats caters more to the special interests.

The Attraction of Foreign Manufacturing Investments: Investment Promotion and Agglomeration Economies

C. Keith Head, John C. Ries, and Deborah L. Swenson

NBER Working Paper No. 4878

October 1994

JEL No. F21

International Trade and Investment

We study Japanese investments between 1980 and 1992 to assess the effectiveness of state efforts at promotion in light of strong agglomeration economies in Japanese investment. Two policy variables are shown consistently to influence the location of investment: foreign trade zones and labor subsidies. We use simulations to explore the impact these policies had on the geographic distribution of Japanese investment. The simulations reveal that, in aggregate, promotion programs largely offset each other; however, unilateral withdrawal of promotion causes individual states to lose substantial amounts of foreign investment.

Market Failure in Small Group Health Insurance

David M. Cutler

NBER Working Paper No. 4879

October 1994

JEL No. I18

Health Care

Typically, health insurance premiums depend at least in part on the previous costs of the insuring firm, a factor termed "experience rating." This link between health status and future premiums raises concerns of market failure, since it limits the ability of firms to insure the price at which they can purchase insurance in future years. This paper examines the economic factors influencing experience rating. The first part of the paper demonstrates that experience rating is quantitatively important. Premiums at the 90th percentile of the distribution are two and a half times greater than premiums at the 10th percentile of the distribution, and this difference does not appear to be caused by the generosity of benefits or the demographic composition of the firm. The second part of the paper discusses explanations for the prevalence of community rating, including inability to write long-term contracts, lack of demand from firms with below-average costs, and public policies that provide subsidies to the uninsured. The last part of the paper examines these predictions empirically. I find that firms with high-wage employees and low turnover have less variability of premiums than firms with low-wage employees or high turnover, but not that public policies affect the variability of premiums.

Health Insurance and the Supply of Entrepreneurs

Douglas Holtz-Eakin, John R. Penrod, and Harvey S. Rosen

NBER Working Paper No. 4880

October 1994

JEL Nos. J6, I18, H31

Health Care, Labor Studies

Some commentators have suggested that the absence of portable health insurance keeps people from leaving their jobs to start new firms. We investigate this belief by comparing wage earners who become self-employed during a given period of time with their counterparts who do not. By examining the impact of variables relating to the health insurance and health status of these workers and their families, we can infer whether the lack of health insurance portability affects the probability that they become self-employed. The evidence does not support the conjecture that the current health insurance system affects the propensity to become self-employed. Hence, whatever its other merits, there is no reason to believe that the introduction of universal health insurance would enhance entrepreneurial activity significantly.

Taxation and Endogenous Growth in Open Economies

Nouriel Roubini and Gian Maria Milesi-Ferretti

NBER Working Paper No. 4881

October 1994

JEL Nos. E62, O41

International Finance and

Macroeconomics, Public Economics

This paper examines the effects of taxation of human capital, physical capital, and foreign assets in a multisector model of endogenous growth. We show that in general the growth rate is reduced by taxes on capital and labor (human capital) income. When the government faces no borrowing constraints and is able to commit to a given set of present and future taxes, the optimal tax plan involves high taxation of both capital and labor in the short run. This allows the government to accumulate sufficient assets to finance spending without any re-

course to distortionary taxation in the long run. When restrictions to government borrowing and lending are imposed, the model implies that human and physical capital should be taxed similarly.

Optimal Taxation of Human and Physical Capital in Endogenous Growth Models

**Nouriel Roubini and
Gian Maria Milesi-Ferretti**

NBER Working Paper No. 4882

October 1994

JEL Nos. E62, O41

International Finance and

Macroeconomics, Public Economics

We study the effects of income taxation of human and physical capital on growth, and examine how these effects depend on the technologies for human capital accumulation and "leisure." We then derive the normative implications of the analysis for the optimal taxation of factor incomes. We show that, in general, both capital and labor (human capital) taxes reduce growth. In these cases, the optimal long-run tax on both capital and labor income is zero. The optimal taxation plan consists of taxing both factors in the short run, and financing spending in the long run through accumulated budget surpluses.

Public Education and Income Distribution: A Quantitative Evaluation of Education Finance Reform

**Raquel Fernandez and
Richard Rogerson**

NBER Working Paper No. 4883

October 1994

JEL Nos. I22, H42

Public Economics

Many states have implemented or are considering implementing school finance reforms aimed at

lessening inequality in the provision of public education across communities. These reforms will tend to have complicated aggregate effects on income distribution, intergenerational income mobility, and welfare. In order to analyze the potential effects of such reforms, this paper constructs a dynamic general equilibrium model of public education provision, calibrates it using U.S. data, and examines the quantitative effects of a major school finance reform. The policy reform that we examine is a change from a system of pure local finance to one in which all funding is done at the federal level, and expenditures per student are equal across communities. We find that this policy increases both average income and total spending on education as a fraction of income. Moreover, there are large welfare gains associated with this policy: steady-state welfare increases by 3.2 percent of steady-state income.

Precautionary Saving and Social Insurance

**R. Glenn Hubbard,
Jonathan S. Skinner, and
Stephen P. Zeldes**

NBER Working Paper No. 4884

October 1994

JEL Nos. H3, I3

Public Economics

Microdata studies of household saving often find a significant group in the population with virtually no wealth, that raises concerns about heterogeneity in motives for saving. In particular, this heterogeneity has been interpreted as evidence against the life-cycle model of saving. We argue that a life-cycle model *can* replicate observed patterns in household wealth accumulation, after explicitly accounting for precautionary saving and asset-based, means-tested social insurance; we

demonstrate theoretically that social insurance programs with means tests based on assets discourage saving by households with low expected lifetime income. Assuming common preference parameters across lifetime-income groups, we replicate the empirical pattern: that low-income households are more likely than high-income households to hold virtually no wealth. Low wealth accumulation can be explained as a utility-maximizing response to asset-based, means-tested welfare programs.

Fiscal Policies, Capital Formation, and Capitalism **Martin Feldstein**

NBER Working Paper No. 4885

October 1994

JEL No. H00

Public Economics

This paper examines the effects of tax policy and Social Security retirement benefits on capital accumulation and economic welfare. I begin by examining how capital income taxes reduce the real return to savers, and then discuss the welfare loss of capital income taxation relative to the alternatives of taxing consumption and labor income. The analysis shows that capital income taxes impose a very substantial deadweight loss, even if they do not alter private saving. The first section of the paper also discusses the theory and empirical literature on the effect of capital income taxes on national saving.

The second part of the paper deals with Social Security retirement benefits. In 1994, the aged members of the U.S. population will receive cash and medical benefits that cost the government \$530 billion, or \$16,000 per person over age 65. I review the likely impact of these benefits on private saving, and the empirical evidence on this

subject. This part of the paper concludes by discussing the welfare loss of unfunded Social Security benefits, and the possibilities for alternative arrangements.

A final section discusses the implications of international capital flows for this analysis. As capital flows become more important, particularly in Europe, the response of government policy may be to compete for foreign capital inflows, and to tax domestic savers more heavily. This would lead to a smaller total volume of capital.

The sharp decline in the net national saving rate—from more than 8 percent of GDP in the United States in the 1970s to only 4.5 percent in the 1980s, and from more than 14 percent of GDP in Europe in the 1970s to 9.9 percent in the 1980s—may not only create lower real incomes and slower growth, but also may weaken capitalism itself. In the United States, a decade of slow growth has increased protectionist tendencies in international trade and led to a new interest in industrial policies that expand the role of the government in guiding the direction of technology and of private investment. In these ways, the government policies that discourage saving might make the Schumpeterian vision of a shift from private capitalism to a government-dominated economy more likely.

Debt and Seniority: An Analysis of the Role of Hard Claims in Constraining Management

Oliver Hart and John Moore

NBER Working Paper No. 4886

October 1994

JEL Nos. D23, C23

Corporate Finance

We argue that long-term debt has a role in controlling manage-

ment's ability to finance future investments. A company with high (widely held) debt will find it hard to raise capital, since new security holders will have low priority relative to existing creditors. The converse is true for a company with low debt. We show that there is an optimal debt-equity ratio and mix of senior and junior debt if management undertakes unprofitable as well as profitable investments. We derive conditions under which equity and a single class of senior long-term debt work as well as more complex contracts for controlling investment behavior.

Explaining Investment Dynamics in U.S. Manufacturing: A Generalized (S,s) Approach

Ricardo J. Caballero and Eduardo M. R. A. Engel

NBER Working Paper No. 4887

October 1994

JEL Nos. E10, E22, C1

Economic Fluctuations

We derive a model of aggregate investment that builds on the lumpy microeconomic behavior of firms facing stochastic fixed adjustment costs. Firms' optimal adjustment policies have a probability of adjusting (an *adjustment hazard*) that grows smoothly with firms' disequilibria. The processes for aggregate investment obtained from adding up the actions of firms subject to aggregate and idiosyncratic shocks are highly nonlinear. We find clear evidence supporting nonlinear models over linear ones for postwar sectoral U.S. investment in manufacturing equipment and structures. For a given sequence of aggregate shocks, the nonlinear model generates brisker expansions and, to a lesser extent, sharper contractions than its linear

counterpart. These features fit the observed positive skewness and large kurtosis of U.S. manufacturing sectoral investment/capital ratios well.

Measuring Money Growth When Financial Markets Are Changing

Martin Feldstein and James H. Stock

NBER Working Paper No. 4888

October 1994

JEL Nos. E44, E51, C32

Economic Fluctuations, International Finance and Macroeconomics, Monetary Economics

We examine the problem of measuring the growth of a monetary aggregate in the presence of innovations in financial markets and changes in the relationship between individual assets and output. We propose constructing a monetary aggregate that is a good leading indicator of nominal GDP; in general, the weights on its components vary over time. We investigate two specific procedures: in one, subaggregates discretely switch in and out; in the other, the growth of the aggregate is a time-varying weighted average of the growth of the subaggregates, in which the weights follow a random walk. We use these procedures to construct aggregates that potentially augment M2 with stock and/or bond mutual funds. Over 1960–91, the time-varying aggregates look much like M2, but during 1992–3 the time-varying aggregates outperform M2.

Unemployment Effects of Military Spending: Evidence from a Panel of States

Michael M. Knetter and Mark Hooker

NBER Working Paper No. 4889

October 1994

JEL Nos. E24, E62, R12
Labor Studies, Economic Fluctuations

We use data on a panel of states over a 30-year sample to estimate the response of unemployment to military procurement spending. The state panel provides greater variation in both variables than other samples, and permits us to examine whether responses to procurement spending shocks vary across states. Our main finding is that changes in procurement spending significantly affect unemployment in states heavily dependent on the military sector and subject to large changes. Accounting for this variation in responses across states adds approximately 40 percent to the estimated aggregate unemployment impact of the current drawdown.

Market Timing Ability and Volatility Implied in Investment Newsletters' Asset Allocation Recommendations

John R. Graham and Campbell R. Harvey

NBER Working Paper No. 4890
October 1994
JEL Nos. G1, G2, G0
Asset Pricing

We analyze the advice contained in a sample of 237 investment letters from 1980–92. Each newsletter recommends a mix of equity and cash. We construct portfolios based on these recommendations, and find that only a small number of the newsletters appear to have higher average returns than a buy-and-hold portfolio constructed to have the same variance. Knowledge of the asset allocation weights also implies knowledge of the exact conditional betas. As a result, we present direct tests of market timing ability that bypass beta esti-

mation problems. Assuming that different letters cater to investors with different risk aversions, we are able to imply the newsletters' forecasted market returns. The dispersion of the newsletters' forecasts provides a natural measure of disagreement in the market. We find that the degree of disagreement contains information about both market volatility and trading activity.

Cigarette Taxation and the Social Consequences of Smoking

W. Kip Viscusi

NBER Working Paper No. 4891
October 1994
Health Economics, Public Economics

This paper assesses the appropriate cigarette tax needed to address potential market failures. There is no evidence of inadequate risk decisions by smokers regarding their own welfare. Detailed calculations of the financial externalities of smoking indicate that the financial savings from premature mortality, in terms of lower nursing home costs and retirement pensions, exceed the higher medical care and life insurance costs generated. The costs of environmental tobacco smoke are highly uncertain, but are potentially substantial. Even with recognition of these costs, current cigarette taxes exceed the magnitude of the estimated net externalities.

Domestic Saving and International Capital Flows Reconsidered

Alan M. Taylor

NBER Working Paper No. 4892
October 1994
JEL No. F21
Development of the American Economy, International Trade and Investment, International Finance and Macroeconomics

A long literature since Feldstein and Horioka's seminal contribution documents the strong correlation between domestic saving and investment rates since the 1960s. According to conventional wisdom, the result provides evidence of imperfections in the international capital market. The macroeconomic theory of small open economies prescribes a relationship between the composition of aggregate demand and its relative price structure, a linkage previously ignored in the saving–investment literature. The theory and evidence also suggest a role for growth and demographic effects, well known in previous studies. If one controls for these effects, the standard correlation of saving and investment disappears. International capital markets may be integrated better than once thought, and the former correlations may have been spurious. The pattern of domestic investment rates is explained better by domestic price distortions and other variables than by constraints on domestic saving.

The Intertemporal Approach to the Current Account **Maurice Obstfeld and Kenneth Rogoff**

NBER Working Paper No. 4893
October 1994
JEL No. F32
International Trade and Investment, International Finance and Macroeconomics

The intertemporal approach views the current account balance as the outcome of forward-looking dynamic saving and investment decisions. This paper, a chapter in the forthcoming third volume of the *Handbook of International Economics*, surveys the theory and empirical work on the intertempo-

ral approach as it has developed since the early 1980s. After reviewing the basic one-good, representative-consumer model, we consider a series of extended models incorporating relative prices, complex demographic structures, consumer durables, asset-market incompleteness, and asymmetric information. We also present a variety of empirical evidence illustrating the usefulness of the intertemporal approach, and argue that intertemporal models provide a consistent and coherent foundation for open-economy policy analysis. As such, the intertemporal approach should supplant the expanded versions of the Mundell-Fleming IS-LM model that is favored currently by central banks, finance ministries, and international economic agencies.

Why Are Retail Prices in Japan So High? Evidence from German Export Prices

Michael M. Knetter

NBER Working Paper No. 4894

October 1994

JEL Nos. F13, F14, L60

International Trade and Investment,
International Finance and
Macroeconomics

Retail prices in Japan are higher than in other countries for similar products. The two main competing explanations for this are: 1) a relatively high degree of discriminatory practices against imports; and 2) relatively high distribution costs associated with getting goods to the point of final sale in Japan. The first of these explanations implies that foreign exporters should charge higher prices on shipments to Japan than elsewhere, provided that at least some of the rent associated with restrictive practices can be captured by the exporter. For the vast majority of the 37 seven-

digit German export industries studied here, the data are consistent with this implication. Prices on shipments to Japan appear to be significantly higher than prices on shipments to the United States, the United Kingdom, and Canada.

Insulation of Pensions from Political Risk

Peter A. Diamond

NBER Working Paper No. 4895

October 1994

JEL Nos. H55, J14

Aging

There are many sources of political risk to the public provision of pensions. This paper analyzes legislation designed to alter the retirement income system. This approach naturally recognizes that some changes in the system are good responses to social risks, while others generate such risks. Thus, the discussion is in terms of the effect of institutional structure on the likelihood of alternative legislative actions. In particular, I consider the roles of automatic pension adjustment and pension professionals in providing insulation. I also briefly touch upon the tendency of legislation to redistribute as a function of the type of system being created.

Environmental Taxation and the "Double Dividend": A Reader's Guide

Lawrence H. Goulder

NBER Working Paper No. 4896

October 1994

JEL Nos. H21, H23, D58

Public Economics

In recent years there has been great interest in the possibility of substituting environmentally motivated or "green" taxes for ordinary income taxes. Some have suggested that such revenue-neutral re-

forms might offer a "double dividend": not only improve the environment, but also reduce certain costs of the tax system. This paper articulates different notions of "double dividend," and examines the theoretical and empirical evidence for each. In addition, it draws connections between the double dividend issue and principles of optimal environmental taxation in a second-best setting.

A weak claim of a double dividend is that returning tax revenues through cuts in distortionary taxes leads to cost savings relative to revenues being returned lump sum. This claim is defended easily on theoretical grounds, and (thankfully) receives wide support from numerical simulations. The stronger versions contend that revenue-neutral swaps of environmental taxes for ordinary distortionary taxes involve zero or negative gross costs. Theoretical analyses and numerical results tend to cast doubt on the strong double dividend claim. At the same time, the theoretical case against the strong form is not airtight, and the numerical evidence is mixed.

In simple models, the conditions under which the strong double dividend claim is rejected (upheld) are related closely to the conditions under which the second-best optimal environmental tax is less than (greater than) the marginal environmental damages. The difficulty of establishing the strong double dividend claim heightens the importance of attending to and evaluating the (environmental) benefits from environmental taxes.

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