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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

FALL 1993

Fogel Wins Nobel Prize

Headed NBER Program on Development of the American Economy

NBER Research Associate Robert W. Fogel and former NBER Board member Douglass C. North will share the 1993 Nobel Prize in economics for their research in economic history. Fogel, a professor at the University of Chicago, has been associated with the Bureau since 1978. He was director of the NBER's Program on the Development of the American Economy (DAE) from 1978 to 1991, and has written a number of Historical Papers for the NBER.

Fogel was awarded the Nobel Prize for his pioneering research in the application of economic models and statistical methods to historical questions. His work has been, and continues to be, distinguished by startlingly new findings that often overturn conventional knowledge. In early work, Fogel explored the role of the railroads in American economic growth. The railroads had been viewed by many as the magic bullet of economic development, just as infrastructure investments often are viewed today in less developed countries. But rather than being a leading sector that pulled along the rest of the economy, the railroads added a surprisingly small net gain to GNP, Fogel demonstrated.

Fogel is also known for his work on slavery and the economy of the American South. With coauthor Stanley Engerman, Fogel calculated the relative efficiency of large southern slave plantations relative to small southern slave farms and nonslave farms. They found that the large slave plantations were considerably more

more efficient than the other farms. This enormous increase in efficiency held the key to understanding slavery as a labor system. If the larger plantations were more efficient, it was because they worked their labor more intensively. After Emancipation, large slave plantations rapidly disappeared, and southern agricultural production fell substantially. Because slavery was profitable and greatly enhanced efficiency, it was not about to disappear without the Civil War. *Time on the Cross* and *Without Consent or Contract* brilliantly established these facts, and poignantly considered the role of the slave family in the southern antebellum economy, as well as the moral and political implications of slavery.

Fogel's current research project is his most ambitious to date, and promises to reveal much about the interrelationships among health, nutrition, and productivity. It involves the collection of data on heights, health, and pensions from military records, and their linkage to Census information. One part of the project concerns revisions to the standards of living. By including health measures in standards of living, Fogel demonstrates that periods of economic growth do not always involve increased standards of living for the bulk of the population. In the nineteenth century, decreases in health and increases in mortality occurred even though real incomes rose. The finding that the American industrial revolution did not result in rising standards of living for a large group in the population is a truly astonishing discovery.

Continued on page 2

In This Issue

Program Report: Economic Fluctuations	2
Research Summaries:	
The Effects of Capital Income Taxation	6
Immigration and Ethnicity	9
NBER Profiles	11
Conferences	12
Bureau News	20
Bureau Books	25
Current Working Papers	26

This issue of the *Reporter* highlights the Bureau's Program on Economic Fluctuations. Next, Alan J. Auerbach describes his research on the effects of capital income taxation. Then George J. Borjas reports on his work on immigration and ethnicity. After biographical sketches, news of NBER conferences, and other NBER news and reports, the *Reporter* concludes with short summaries of recent Working Papers.

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Throughout his career, Fogel has excited and incited his audiences, made them think harder about the past and its relevance to the present, and brought scholarship in economic history to a considerably higher plane. His work is as fresh today as it was when he wrote it, and his most recent project is at the forefront of the social sciences.

Bureau President Martin Feldstein added: "Bob Fogel established the NBER's Program on the Development of the American Economy with the same enthusiasm and insight that he brought to his own research. By organizing it around the same broad subjects as the rest of the NBER's research agenda, he made the DAE program a vital and integral part of the Bureau."

North, a professor at Washington University, did research at the NBER's New York office in the 1950s. He also served on the NBER's Board of Directors from 1967 to 1986, representing the Economic History Association.

Program Report

Economic Fluctuations

Robert E. Hall

The U.S. business cycle continues to be the main concern of the NBER's Program on Economic Fluctuations. We have examined the sources of the business cycle, propagation mechanisms, and policy responses. The program is organized around a number of specialized research groups, each of which studies some aspect of the business cycle with a combination of analytical and empirical methods. Their results are presented at research meetings three times a year.

The program also maintains the semi-official chronology of the U.S. business cycle. This function is the responsibility of the Bureau's Business Cycle Dating Committee.

The 1991 Business Cycle Trough

On December 22, 1992, the Business Cycle Dating Committee announced its determination that the U.S. economy reached a trough of activity in March 1991. Previously, the committee had determined that the economy reached a peak of activity in July 1990. The

eight-month period between July 1990 and March 1991 thus entered the NBER's chronology as a recession. The recession ended in March 1991 and an expansion began; the expansion is still underway at this writing.

The committee waited nearly two years to identify the trough. Although this period was unusually long and the committee was criticized for the delay, the sluggish performance of the economy during 1991 and 1992 compelled the long wait. The committee followed its normal policy of waiting to determine the trough date until there was no doubt that any future downturn in the economy would be considered a new recession and not a continuation of the recession that began in July 1990. An important fact to the committee was that the broadest measure of economic activity—gross domestic product in constant dollars—did not surpass its previous peak, according to data available at the time, until the third quarter of 1992. Not until December did the overall pattern of economic activity appear to be strong enough to warrant the determination of the trough date.

The behavior of the economy in 1991 made deciding on a trough date particularly challenging. Two important monthly indicators related to the production and sales of goods—industrial production, and manufacturing-trade sales in constant dollars—had unambiguous troughs in early 1991 (in March and January, respectively). Two other monthly indicators had declined to close to their minimum values by early 1991, but continued to decline slightly for the rest of that year. Real personal income reached its trough in November 1991, at a minuscule 0.07 percent below its level in April. Total hours of all nonagricultural employees reached its trough in April. The choice of March 1991 as the trough date was based primarily on the fact that various averages of the monthly indicators reached clear troughs in that month.

The Business Cycle Dating Committee meets as needed to keep the chronology up to date. The next meeting will occur when it appears appropriate to determine the date of the next peak in activity, or if new data become available that suggest that an existing date should be adjusted.

Overview of Modern Research in Economic Fluctuations

The unifying theme of research in the program is movements over time in national output, employment, productivity, interest rates, and inflation. Interestingly, none of the research tackles all of these issues jointly. Members of the program are not engaged in a collective effort to build a complete empirical model of the U.S. or world economies. Instead, research generally isolates particular parts of the economy, such as the behavior of the consumer, or considers issues of the overall performance of the economy in terms of relatively simple and

admittedly stripped-down models of the determination of output and employment.

Most of the research within the program looks at data on the U.S. economy within a rather fully specified analytical framework. The research is oriented toward scientific findings about technology, preferences, and other fundamentals, rather than toward descriptions and correlations. Most of the papers presented to the program's research groups and at its research meetings are quite technical, even when the basic factual results ultimately can be explained in a nontechnical way. A number of program members use methods from the frontier of econometrics, and are seen by the profession as econometricians as much as macroeconomists.

Where research considers issues of fluctuations by looking at particular sectors of the economy, the actual research closely resembles work by economists in other branches of applied microeconomics. Many of the papers produced within the program are of great interest to those in labor economics, industrial organization, and other fields of microeconomics. And many of the economists who attend group meetings or program meetings come from microeconomic specialties. Although the long-run goal of many researchers of providing a microeconomic theory of macroeconomic fluctuations has proven elusive, the assimilation of microeconomic thinking into macroeconomics, as it is practiced in the fluctuations program, has been complete.

Macroeconomic Complementarities

For a number of years, the EF program has had an active research group on macroeconomic complementarities under the direction of Russell W. Cooper. Complementarities—that is, favorable nonmarket interactions between firms, or between workers and firms—could play an important role in explaining the vulnerability of the national economy to relatively unimportant shocks.

In an economy without complementarities, markets have a strong role as shock absorbers. For example, a downward shift in consumption, such as apparently occurred around 1990 in the United States, should have relatively little effect on output and employment. Instead of triggering a recession, the shock should bring responses in credit markets that offset it. If consumers spend less, interest rates should fall, raising the demand for investment goods and exports.

By contrast, with complementarities there can be a magnification of small shocks. If the productivity of one firm depends on the level of activity of related firms, a negative shock can move the economy to a substantially lower level of output at its new equilibrium.

Another potential result of complementarities is multiple equilibriums. An economy can have a high-level equilibrium, in which firms and workers mutually reinforce

each other's productivity. The same economy can have a low-level equilibrium, in which no single firm can expand profitably because of the low level of activity of other firms.

Currently, work in the complementarities group falls into three broad areas. Attacks on the tough theoretical issues raised by complementarities are being made by Douglas Gale, Alberto Trejos, Randall Wright, Andrew John, B. Ravikumar, Costas Azariadis, and Bruce Smith. The second type of work mixes theoretical and quantitative analysis. The common goal is to assess the quantitative plausibility of models with complementarities. Group members taking this approach are Satyajit Chatterjee, Russell W. Cooper, Paul Beaudry, Michael Devereux, and Jordi Gali. The last approach is strongly empirical. Suzanne Cooper and Steven N. Durlauf have developed a method for detecting the presence of the types of behavior associated with complementarities in aggregate data. Peter Klenow is studying complementarities that take the specific form of one firm learning from the experience of another firm making the same product. Klenow is using detailed data for computer chips.

Consumption Inequality and Its Aggregate Implications

A second important area of research in the program since its inception 15 years ago is the behavior of the consumer. Under the direction of Marjorie A. Flavin and Knut Mork, and more recently Orazio Attanasio, most of the research applies sophisticated models of household behavior to survey data on their purchasing decisions. Households gather and process information about their future well-being in order to make current decisions. Families do not just consume a certain fraction of their current income; they tend to put windfall income into the bank and to consume it slowly over future years. Our research also has rejected the opposite view—that families follow exactly the optimal information-processing strategy to distinguish temporary from permanent changes in income. There is some evidence that families let consumption track income too closely to be explained by models of optimal behavior. But a newly developed body of thought holds that refinement of the models can explain these departures.

Research by Attanasio and Steven J. Davis shows how the relative wage gains experienced by older and better-educated households during the 1980s were reflected in relative consumption gains. Angus Deaton and Christina H. Paxson study the effects of demographic changes in the United States, the United Kingdom, and Taiwan on the cross-sectional inequality in consumption. Wouter den Haan extends the method of parameterized expectations to solve and simulate several versions of an asset pricing model. Giuseppe Bertola is

studying the effect on aggregate saving and growth of factor distribution. James Banks, Richard Blundell, and Agar Brugiavini are measuring consumption and income variance, and quantifying their effects on consumption growth. R. Glenn Hubbard, Jonathan S. Skinner, and Stephen P. Zeldes are using numerical simulations to assess the importance of the precautionary motive for saving. Several realistic features, such as liquidity constraints, failing health, and "means-tested" Social Security provisions are part of the model.

Micro and Macro Perspectives on the Aggregate Labor Market

A third area of research in recent years has been the functioning of labor markets. Under the direction of Wright and Richard Rogerson, the EF program has had a research group on labor supply and related issues; Davis led a separate group on employment dynamics. Recently these groups combined.

The elasticity of labor supply is of central importance in understanding overall economic fluctuations. When the economy booms, many people are working, and the typical worker is putting in unusually long hours. In a slump, both the number of people at work and their hours fall. Can these movements be interpreted as occurring along a labor supply curve?

The traditional macroeconomic answer was no. A recession was seen as a time of involuntary unemployment, a breakdown of the labor market. Modern thinking, which emphasizes market interpretations of fluctuations, has tried to provide a deeper analysis of the issue. One view is that the labor supply may be much more elastic in the short run than in the long run. Another looks at the time allocation of workers between working and looking for work. A further area of research in the macro-labor field is the sources of unemployment, job destruction; and the sources of reemployment, job creation. Very detailed micro data from individual plants provide important new insights into these processes.

The macro-labor group has been meeting for three years. The group's focus is on the behavior and performance of the aggregate labor market, including employment and productivity fluctuations, human capital accumulation and growth, and unemployment. Dale Mortenson and Christopher Pissarides have studied matching models of the labor market to analyze the relationship between job creation and destruction and cyclical fluctuations and growth. They build on the empirical work of Davis and John C. Haltiwanger on firm-level employment dynamics, which also has been represented in the group. Victor Rios-Rull shows how labor market regulations can emerge endogenously and create long wave growth cycles. Rogerson and Raquel Fernandez study the interaction between income distribution and educa-

tion, and point to inefficiencies in a system of local provision of public education.

Empirical Methods in Macroeconomics

Durlauf and Francis Diebold recently organized a new group on empirical methods in macroeconomics, focusing on the interface between time-series econometrics and empirical macroeconomics. Their first meeting was in Palo Alto on February 6. Lucrezia Reichlin is working on the problem of invertibility in multivariate time-series models, and developing new diagnostic procedures for assessing the likelihood of neglected moving average components in VAR analyses. Robert F. Engle is working on modeling "common features" in economic and financial time series. Simon Potter is working with nonlinear impulse response functions and exploring their application in a number of macroeconomic contexts. Durlauf and Louis Maccini are using the Durlauf-Hall signal extraction approach to decompose inventory fluctuations into a model-consistent part and a "noise" part, thereby providing a natural metric for evaluating the fit of inventory models. Kenneth D. West and David W. Wilcox are exploring the properties of advanced estimation methods using Monte Carlo methods. Halbert White is continuing his work on neural networks, with particular focus on their strengths and weaknesses as approximators. Bent Sorenson is examining whether productivity is cointegrated with other determinants of long-run growth.

Impulses and Propagation Mechanisms

Since 1989, a group under the direction of Lawrence J. Christiano and Martin Eichenbaum has studied impulses and propagation mechanisms in the business cycle. Its winter 1992 meeting, organized jointly with the University of Arizona, focused on theoretical and empirical aspects of the interaction of monetary policy and business cycles. Four of the seven papers concerned international aspects of the problem. Alan C. Stockman presented a theoretical model of the impact of price rigidities on the trade-off between exchange rate targeting and monetary control. Don Schlagenhauf and Jeff Wrase analyzed the effects of monetary policy shocks on nominal and real exchange rates. Eichenbaum and Charles L. Evans showed empirical evidence of the effects of U.S. monetary policy shocks on exchange rates. Nobuhiro Kiyotaki discussed joint work with John Moore on the role of balance sheet constraints in propagating business cycle shocks. Christiano, Eichenbaum, and Evans gave a progress report on their ongoing work studying the impact of monetary policy shocks on the Flow of Funds data. Mark Gertler and Simon Gilchrist presented their work on the response of large and small

firms to monetary policy shocks. Vittorio U. Grilli and Nouriel Roubini described international evidence on the exchange rate effects of monetary policy shocks.

At the NBER Summer Institute, the group discussed three papers on the interaction of monetary policy and the business cycle. Gertler and Gilchrist described the differential response to monetary policy shocks in the inventory investment behavior of small and large manufacturing firms. Stephen D. Oliner and Glenn Rudebusch looked at other differences in the response of large and small firms to monetary policy shocks. Christiano and Evans presented a paper with Eichenbaum on the effects of a monetary policy shock on the borrowing and lending activities of different sectors of the economy.

Two papers analyzed international estimates of productivity growth. Evans showed that measures of monetary policy shocks lead to a prolonged rise in standard measures of productivity. Patricia Reynolds presented improved estimates of productivity growth for different countries, and contrasted them with the existing literature. Two papers focused on fiscal policy in equilibrium business cycle models. Lee Ohanian presented a progress report on his work with Thomas Cooley that uses an equilibrium model to assess the effects of the policies pursued by the United Kingdom and the United States during World War II on their postwar economic performance. Ellen McGrattan discussed her ongoing study with Phillip A. Braun on the impact of fiscal policy on U.S. economic performance during and after World War II. David Levine analyzed the implications of income risk for the equity premium puzzle. Gali presented his research on models of spatial location; his theoretical discussion focused on the role of externalities and increasing returns in the propagation of sectoral shocks.

High-Frequency Economic Fluctuations

Until his recent move to the staff of the Council of Economic Advisers, Matthew D. Shapiro was the director of a research group on fluctuations that occur relatively rapidly over time. The group also is concerned with variations in economic activity over space and their relationship to similar variations over time. Participants include John Shea, Mark Bils, and James Kahn, who are working on spatial-temporal issues; Benjamin Eden, whose research in the group deals with inventory fluctuations; Valerie A. Ramey, who is continuing her research on the intertemporal elasticity of substitution; Ana Aizcorbe, who is studying variations over time in the productivity of auto assembly plants; and Susanto Basu and Argia Sbordone, whose research deals with labor hoarding and cyclical capital utilization.

Research Summaries

The Effects of Capital Income Taxation

Alan J. Auerbach*

Introduction

The 1993 tax changes are the latest in a series of important revisions to the U.S. tax code. Throughout this process, the debate has included questions about the appropriate level and structure of capital income taxation. Despite considerable research, the effects of capital income taxation are still unclear and sometimes difficult to understand. During the past few years, I have continued my research on the subject, both alone and with several coauthors.

Capital Gains Taxation

Economists have paid considerable attention to the capital gains tax in recent years, because it falls mainly on taxpayers with higher income, has a strong impact on individual behavior, and is complex in design. My research attempts to measure empirically the effects of capital gains taxation on taxpayer behavior, and to consider the efficiency effects of alternative schemes for taxing capital gains.

Over the years, taxpayers appear to have responded strongly to changes in the capital gains tax rate. For example, when a tax rate increase was scheduled to take place in 1987, realizations of capital gains roughly doubled in 1986. A more subtle and controversial question, though, is whether tax-induced increases in realizations arise from shifts in timing, rather than from long-run increases in the rate at which gains are realized. The distinction is important for determining the long-run revenue effects of changing capital gains tax rates.

In two empirical studies based on U.S. time-series data,¹ I estimate that a considerable portion of the response can be attributed to anticipated changes in the capital gains tax rate, rather than to the level of the tax rate. These results suggest that a considerable share of

any revenue gain generated by a capital gains tax reduction will be short-lived.

Most of the distortions and complexities associated with capital gains taxes, such as the "lock-in" effect that discourages realizations, are attributable to the fact that capital gains are taxed on *realization*, rather than on *accrual*. Yet, moving to the taxation of gains on accrual has been hindered by two factors. First, the gains themselves often cannot be determined accurately until they have been realized. Second, taxpayers may lack the liquidity to pay taxes on appreciating assets before such assets are actually sold. Building on a much earlier contribution by William S. Vickrey,² I show that there is a scheme that taxes assets only when they are sold, but simulates the effects of a system of accrual taxation by effectively charging interest on deferred taxes. This system of "retrospective" taxation works even if the government cannot identify the pattern of actual accrual of gains.³

Would taxing capital gains on accrual increase economic efficiency? The issue is complicated, because lessening one distortion could worsen another. Capital

"Capital gains taxes don't simply distort the timing of realizations; they also discourage saving."

gains taxes don't simply distort the timing of realizations; they also discourage saving. It is possible, for example, that the lock-in effect induced by taxing realizations forces additional

saving, as investors discouraged from balancing their existing portfolios are driven to provide balance through additional saving. Hence, alleviating the lock-in effect also might reduce saving.

To consider this and other propositions regarding capital gains tax reform, I developed a numerical simulation model involving both saving and portfolio choice decisions.⁴ I found that a move to accrual taxation does reduce national saving, but still increases economic efficiency. The same analysis suggests that a simple reduction in the capital gains tax rate also would reduce national saving, even if capital gains realizations responded strongly to the rate of tax.

Taxation and the Cost of Capital

Capital income taxes influence the level and composition of investment through the required before-tax rate of

*Currently an NBER Research Associate and Professor of Economics at the University of Pennsylvania; Auerbach was Chief of Staff of the U.S. Joint Committee on Taxation during 1992.

¹A. J. Auerbach, "Capital Gains Taxation in the United States: Realizations, Revenue, and Rhetoric," *Brookings Papers on Economic Activity* 2 (1988), pp. 595-631, and "Capital Gains Taxation and Tax Reform," *National Tax Journal* (September 1989), pp. 391-401.

²W. S. Vickrey, "Averaging of Income for Income Tax Purposes," *Journal of Political Economy* (June 1939), pp. 379-397.

³A. J. Auerbach, "Retrospective Capital Gains Taxation," *NBER Report No. 1609*, September 1991, and *American Economic Review* (March 1991), pp. 167-178.

⁴A. J. Auerbach, "On the Design and Reform of Capital Gains Taxation," *American Economic Review* (May 1992), pp. 263-267.

return, or the cost of capital. In my research, I attempt both to measure the cost of capital and to consider how different tax provisions influence it.

It is difficult to measure the cost of capital, because the required return to equity cannot be observed, and proxy measures, such as actual corporate earnings-price ratios, are subject to measurement error. This is a particular problem when comparing different countries in which accounting methods and institutions differ. In a series of papers, Albert Ando and I attempt to compare the corporate cost of capital in the United States and Japan.

Many have argued that Japanese firms face a considerably lower cost of capital because of more favorable tax rules. In one study of a large number of corporations, we indeed find that our measure of the cost of capital is considerably lower in the aggregate in Japan than in the United States. However, differences in corporate tax rules, or the greater Japanese reliance on tax-favored debt finance, explain only a relatively small share of the gap.⁵ Our subsequent study suggests that the lower Japanese earnings-price ratios need not be associated with a lower cost of capital at all, if share prices reflect the very high market value of corporate landholdings.⁶

While the corporate income tax contributes to the cost of capital, its provisions are sufficiently complex that the average tax rate faced by a firm may be a very poor measure of the marginal tax rate. Among these complexities are the asymmetric treatment of income and losses: income is immediately taxable, while losses can only be carried forward.

"The average tax rate faced by a firm may be a very poor measure of the marginal tax rate."

According to traditional analysis, the lack of loss offset discourages risktaking by increasing the tax burden relatively more on risky assets. However, it also influences the relative incentives faced by investors based on their current tax status and the types of assets they purchase. How prevalent are these asymmetries? Using the Treasury's file of corporate tax returns for 1971-82 and a method we developed for imputing a firm's tax status, Rosanne Altshuler and I estimate that, in 1982, over half of the assets held in corporate form in the United States were owned by firms that either were not taxable, or were taxable but unable to use investment tax credits (which, before the credit was repealed in 1986,

were subject to additional limitations).⁷ The same type of analysis applies to other instances in which firms may be subject to alternative tax rules depending on some measure of their profitability. One such rule that has become important in recent years and begun to receive attention is the corporate Alternative Minimum Tax.⁸

Mergers and Acquisitions

The lack of loss offset also may encourage firms with unused tax losses to merge, acquire, or be acquired by another firm with sufficient taxable income to absorb the losses and be shielded by them from tax. During the merger boom of the 1980s, many observers hypothesized that this, along with other tax incentives, played an important role in the heightened level of activity. To test this, David Reishus and I construct and estimate a "marriage" model for firms, to see what factors determine whether a firm was involved in a merger or acquisition and the type of firm with which it was likely to combine.⁹ We find that, although significant tax benefits were present in a sizable class of mergers and acquisitions, these generally were not greater than those that would have occurred through random combinations, holding other determinants constant. In light of this, it may not be surprising that the reduction in tax benefits brought about by the Tax Reform Act of 1986 did not have a noticeable impact on the level of merger activity, which continued until the end of the decade.

During the years immediately after 1986, an increasing share of merger and acquisition activity in the United States was accounted for by foreign parent companies. One hypothesis attributed this shift to the Tax Reform Act of 1986. It suggested that the reduced investment incentives that followed repeal of the investment tax credit opened the way for investment from countries subject to a "worldwide" or residence-based tax system in their home country, for whom U.S. tax credits were arguably of little value in the first place.¹⁰ Indeed, for-

⁵A. Ando and A. J. Auerbach, "The Cost of Capital in the United States and Japan: A Comparison," NBER Reprint No. 1392, May 1990, and *Journal of Japanese and International Economies* (1988), pp. 134-158.

⁶A. Ando and A. J. Auerbach, "The Cost of Capital in Japan: Recent Evidence and Further Results," NBER Reprint No. 1649, October 1991, and *Journal of Japanese and International Economies* (1990), pp. 323-350.

⁷R. Altshuler and A. J. Auerbach, "The Significance of Tax Law Asymmetries: An Empirical Investigation," NBER Reprint No. 1384, April 1990, and *Quarterly Journal of Economics* (February 1990), pp. 63-86.

⁸See, for example, B. D. Bernheim, "Incentive Effects of the Alternative Minimum Tax," in *Tax Policy and the Economy*, Volume 3, L. H. Summers, ed. Cambridge, MA: MIT Press, 1989; and A. B. Lyon, "Investment Incentives Under the Alternative Minimum Tax," *National Tax Journal* (December 1990), pp. 451-465.

⁹A. J. Auerbach and D. Reishus, "The Effects of Taxation on the Merger Decision," NBER Reprint No. 1396, May 1990, and in *Corporate Takeovers: Causes and Consequences*, A. J. Auerbach, ed. Chicago: University of Chicago Press, 1988.

¹⁰M. S. Scholes and M. A. Wolfson, *Taxes and Business Strategy*, Englewood Cliffs, NJ: Prentice-Hall, 1992.

eign direct investment (FDI) in the United States from countries following such tax rules, notably Japan and the United Kingdom, did grow sharply in the late 1980s.

My research with Kevin A. Hassett suggests that the increase in inbound FDI was not caused by U.S. tax rules.¹¹ We base our conclusions on two factors. First, the 1986 act only encouraged *new* investment in machinery and equipment from countries applying the residence principle. Yet, the boom in FDI primarily took the form of the acquisition of existing companies and their assets, which the 1986 act's tax windfalls to existing capital should have *discouraged* by making these companies more expensive. Second, the boom in FDI in the United States was part of a worldwide trend: although FDI in the United States from the "worldwide" countries increased sharply, it did *not* increase as a share of these countries' total outbound FDI.

Taxation and Business Fixed Investment

The Tax Reform Act of 1986 represented just one of many changes in the tax incentives for U.S. business fixed investment. In a series of papers, Hassett and I argue that previous studies relating investment to the cost of capital failed to account adequately for the anticipation of future tax changes—changes that James R. Hines and I earlier found to have had an important impact on the incentive to invest.¹²

Taking these incentives into account in a time-series analysis of postwar aggregate investment, Hassett and I find that U.S. investment in machinery and equipment

"U.S. investment in machinery and equipment [is] significantly influenced by the tax system."

was significantly influenced by the tax system. The evidence was far weaker for investment in structures, perhaps because of our difficulty in accounting for all the com-

plex tax provisions that influence structures investment.¹³ We also estimate, however, that tax policy changes (including the effects of expectations) increased the volatility of investment in both equipment and structures, as measured by its variance.

In a subsequent paper, we confirm these findings about the impact of tax policy on equipment investment using a very different methodology. We consider the pattern of cross-industry and cross-asset investment following the Tax Reform Act of 1986. Equipment investment fell short of its predicted level in those industries and assets most discouraged by the act's provisions. Despite the fact that equipment investment as a whole performed relatively well as a share of GDP following the act, it still fell short of the strong behavior one would have expected.¹⁴

Investment Incentives and Economic Efficiency

As addressed in the Tax Reform Act of 1986, capital income taxes distort the choice among different types of investment. Taxes should be designed to be "neutral" with respect to different assets. That is, assets should face equal "effective tax rates." But, in the context of an otherwise less-than-optimal tax system, how useful is this rule of thumb? To answer that question, I develop a dynamic numerical simulation model that incorporates several other distortions associated with capital income taxation, including those between consumption and saving and between business and housing capital. I find that, although a "neutral" tax system is very unlikely to be efficient in such an environment, the gains from moving away from it are small, and the direction of needed movement is hard to identify.¹⁵

This analysis, like most on the subject, assumes that there are no identifiable social externalities accruing to certain types of investment but not others. Such externalities would introduce another reason to deviate from the "level playing field," and recently have been argued to accrue to investment in machinery and equipment.¹⁶ However, in a recent paper, Hassett, Stephen D. Oliner, and I find no evidence whatsoever for such externalities among the OECD countries, and no significant evidence for a large sample of developed and less developed countries.¹⁷

¹¹A. J. Auerbach and K. A. Hassett, "Taxation and Foreign Direct Investment in the United States: A Reconsideration of the Evidence," NBER Working Paper No. 3895, November 1991, and in *Studies in International Taxation*, A. Giovannini, R. G. Hubbard and J. B. Slemrod, eds. Chicago: University of Chicago Press, 1993.

¹²A. J. Auerbach and J. R. Hines, Jr., "Investment Tax Incentives and Frequent Tax Reforms," NBER Reprint No. 1088, December 1988, and *American Economic Review* (May 1988), pp. 211–216.

¹³A. J. Auerbach and K. A. Hassett, "Tax Policy and Business Fixed Investment in the United States," NBER Reprint No. 1728, June 1992, and *Journal of Public Economics* (February 1992), pp. 141–170.

¹⁴A. J. Auerbach and K. A. Hassett, "Recent U.S. Investment Behavior and the Tax Reform Act of 1986," NBER Reprint No. 1730, June 1992, and *Carnegie–Rochester Conference Series on Public Policy* (Autumn 1991), pp. 185–215.

¹⁵A. J. Auerbach, "The Deadweight Loss from 'Nonneutral' Capital Income Taxation," NBER Reprint No. 1378, April 1990, and *Journal of Public Economics* (March 1989), pp. 1–36.

¹⁶J. B. De Long and L. H. Summers, "Equipment Spending and Economic Growth," *Quarterly Journal of Economics* 106, 2 (May 1991), pp. 445–502.

¹⁷A. J. Auerbach, K. A. Hassett, and S. D. Oliner, "Reassessing the Social Returns to Equipment Investment," NBER Working Paper No. 4405, July 1993.

Immigration and Ethnicity

George J. Borjas

Immigration again has become a major component of demographic change in the United States. The flow of legal immigrants has increased steadily since the 1930s, when only 500,000 immigrants were admitted during the entire decade. By the early 1990s, over 800,000 immigrants were being admitted every year. A large number of persons also enter the United States illegally. Despite the enactment of the Immigration Reform and Control Act in 1986, the Border Patrol apprehended 1.3 million illegal aliens in 1992, or 2.4 aliens per minute. Legal and illegal immigration now account for over one-third of the increase in population in the United States, and for over one-quarter of all new workers.

In view of these historic changes in the size of the immigrant flow, it is not surprising that immigration has resurfaced as a pivotal issue in the debate over U.S. social policy. Two central questions in this debate have motivated my research. First, what is the immediate economic impact of immigration? Second, what is the impact of today's immigration on the skill endowment of the labor force in future generations and on the economic performance of tomorrow's ethnic groups?

The Economic Impact of Immigration

The most important characteristic of postwar immigration to the United States is the decline in the skills of successive waves of immigrants relative to the skills of the native-born population.¹ In 1960, newly admitted immigrant men (that is, immigrants who had been in the country less than five years) had 0.4 more years of schooling and earned about 13 percent less than native men. By 1990, newly admitted immigrants had 1.4 fewer years of schooling and earned 38 percent less than natives.

The precipitous decline in skills across successive waves has a number of important social and economic consequences, and is probably the source of much of the current concern over the impact of immigration on the United States. My research indicates that if a particular immigrant wave is tracked over time, there is relatively little convergence of wages between the immigrants and natives. Because more recent immigrant waves start off poorly, it is unlikely that the earnings of the "new immigrants" will ever catch up with those of natives. In fact, the wage differential between immigrants

and natives may exceed 20 percent even two or three decades after immigration.

An important consequence of the shift toward an unskilled immigrant flow is that recent immigrants are more likely to become welfare recipients.² In 1970, the fraction of newly arrived immigrant households who received cash benefits was smaller than the fraction of native households: 5.5 percent versus 6.1 percent. By 1980, the situation had reversed: immigrant households were about half a percentage point more likely to be on welfare than native households.

In fact, not only do recent waves have a higher propensity for participation in welfare programs, but the longer the immigrants reside in the United States, the higher the probability of receiving welfare. In a sense, the immigrant population "assimilates" into the welfare system. The reasons for this trend are not well understood. The transition into welfare might occur because the assimilation process involves learning not only about labor market opportunities, but also about income opportunities in the welfare state. It also might be the case that recent immigrants fear their chances for naturalization might be jeopardized if they become a "public charge," and delay their entry into the welfare system until after naturalization occurs.

Much of the decline in skills across successive immigrant waves is attributable to the changing national origin mix of immigrants.³ In the 1950s, 68 percent of immigrants originated in Europe or Canada, 6 percent in Asia, and 25 percent in Latin America. By the 1980s, only 13 percent originated in Europe or Canada, 37 percent in Asia, and 47 percent in Latin America. There are huge wage disparities among national origin groups. In 1980, for instance, newly arrived immigrants from Sweden or the United Kingdom were earning about 20 percent more than natives, those from India or Iran earned about 20 percent less, while those from Mexico or Haiti earned about 50 percent less.

Two factors explain the dispersion in skills among national origin groups. First, skills attained in advanced, industrialized economies are more easily transferable to the American labor market. After all, the industrial structure of advanced economies and the types of skills rewarded by those labor markets greatly resemble the industrial structure of the United States and the types of skills rewarded by American employers. In contrast, the

²G. J. Borjas and S. J. Trejo, "Immigrant Participation In the Welfare System," *Industrial and Labor Relations Review* 44 (January 1991), pp. 195-211; and "National Origin and Immigrant Welfare Reciprocity," *Journal of Public Economics* 50 (March 1993), pp. 325-344.

³G. J. Borjas, "National Origin and the Skills of Immigrants in the Post-war Period," in *Immigration and the Work Force: Economic Consequences for the United States and Source Areas*, G. J. Borjas and R. B. Freeman, eds. Chicago: University of Chicago Press, 1992, pp. 17-47.

¹G. J. Borjas, *Friends or Strangers: The Impact of Immigrants on the U.S. Economy*, New York: Basic Books, 1990; "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants," *Journal of Labor Economics* 3 (October 1985), pp. 463-489; and "Assimilation and Changes in Cohort Quality Revisited: What Happened to Immigrant Skills in the 1980s?" University of California, San Diego, July 1993.

industrial structures and labor markets of less developed countries require skills that are much less useful in the American labor market. The human capital embodied in residents of those countries is, to some extent, "specific" to those economies and is not easily transferable to the U.S. labor market.

In addition, the immigrant flow is "self-selected"—that is, not all persons in the source countries migrate to the United States.⁴ Which individuals find it worthwhile to migrate? If a worker originates in a country that offers low returns to his or her skills (such as the United Kingdom and Sweden, which have relatively egalitarian income distributions), the source country in effect "taxes" able workers and "insures" the least productive against poor labor market outcomes. This situation obviously generates incentives for the most able to migrate to the United States and the immigrant flow is positively selected. Conversely, if the source country offers relatively high rates of return to skills (which is typically true in countries with substantial income inequality, such as Mexico), the United States now taxes the most able and subsidizes the least productive. Economic conditions in the United States relative to those in the country of origin become a magnet for workers with relatively low earnings capacities, and the immigrant flow is negatively selected.

The fact that national origin matters raises a number of provocative policy questions, particularly when one compares U.S. immigration policy with policies of other receiving countries, such as Canada. Since 1967, many visa applicants to Canada have been screened by means of a "point system." Points are awarded according to the applicant's education, age, occupation, and other socioeconomic characteristics. Applicants who score at least a minimum number of points receive entry visas.

My research indicates that immigrants admitted to Canada are indeed more skilled than immigrants in the United States.⁵ At the time of arrival, the typical immigrant admitted to Canada has about a year more schooling than the typical immigrant admitted to the United States. However, the average skill level of specific national origin groups is about the same in Canada and the United States, so that Canada's point system does not attract more skilled workers from a given source country. The national origin mix of the Canadian immigrant flow is more heavily weighted toward groups

that perform well in both the Canadian and U.S. labor markets, though. As a result, the point system "works" not because it attracts more skilled immigrants from a given country, but because it alters the national origin mix of immigrant flows.

Finally, the migration of unskilled workers may have an increasingly adverse effect on the employment opportunities of the unskilled native work force. There is a great deal of evidence indicating that the average native wage is smaller in cities where immigrants make up a substantial fraction of the labor force.⁶ However, the decline in the native wage attributable to an increase in the supply of immigrants is numerically trivial. If one city has 10 percent more immigrants than another, the native wage in the city with the most immigrants is only 0.2 percent lower.

These across-city correlations might be masking an important effect of immigration on unskilled workers. In particular, natives might attenuate the negative impact of immigration on a local labor market by moving to other localities. The internal migration of native labor (or of capital) "dissipates" the impact of immigration across the entire economy, making it difficult to detect a significant effect from comparisons of local labor markets.

In fact, the recent trend in the wage of unskilled workers suggests that immigration has a substantial impact on native employment opportunities.⁷ The 1980s witnessed a huge increase in the wage gap across education groups; the relative wage of high school dropouts declined by 10 percentage points. The flow of unskilled immigrants may have contributed to this decline: In 1980, only 13 percent of high-school dropouts were foreign-born; by 1988, immigrants made up over 25 percent of workers with less than a high school education. In contrast, the fraction of college graduates who were foreign-born rose from only 8 to 11 percent over the same period. The massive change in the number of unskilled immigrants may account for one-third of the 10 percentage point decline in the wage of high school dropouts between 1980 and 1988.

Ethnicity

My recent work also attempts to determine the intergenerational consequences of immigration. Although the new immigrants will be relatively less successful in the labor market, the cause for concern would be greatly diminished if there were substantial growth between the

⁴G. J. Borjas, "Self-Selection and the Earnings of Immigrants," *American Economic Review* 77 (September 1987), pp. 531–553; and "Immigration and Self-Selection," in *Immigration, Trade, and the Labor Market*, J. M. Abowd and R. B. Freeman, eds. Chicago: University of Chicago Press, 1991, pp. 29–76.

⁵G. J. Borjas, "Immigration Policy, National Origin, and Immigrant Skills: A Comparison of Canada and the United States," in *Small Differences That Matter: Labor Markets and Income Maintenance in Canada and the United States*, D. Card and R. B. Freeman, eds. Chicago: University of Chicago Press, 1993.

⁶G. J. Borjas, "Immigrants, Minorities, and Labor Market Competition," *Industrial and Labor Relations Review* 40 (April 1987), pp. 382–392.

⁷G. J. Borjas, R. B. Freeman, and L. F. Katz, "On the Labor Market Effects of Immigration and Trade," in *Immigration and the Work Force*: . . . , pp. 213–244.

first and second generations. The available data suggest that second-generation workers do earn more than their parents, but that the intergenerational growth is not particularly large.⁸ On average, the "jump" in earnings between the immigrant generation and their children is about 7 percent higher than the jump experienced between any other two subsequent generations.

More importantly, the skill differentials observed among national origin groups in the first generation are transmitted to their ethnic offspring. Put differently, today's differences in skills among the foreign-born groups become tomorrow's skill differentials among American-born ethnic groups. For example, immigrants from the Philippines earned about 41 percent less than immigrants from Italy in 1940. In 1970, second-generation Filipino-Americans earned 17 percent less than second-generation Italian-Americans. The strong correlation between the earnings of immigrant national-origin groups and U.S.-born ethnic groups suggests that between 50 and 60 percent of the wage gap among groups persists from one generation to the next. As a result, it might take four generations for the skill differentials introduced in the immigrant generation to disappear.

To explain why ethnic skill differentials persist across generations, I have pursued the idea that ethnicity acts as an externality in the human capital accumulation process: that is, that a child's skills depend not only on parental influences but also on the "quality" of the child's ethnic milieu, which I call "ethnic capital."⁹ Persons who grow up in advantaged ethnic environments tend to be exposed to social, cultural, and economic factors that increase their productivity when they grow up; and the larger or more frequent the amount of this exposure, the higher the resulting quality of the worker. Because ethnic "role models" matter, it is not surprising that ethnic influences reinforce the intergenerational correlation in skills, and might retard (and even prevent) the convergence of ethnic skill differentials. The data suggest that the impact of ethnic capital on the next generation's skills accounts for about half of the correlation between the skills of an immigrant group and the skills of the U.S.-born second generation.

I have examined some of the channels through which the ethnic spillover effects are transmitted.¹⁰ One important mechanism is the ethnic neighborhood. There is a great deal of ethnic residential segregation in the United

States. For example, the average person of Cuban ancestry lives in a neighborhood that is 33 percent Cuban; the average person of Italian ancestry lives in a neighborhood that is 16 percent Italian; and the average person of Portuguese ancestry lives in a neighborhood that is 20 percent Portuguese. My research indicates that ethnic capital has a much stronger impact on the next generation's skills for children raised in segregated neighborhoods, where they were exposed frequently to other persons who shared the same ethnic background.

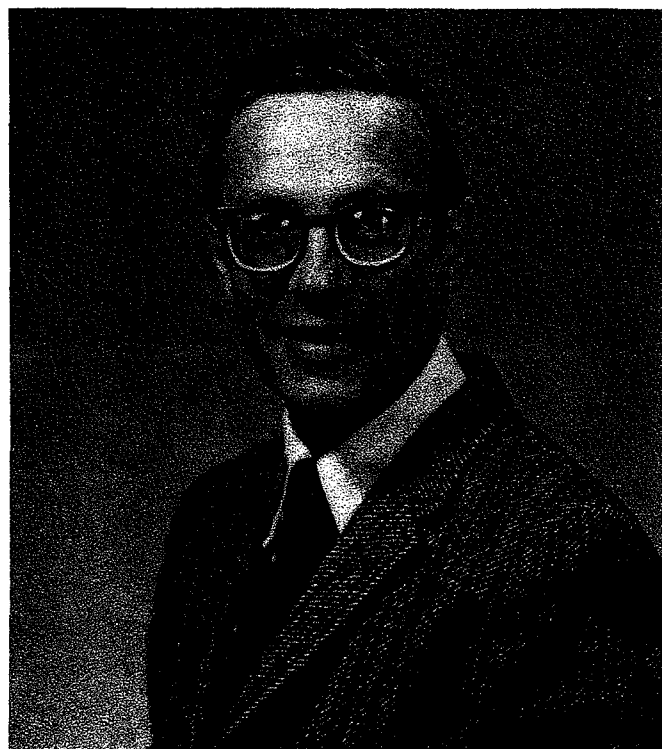
Conclusion

The empirical evidence suggests that the impact of immigration is far-reaching and long-lasting. The consequences of the historic changes in the size, national origin mix, and skill composition of immigrants admitted to the United States during the past three decades are only beginning to be revealed. They will alter the skill endowment of the labor force, the earnings opportunities of native workers, and the costs of social insurance programs not only in our generation, but for our children and grandchildren as well.

Profiles

Glen G. Cain

Glen G. Cain, a professor of economics at the University of Wisconsin, has represented that university on the



⁸G. J. Borjas, "The Intergenerational Mobility of Immigrants," *Journal of Labor Economics* 11 (January 1993), pp. 113-135; and "Long-Run Convergence of Ethnic Skill Differentials," *University of California, San Diego*, August 1992.

⁹G. J. Borjas, "Ethnic Capital and Intergenerational Mobility," *Quarterly Journal of Economics* 107 (February 1992), pp. 123-150.

¹⁰G. J. Borjas, "Ethnicity, Neighborhoods, and Human Capital Externalities," *University of California, San Diego*, July 1993.

NBER's Board of Directors since 1990. He received his B.A. from Lake Forest College, his M.A. from the University of California, Berkeley, and his Ph.D. in economics from the University of Chicago.

Cain has been a faculty member of the University of Wisconsin's Industrial Relations Research Institute since 1963 and a research associate of the university's Institute for Research on Poverty since 1967. His current research focuses on methods of evaluating employment and training programs and, with Robert E. Baldwin, the effect of international trade on employment and earnings in the United States. Cain's work in labor economics has been published in numerous journals and books.

Cain's wife, Ria, is self-employed as an interior designer. They have three children, Steven, Paula, and Leah, and one grandchild, Crystal. In his free time, Cain enjoys listening to jazz and opera, bicycling, and swimming.

Michael Y. Yoshino

Michael Y. Yoshino, the Herman C. Krannert Professor of Business Administration and General Management Chair at the Harvard Business School, has represented Harvard University on the NBER's Board of Directors since 1989. Yoshino earned an M.B.A. from Columbia University and a Ph.D. from Stanford University. He joined the Harvard faculty in 1971.



Yoshino's fields of specialization are competitive strategy, general management, and global strategy and organization. His most recent book, *Invisible Link: Japan's Sogo Shosha and the Organization of Trade*, was published by the MIT Press in 1986. Currently he is writing a book on global competition and strategic alliances.

Yoshino and his wife, Chiyo, have a grown daughter and son. His hobbies are hiking, skiing, and reading.

Conferences

Sixth Annual Interamerican Seminar on Economics

On May 28 and 29, the NBER's sixth annual Interamerican Seminar on Economics was held in Caracas, Venezuela. The meeting was sponsored jointly with the Instituto de Estudios Superiores de Administración (IESA), Caracas, and the Pontificia Universidade Católica (PUC), Rio de Janeiro. Edmar Bacha, PUC; Sebastian Edwards, NBER and University of California, Los Angeles; and Gustavo Márquez, IESA, prepared this program:

Juan Eduardo Coeymans and Felipe Larraín, Universidad Católica de Chile, "Effects of a Free Trade Agreement Between Chile and the United States: A General Equilibrium Approach"

Discussant: **Efrain Velázquez**, Azpurua, Garcia Palacios & Velázquez, Consultores Assoc.

Mauricio Cárdenas, FEDESARROLLO, Bogota, "International Policy Coordination: Colombia and Venezuela"

Discussant: **Gustavo Márquez**

Luis Alberto Ibarra, Secretariat of Commerce and Industrialization, Mexico, "Credibility of Trade Policy Reform and Investment: The Mexican Experience"

Discussant: **Gustavo Garcia**, IESA

Sebastian Edwards, "Exchange Rates, Inflation, and Disinflation in Very Open Economies: Some Latin American Experiences"

Discussant: **Jeffrey A. Frankel**, NBER and University of California, Berkeley

Jeffrey A. Frankel; Ernesto Stein, University of California, Berkeley; and **Shang-Jin Wei**, NBER and Harvard University, "Trading Blocs: The Natural, the Unnatural, and the Supernatural"

Discussant: **Andres Velasco**, New York University

Gustavo Márquez, "Poverty and Social Policies in Venezuela"

Discussant: **Geoffrey Carliner**, NBER

Helmut Reisen, Organization for Economic Cooperation and Development, "The Case for Sterilized Intervention in Latin America"

Discussant: **Carment M. Reinhart**, International Monetary Fund (IMF)

Guillermo A. Calvo, **Carment M. Reinhart**, and **Carlos A. Végh**, IMF, "Targeting the Real Exchange Rate: Theory and Evidence"

Discussant: **Helmut Reisen**

Walter Novaes and **Sérgio Ribeiro da Costa**

Werlang, Vargas Foundation, Rio de Janeiro: "Financial Integration and Public Finance Institutions"

Discussant: **Hugo Fariás**, IESA

Coeymans and **Larraín** conclude that a free trade agreement (FTA) with the United States would lead to a substantial recomposition of Chilean trade toward the United States, both in imports and exports. There would also be a gain in terms of trade for Chilean exporters, because they are mostly price takers in international markets. The most favored sectors in Chile would be those that: initially faced higher barriers in the United States; had higher international competitiveness, as measured by the ratio of exports to production; and faced less external competition, as measured by the ratio of imports to production. Finally, an FTA might reduce the risk premium that foreigners charge to invest in Chile. A reduction of just half a percentage point could induce additional investment of up to 2 percent of GDP per year, creating a substantial increase in aggregate and sectoral outputs, exports, imports, real wages, and private consumption. Quantitatively, this would be the most important effect for Chile of an FTA with the United States.

Cárdenas finds that the rate of convergence among Colombia's regions is close to 4 percent per year. However, labor migration does not seem to play an important role in the process of convergence. Areas that invest more in education appear to grow faster, regardless of their initial position. The sectoral composition of output and trade orientation do not seem to be important in explaining growth differentials.

Ibarra finds that there was a serious credibility problem in Mexico in 1988, just after some of the most important liberalization measures were introduced by the government. However, this credibility problem had become negligible by 1990–1. To a large extent, this was because the balance of payments improved after the second quarter of 1990. Ibarra concludes that the probability of reversal of trade policy has reduced the rate of capital accumulation in Mexico. Also, in the case of Mexico, the balance of payments began to improve after the 1990 announcement of a proposal to form a free

trade area with Canada and the United States. This announcement probably enhanced the credibility of the liberalization. In fact, the improvement in the balance of payments since 1990 was achieved with considerable capital inflows, including substantial amounts of foreign investment.

Edwards finds that the existence of a long tradition of exchange rate stability provided some constraints on central bank behavior in the Latin American countries with fixed rates. However, these constraints were limited, and would not survive the combination of populist political pressures and severely negative terms-of-trade shocks in the late 1970s and early 1980s. In fact, by trying to avoid exchange rate adjustment after the debt crisis, these nations incurred severe costs. Edwards also finds that even when the fiscal side is balanced, the adoption of a fixed nominal exchange rate may not reduce the degree of persistence or inertia of inflation in the system. The contrasting experiences of Chile and Mexico suggest that the combination of a fixed exchange rate anchor with income policies (as in Mexico) may be particularly effective in reducing inflation inertia



**At the IASE Conference, left to right:
Geoffrey Carliner, Jeffrey A. Frankel,
and Sebastian Edwards**

Frankel, Stein, and Wei examine the hypothesized regionalization of the world economy, holding constant the natural determinants of bilateral trade, such as GNP and distance. They find strong statistical evidence of regionalization, whether considering continental blocs—Western Hemisphere, Europe, and East Asia—or subregional free trade areas. In the latter category, the Andean Pact and MERCOSUR in the last few years have greatly stimulated trade among their members (the countries of the western and eastern halves of South America, respectively). The authors then show that partial trade preferences raise economic welfare, if drawn along "natural" geographical lines. If the degree of regional preferences is too great given the magnitude of intercontinental transportation costs, though, then the effect may be to distort trade. Such free trade areas are called "supernatural" blocs.

Márquez concludes that poverty has increased in Venezuela, and now includes more than one-third of the total population. This increase has been the result of a long decline in real wages. Poverty in 1991 is mainly an urban phenomenon that affects two-parent families. Some specific programs (such as *Hogares de Cuidado Diario*, a subsidized day-care system) do help the poor, while direct transfer programs do not. Márquez argues that reducing poverty requires integrating the poor as consumers and producers in a growing economy, which requires more than targeted subsidies. Growth and the enhanced availability and access to high-quality social services (particularly education and health) are the proven ways out of poverty.

Reisen notes that capital inflows to Latin America cause currencies to appreciate in real terms, unless there is sterilized intervention on the foreign exchange market. He argues that temporary flows could be sterilized effectively via the portfolio-balance channel, and at a modest fiscal cost in present value terms.

Calvo, Reinhart, and Végh analyze policies for depreciating the real exchange rate. They suggest that in the absence of changes in fiscal policy, the real exchange rate can only be depreciated temporarily, either through higher inflation and/or higher real interest rates, depending on the degree of capital mobility. The experiences of Brazil, Chile, and Colombia support the prediction that the undervalued real exchange rates are associated with higher inflation.

Novaes and Werlang highlight the problems associated with financial institutions that are owned by a state that is a member of a federation. They show that these financial institutions allow the states to transfer deficits to the federal government, creating incentives for higher deficits at both state and federal levels, and implying an inefficiently high inflation rate. It is more difficult to implement stabilization policies in such countries, including Brazil and Argentina.

Selected papers from this conference, and commentary on them, will appear in the *Journal of Development Economics*.

Fourth Annual East Asian Seminar on Economics

The NBER's fourth annual East Asian Seminar on Economics took place in San Francisco on June 17–19. Takatoshi Ito, NBER and Hitotsubashi University, and Anne O. Krueger, NBER and Duke University, organized this program:

Anne O. Krueger, "East Asian Experience and Endogenous Growth Theory"

Discussants: **Geoffrey Carliner**, NBER, and **Koichi Hamada**, NBER and Yale University

Hirohisa Kohama, University of Shizouka, "Development Cooperation and the Economic Development in East Asia"

Discussants: **Chong-Hyun Nam**, Korea University, and **John Page**, World Bank

T. N. Srinivasan, Yale University, "Long-Run Growth Theories and Empirics: Anything New?"

Discussants: **Sebastian Edwards**, NBER and University of California, Los Angeles, and **Paul M. Romer**, NBER and University of California, Berkeley

Shang-Jin Wei, NBER and Harvard University, "Open Door Policy and China's Rapid Growth: Evidence from City-Level Data"

Discussants: **John Page**, and **Yun-Wing Sung**, Chinese University of Hong Kong

Ji Chou, Chung-Hua Institution for Economic Research, "Old and New Development Models: Taiwanese Experience"

Discussants: **Chia Siow Yue**, University of Singapore, and **Mokhtar Tamin**, University of Malaya

Chen-Min Hsu, National Taiwan University, "Debt Financing, Public Investment, and Economic Growth in Taiwan"

Discussants: **Ponciano S. Intal, Jr.**, Philippine Institute for Development Studies, and **Yun-Wing Sung**

Sang-Dal Shim, Joon-Kyung Kim, and Jun-Il Kim, Korean Development Institute, "Sources of Economic Growth in Korea: An Interpretation by Endogenous Growth Theory"

Discussants: **Chia Siow Yue**, and **Hak K. Pyo**, Seoul National University

Hak K. Pyo, "A Time-Series Test on the Endogenous Growth Model with Human Capital"

Discussants: **Geoffrey Carliner**, and **Shin-ichi Fukuda**, Hitotsubashi University

Shin-ichi Fukuda and Hideki Toya, Hitotsubashi University, "The Conditional Convergence in East Asian Countries"

Discussants: **Koichi Hamada** and **Sang-Dal Shim**

William Easterly, World Bank, "Explaining Miracles: Growth Regressions Meet the Gang of Four"

Discussants: **Takatoshi Ito** and **T. N. Srinivasan**

Krueger reviews the East Asian experience with respect to the salient characteristics of growth, and to the current state of understanding of that experience. She examines the policy regimes under which growth occurred, and considers the relevance of endogenous growth theory in light of her analysis.

Kohama asks what type of economic environment fosters innovative entrepreneurship. He suggests that both a competitive economic environment and what he calls "social capability" are crucial to enhancing an in-

dustry's international competitiveness. He presents some supporting historical facts about postwar Japan and other East Asian countries to explain economic development in East Asia (mainly Japan, the NICs, and ASEAN).

Srinivasan points out that sustained growth in per capita income is possible if the marginal product of capital has a positive lower bound, regardless of how much capital is accumulated relative to labor. Increasing economies of scale are neither necessary nor sufficient to generate sustained growth.

Wei shows that during 1980–90, increased exports were positively associated with higher growth rates across Chinese cities. In comparison, in the late 1980s, Chinese growth was caused mainly by foreign investment, in the form of technological and managerial spillovers across firms, rather than new capital. Finally, Wei finds nothing magical about the high growth rates of Chinese coastal areas, other than their effective utilization of both foreign investment and exports.

Using time-series data for Taiwan, **Chou** tests the neoclassical growth model with human capital accumulation in order to determine the impact of the savings ratio and population growth on the income level. He shows that there are constant returns to scale when the exogeneity of income determinants is relaxed. He also tests for the interaction between total factor productivity and factor input. Chou finds that there is an interaction between those two variables and the scale effect generated by export expansion.

Hsu analyzes the effects of deficit-financing public investment on the Taiwanese economy. He shows that more private investment is crowded out in the open economy than in the closed economy.

Shim, Kim, and Kim find that Korea's surge in economic growth was largely a result of rapid accumulation of human capital, driven by education and on-the-job training. Government policies made a large contribution to accelerating the process. In particular, export promotion and industrialization with intensive government support reduced the risks of new projects faced by industrialists substantially. The rapid deepening and diversification of industrial structure enabled the learning process to continue without being subject to diminishing returns. Because of the speed of the learning process, high productivity growth continued until the late 1980s.

Instead of using cross-country data with proxy variables for human capital, such as the enrollment rate and literacy rate, **Pyo** uses direct time-series estimates of human capital for the United States and South Korea to

test the convergence hypothesis. He finds that human capital is a significant determinant of growth in both countries, but that the returns to capital are nearly constant for the United States and decreasing for South Korea. South Korea's aggregate productivity is increasing, but it is still only one-fifth of the U.S. level. Therefore, until the level of human capital reaches a certain threshold point, it will play the role of an accumulating input, rather than providing economywide externality.

Fukuda and Toya investigate whether there is a tendency for convergence among East Asian countries. The cross-country evidence shows that per capita growth rates in East Asian countries have little correlation with the starting level of per capita product, even after allowing for differences in the level of human capital. The authors then stress the role of exports for economic growth, and show that growth rates in East Asian countries have a strong tendency toward convergence, given their export–GDP ratios.

According to **Easterly**, growth regressions are not very successful at picking out as the “most likely to succeed” the Gang of Four: Hong Kong, Korea, Singapore, and Taiwan. The Four are not nearly as superlative in policies and other country characteristics as they are in per capita growth rates. Large positive residuals such as those associated with the Four's high performance historically have been transitory. The stratospheric trajectory of the Four should be heading back toward earth soon, Easterly concludes.

A conference volume will be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

Sixteenth Annual International Seminar on Macroeconomics

The sixteenth annual International Seminar on Macroeconomics (ISOM), hosted by the Institut für Weltwirtschaft in Kiel, Germany, was held on June 28 and 29. ISOM is cosponsored by the NBER and the European Economic Association, and was organized jointly by Robert J. Gordon of the NBER and Northwestern University and Georges de Ménil of the Ecole des Hautes Etudes en Sciences Sociales.

This year's papers and their discussants were:

Dwight M. Jaffee, University Of California, Berkeley,
“Markets for Housing in Russia”

Discussants: **Gordon Hughes**, World Bank, and
Edwin Deutsch, University of Technology, Vienna

José De Gregorio, International Monetary Fund; **Alberto Giovannini**, NBER and Columbia University; and **Holger Wolf**, NBER and New York University, "Sectoral Inflation: Empirical Regularities from Regions and Countries"
Discussants: **Robert J. Gordon** and **Georges de Ménil**

Michael Funke, Free University of Berlin, and **Stephen Hall** and **Martin Sola**, London Business School, "Rational Bubbles During Poland's Hyperinflation: Implications and Empirical Evidence"
Discussants: **Wojciech W. Charemza**, University of Leicester, and **Kenneth D. West**, NBER and University of Wisconsin

Andrew K. Rose, NBER and University of California, Berkeley, and **Lars E. O. Svensson**, NBER and University of Stockholm, "European Exchange Rate Credibility Before the Fall"
Discussants: **William H. Branson**, NBER and Princeton University, and **Guido Tabellini**, Innocenzo Gasparini Institute

Richard H. Clarida, NBER and Columbia University, "International Capital Mobility, Public Investment, and Economic Growth: A Neoclassical Framework with an Empirical Test"
Discussants: **Martin Feldstein**, NBER and Harvard University, and **Giorgio Basevi**, European Bank for Reconstruction and Development (EBRD)

Olivier J. Blanchard, NBER and MIT, and **Philippe Aghion** and **Robin Burgess**, EBRD, "Industrial Restructuring in Eastern Europe"
Discussants: **Horst Siebert**, Institut für Weltwirtschaft, and **Saul Estrin**, London Business School

Michael Burda and **Charles Wyplosz**, Institut Européen d'Administration des Affaires, "Gross Labor Market Flows in Europe"
Discussants: **John M. Abowd**, NBER and Cornell University, and **Wolfgang Franz**, Universität Konstanz

Jaffee studies the Russian housing sector during the economy's transition to a market system. Russian housing is systematically of poor quality and under-maintained, reflecting state ownership and rent ceilings. Improving housing conditions would provide a number of positive externalities, as well as direct consumption benefits.

De Gregorio, **Giovannini**, and **Wolf** use sectoral data for a group of European countries and U.S. states to examine the determinants of the trend increase in the relative price of tradables from 1970 to 1985. They show that the trend growth in income and the faster growth of total factor productivity in the tradable goods sector were the prime causes of higher inflation in nontradables. They also find that the relative price of nontradables has increased even during periods of disinflation.

Finally, they report on the behavior of relative inflation rates across exchange rate regimes.

Many Eastern European countries have been subject to periods of high inflation during their transition from planned to market economies. The appropriate policy for dealing with this inflation depends on the true nature of the underlying process that generates it. **Funke**, **Hall**, and **Sola** begin by outlining a model and defining the type of rational bubbles in question. They then carry out a range of tests for deterministic bubbles. Finally, they use a switching regime mode to investigate the possibility of stochastic bubbles.

Rose and **Svensson** analyze expectations of realignment, using daily financial data since the inception of the European Monetary System. It is difficult to find economically meaningful relationships between realignment expectations and macroeconomic variables, although there are signs that lower inflation improves credibility. The authors find few indications of poor credibility of the Exchange Rate Mechanism before late August 1992; the dimensions of the currency crisis of September 1992 appear to have taken both policymakers and private agents largely by surprise.

Clarida models international capital flows, public investment, and economic growth. Because public capital is not traded and is not a perfect substitute for private capital, the open economy converges only gradually to the Solow steady state, notwithstanding the assumption in his model that international capital mobility is perfect. Along the convergence path, the economy initially runs a current account deficit that reflects a consumption boom and a surge in public spending. Over time, the rate of public investment declines, as does the rate of growth in the standard measure of multifactor productivity in the private sector: the Solow residual. Because of perfect capital mobility, the rate of return on private capital and the capital-output ratio are constant and equal to the world rate along the convergence path.

Aghion, **Blanchard**, and **Burgess** analyze the incentives and constraints faced by managers of state-owned enterprises in Eastern Europe. They develop a simple debt-refinancing model to show how budget hardening, managerial concerns, and privatization prospects interact to induce restructuring in the absence of performance-related remuneration. They then focus on how to provide managers with the incentives and power to divide the firm into separate (more efficient) parts. Finally, they identify several policy devices to overcome resistance to unbundling and the decentralization of decisionmaking, in particular debt reallocation.

Burda and **Wyplosz** explore the two related hypotheses that business cycle fluctuations in unemployment are characterized by sharp changes in inflows into unemployment, rather than by changes in outflow propensities, and that the decline in the outflow rate is responsible for both cyclical and sectoral variation of the unem-

ployment rate. They show that the importance of inflows, stressed in the United States, carries over to Europe. Labor markets in Europe produce a countercyclical pattern of exit from unemployment, and from unemployment to employment, similar to what is observed in the United States.

Selected papers from the conference will be published in the *European Economic Review* in Spring 1994.

Economics of Aging

The NBER held a joint conference on aging with the Japan Center for Economic Research (JCER) in Tokyo on September 15–16. NBER Research Associate Michael D. Hurd, State University of New York, Stony Brook, and Naohiro Yashiro, Sophia University and JCER, organized the following program:

Seiritsu Ogura, Hosei University, "Projection of Japanese Public Pension Costs in the First Half of the 21st Century and the Effects of Three Possible Reforms"

Discussant: **Steven F. Venti**, NBER and Dartmouth College

Michael D. Hurd, "The Effects of Demographic Trends on Consumption, Saving, and Government Expenditures in the United States"

Discussant: **Toshiaki Tachibanaki**, Kyoto University

Naohiro Yashiro, and **Akiko Oishi**, JCER, "Population Aging and Saving–Investment Balance in Japan"

Naohiro Yashiro, "Economic Position of the Elderly in Japan"

Discussant: **John B. Shoven**, NBER and Stanford University

Sylvester Schieber, Wyatt Company, and **John B. Shoven**, "The Consequences of Population Aging on Private Pension Fund Saving and Asset Markets"

Discussant: **Tatsuo Hatta**, Osaka University

Naoto Yamauchi, Osaka University, "The Impact of Aging on Saving and the Capital Markets: Empirical Findings in Japan"

Discussant: **Noriyoshi Oguchi**, Sensyu University

Hilary W. Hoynes and **Daniel L. McFadden**, NBER and University of California, Berkeley, "The Impact of Demographics on Housing and Nonhousing Wealth in the United States"

Discussant: **Charles Y. Horioka**, NBER and Osaka University

Yukio Noguchi, Hitotsubashi University, "Improvement of After-Retirement Income by Home Equity Conversion Mortgages: Possibility and Problems in Japan"

Discussant: **Michael D. Hurd**

James M. Poterba, NBER and MIT; **Steven F. Venti**; and **David A. Wise**, NBER and Harvard University, "The Effects of Special Saving Programs on Saving and Wealth"

Discussant: **Charles Y. Horioka**

Noriyuki Takayama, Hitotsubashi University, "Personal Savings for Retirement in Japan"

Discussant: **Hilary W. Hoynes**

Robin L. Lumsdaine, NBER and Princeton University; **James H. Stock**, NBER and Harvard University; and **David A. Wise**, "Retirement Incentives: The Interaction Between Employer-Provided Pensions, Social Security, and Retiree Health Benefits"

Discussant: **Toshiaki Tachibanaki**

Atsushi Seike, Keio University, "Labor Market Implications of Social Security: Company Pension Plans, Public Pensions, and Retirement Behavior of the Elderly in Japan"

Discussant: **David A. Wise**

Michael D. Hurd and **David A. Wise**, "Changing Social Security Survivorship Benefits and the Poverty of Widows" (NBER Working Paper No. 3843)

Discussant: **Seiritsu Ogura**

Tatsuo Hatta and **Noriyoshi Oguchi**, "The Net Pension Debt of the Japanese Government"

Discussant: **Robin L. Lumsdaine**

Ogura explains the structure of the JCER's public pension simulation model, and offers a baseline projection of the costs and tax rates needed to sustain the Japanese pension system. He then examines the effects on these costs and tax rates of delaying the start of retirement to age 65, taxation of benefits, and price indexation.

Hurd assesses the effect of projected U.S. aggregate demographic changes on households, government, firms, and the economy. He finds that at least until 2020, the required adjustments are within the bounds of historical experience, with the prominent exception of health care costs.

Yashiro and **Oishi** examine the impact of population aging on savings, investment, and economic growth. They find that the negative impact of population aging—a declining labor force—could be relieved if adequate policies were adopted to stimulate labor-augmenting technical progress and labor participation of the elderly.

Yashiro finds that the high rate of savings of the Japanese elderly as conventionally measured is largely

overstated: it does not account for imputed incomes, and also may exclude the poor elderly, who are economically dependent on their children. Since living arrangements of the elderly significantly affect their economic position, Yashiro uses a strategic bequest motive model to analyze the major determinants of residence.

Schieber and **Shoven** examine the impact of the aging of the U.S. population on our funded private pension system. According to a 75-year forecast, the pension system will cease being a source of national saving in the third decade of the next century. Schieber and Shoven speculate about the impact that this may have on asset prices.

Yamauchi investigates the effects of the aging of the Japanese population on saving and asset accumulation. He shows that population aging has negative effects on household and national saving rates, but not that the elderly dissave, or decumulate their assets drastically. Increasing wealth in employer-sponsored pension funds tends to lower the household saving rate, but it is not clear whether the growing popularity of private pensions also lowers the national saving rate.

Hoynes and **McFadden** ask whether capital gains in housing can be predicted from demographic trends. They then investigate whether households adjust their nonhousing savings to maintain a desired level of total savings. There is mixed evidence about the ability to forecast housing prices, but no evidence that households adjust other assets if housing prices change. In the face of predictions of demographically driven trends for falling housing prices, these results have important implications for the welfare of future cohorts.

Noguchi observes that housing is a very important component of household assets in Japan. If housing could be liquidated through home-equity-conversion mortgages (HECMs), then considerable improvements in after-retirement income would be possible. In spite of this potential, HECMs are not widely utilized in Japan because of difficulties in obtaining consents from heirs.

Individual saving through targeted retirement saving accounts—IRAs and 401(k)s—grew rapidly in the United States during the 1980s. **Poterba**, **Venti**, and **Wise** suggest that most of the contributions to these programs represent new saving that would not have occurred otherwise.

It has been said that Japan's saving rate will decline in the future because of the rapid aging of its population. **Takayama** examines when and how much the elderly will dissave, and whether there are factors offsetting the demographics.

Proposed changes in the U.S. Social Security provisions include increasing the normal retirement age from 65 to 67 and a 3 to 8 percent increase in benefits for each year that retirement is delayed after the normal age of retirement. **Lumsdaine**, **Stock**, and **Wise** consider the interaction between these changes and the provision of employer-provided pension plans. For per-

sons with private firm plans, Social Security changes will have little effect on labor force participation, they find. But changes in the firm plans—for example, increasing the early retirement age—would have very large effects on labor force participation.

Seike asks how the ongoing institutional structure in Japan discourages older workers from continuing to work. His analysis of company severance payment plans suggests that large Japanese employers are motivated to let their older employees, whose wages are more likely to exceed their productivity, leave the firm. The Japanese public pension plan, particularly its earnings test scheme, discourages workers eligible for pensions from continuing to supply labor. The revision that tried to minimize this negative effect on the labor supply has not seemed to succeed in its original purpose.

Hurd and **Wise** consider the possibility of reducing the poverty rate of elderly widows by increasing their Social Security benefits and reducing the benefits of couples. They find that a 20 percent increase in widows' benefits would reduce their poverty by about 25 percent, say from 36 percent to 27 percent. The poverty rate of couples would increase about 10 or 20 percent, from around 10 percent to 11 or 12 percent.

Hatta and **Oguchi** estimate the Japanese public pension debt to be about 120 percent of GNP in 1990. They conclude that the Japanese public pension system will stay solvent in the long run under the conditions assumed in its 1986 reappraisal by the Ministry of Health and Welfare. However, the actual fund may be exhausted temporarily.

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

Internationalization of Equity Markets

The NBER held a conference on the "Internationalization of Equity Markets" in San Francisco on October 1 and 2. NBER Research Associate Jeffrey A. Frankel, director of the NBER's Program in International Finance and Macroeconomics and a professor at the University of California, Berkeley, organized the following program:

John Y. Campbell, NBER and Princeton University, and **Kenneth A. Froot**, NBER and Harvard University, "Securities Transaction Taxes: Lessons from International Experience"
Discussants: **Arjun Divecha**, Barra Associates, and **René M. Stulz**, NBER and Ohio State University

Gikas Hardouvelis, Rutgers University; **Rafael La Porta**, Harvard University; and **Thierry Wizman**, Federal Reserve Bank of New York, "What Moves the Discount on Country Equity Funds?"

Discussants: **Vihang Errunza**, McGill University, and **Rob Neal**, University of Washington

Takatoshi Ito, NBER and Hitotsubashi University, and **Weng-Ling Lin**, University of Wisconsin, "Price Volatility and Volume Spillovers Between the Tokyo and New York Stock Markets"

Discussants: **Alan Kleidon**, Cornerstone Research, and **George Von Furstenberg**, Indiana University

Stijn Claessens, World Bank, and **Moon-Whoan Rhee**, KyungHee University, "The Opening Up to Equity Investment by Developing Countries"

Discussants: **Michael Dooley**, NBER and University of California, Santa Cruz, and **Don Lessard**, MIT

Charles M. Engel, NBER and University of Wisconsin, "Tests of CAPM on an International Portfolio of Bonds and Stocks"

Discussants: **Geert Bekaert**, Stanford University, and **G. William Schwert**, NBER and University of Rochester

Wayne E. Ferson, University of Washington, and **Campbell R. Harvey**, NBER and Duke University, "An Exploratory Investigation of the Fundamental Determinants of National Equity Market Returns"

Discussants: **Bruce N. Lehmann**, University of California, San Diego, and **Richard K. Lyons**, NBER and University of California, Berkeley

Linda L. Tesar, NBER and University of California, Santa Barbara, and **Ingrid M. Werner**, NBER and Stanford University, "International Equity Transactions and U.S. Portfolio Choice"

Discussants: **Philippe Jorion**, University of California, Irvine, and **Richard M. Levich**, NBER and New York University

Bernard Dumas, NBER and HEC, "A Test of International CAPM with Business Cycle Indicators as Instrumental Variables"

Discussants: **Campbell R. Harvey** and **Thierry Wizman**

Campbell and **Froot** study Swedish and British securities transaction taxes (STTs). The authors argue that STTs are best thought of as taxes on different resources used in transactions: domestic brokerage services, in the case of Sweden; and registration services, in the British case. STTs give investors incentives to economize on the taxed resources by shifting trading to foreign markets, or untaxed assets, or by reducing the volume of trade. The estimated revenues from a U.S. STT will be overstated if such behavioral effects are ignored, they conclude.

Hardouvelis, **La Porta**, and **Wizman** examine the weekly prices of 35 country funds that traded on the

New York and American Stock Exchanges between 1985 and 1992. Unlike domestic equity funds, country funds do not all trade at an average discount. However, in the long run, discounts prevail for funds whose host countries allow free capital movements across borders. Like their domestic-equity counterparts, country funds typically are issued at a premium; this premium erodes by about 20 percent over the 24 weeks following the initial offering. The average discount for funds invested in countries with no restrictions on capital movements is attributable to noise-trader risk, which depresses fund prices relative to their net asset values.

Ito and **Lin** study the interactions of returns, volatility, and trading volumes between the U.S. and Japanese stock markets using intradaily data from October 1985 to December 1991. Returns in these two markets are always positively correlated. The authors find that the effect of the New York stock returns on the Tokyo returns increased after the 1987 crash. This effect increases when the price volatility in New York is higher, but it is not affected significantly by changes in trading volume in New York. Finally, a drop in prices is usually associated with lower trading volume in the foreign as well as the domestic markets.

Claessens and **Rhee** investigate stock performance in emerging markets in relation to the markets' accessibility by foreign investors. They find a positive relationship between a stock's P/E ratio and its investability index, suggesting that barriers to access by foreigners have a negative impact. However, the effects of barriers on abnormal rates of returns is insignificant. Neither the degree of international spanning of the domestic market, nor the supply of stocks significantly affect abnormal rates of return.

Engel estimates and tests an international version of the Capital Asset Pricing Model (CAPM). Investors from the United States, Germany, and Japan choose a portfolio that includes bonds and equities from each of these countries to maximize return, evaluated in terms of their home currency. The CAPM partially explains ex ante returns. It predicts fairly large risk premiums on the equities, but small ones on bonds. However, when tested against a more general alternative that allows for more heterogeneity of investors than the CAPM, the model is rejected.

Ferson and **Harvey** study the relationship of stock returns in different countries to fundamental attributes of the markets. They find that average returns differ according to the volatility of price-to-book-value ratios in the different markets. Returns can be predicted over time by using relative gross domestic product, interest rate levels, and dividend-price ratios. The authors then test asset pricing models in which the fundamental attributes determine the sensitivity of the national stock markets to global measures of economic risks. These tests produce some support for the models.

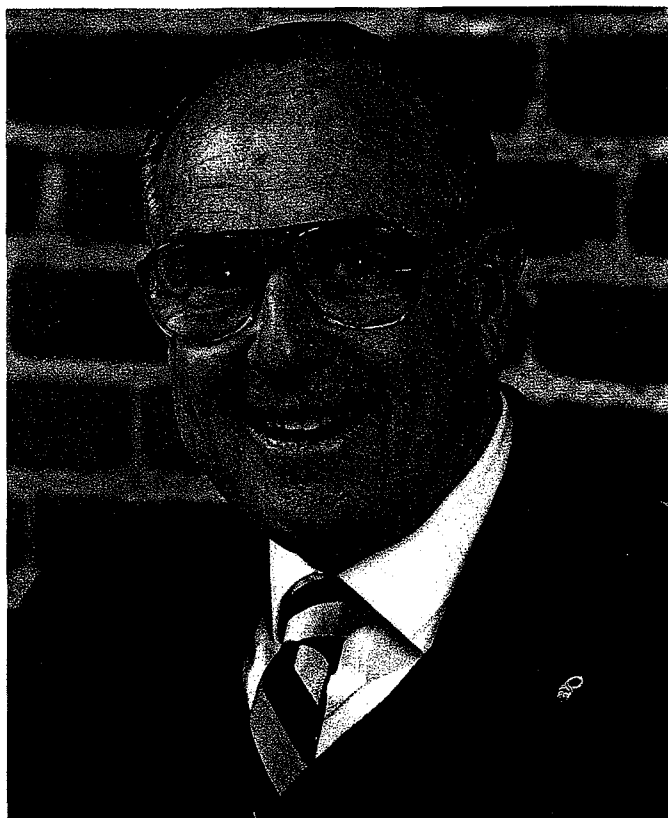
Tesar and **Werner** study the cross-border transactions in equity by investors in Canada, Germany, Japan, the United Kingdom, and the United States. They find that investors from different countries make very different decisions about the allocation of their portfolio across markets. In contradiction to the notion that high variable transaction costs hinder international diversification, Tesar and Werner find that the volume of gross equity flows vastly exceeds net equity flows, and that the turnover rate on foreign equity investments by some investors even exceeds domestic turnover rates.

Dumas attempts to explain the behavior of the international stock market on the basis of economically meaningful variables that capture "the state of the economy." He finds that the leading indicators put together by Stock and Watson as predictors of the U.S. business cycle also predict stock returns in the United States, Germany, Japan, and the United Kingdom. These instruments again lead to a rejection of the classic CAPM and no rejection of international CAPM.

The papers and commentary will be collected in an NBER conference volume to be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

Fuchs to Head American Economic Association

NBER Research Associate Victor R. Fuchs, the Henry J. Kaiser Jr. Professor of Economics at Stanford University, will become the next president of the AEA. He will serve as president-elect in 1994 and president in 1995.



Fuchs founded the NBER's Program in Health Economics, and has been associated with the Bureau since 1962. He was vice president of the NBER from 1968-78, and founded and directed a Center for Economic Analysis of Human Behavior and Social Institutions at the Bureau.

Born in New York City, Fuchs received a Ph.D. in economics from Columbia University in 1955. He taught at Columbia and New York University, and was a program associate at the Ford Foundation before joining the Bureau's research staff.

From 1968 to 1974, Fuchs was professor of economics and community medicine at the City University of New York. In 1974, he joined the faculty of Stanford University and Stanford Medical School. Fuchs is a member of the American Philosophical Society and the American Academy of Arts and Sciences.

Bureau News

Abraham Named BLS Commissioner

Katharine G. Abraham is the new commissioner of the U.S. Labor Department's Bureau of Labor Statistics (BLS). The BLS produces several of the most important statistics for measuring the economic health of the nation, including the monthly unemployment rate and the inflation rate, as measured by the Consumer Price Index.

Until her appointment, Dr. Abraham was an NBER research associate and a professor of economics at the University of Maryland.

Abraham, a native of Ames, Iowa, holds a B.S. from Iowa State University and a Ph.D. from Harvard University. She taught at the Sloan School of Management at MIT before joining the University of Maryland faculty in 1988. She and her husband, Graham N. Horkley, have two sons.

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Tetsuji Yamada
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Richard J. Zeckhauser
Stephen P. Zeldes

*On Leave for Government Service

†On Leave for Nongovernment Service

Feenstra, Frankel, and Mankiw Named New Program Directors

The restructuring of the NBER activities in international economics was completed in July when Robert C. Feenstra became the director of the new Program on International Trade and Investment and Jeffrey A. Frankel became director of the new Program on International Finance and Macroeconomics. These two programs replaced the previous NBER Program in International Studies that had been headed by William H. Branson since 1978.

Feenstra is a professor of economics at the University of California, Davis, and has been associated with the NBER since 1985. Frankel is a professor of economics at the University of California, Berkeley, and has been associated with the Bureau since 1982.

Branson, who is a professor of economics at Princeton University, will continue to be active in the two new NBER programs. Bureau President Martin Feldstein said, "Bill Branson had done an outstanding job as the first director of the NBER's international studies program, leading a series of major studies, and recruiting outstanding American and foreign economists to the NBER program."

N. Gregory Mankiw's appointment as director of the NBER Program in Monetary Economics also marks the completion of a major transition. The NBER Program in Financial Markets and Monetary Economics has been split into three parts: Asset Pricing (headed by John Y. Campbell), Corporate Finance (headed by Robert W. Vishny), and Monetary Economics (now headed by Mankiw).

Mankiw was deputy director of the monetary economics program until his promotion to director last summer. He succeeds Benjamin M. Friedman, who had directed the entire financial markets and monetary economics program since its inception in 1978. Feldstein noted "the excellent job Friedman had done in bringing together a diverse and high-quality research group. The size and breadth of interests made it more productive to have three separate programs than a single program," he added.

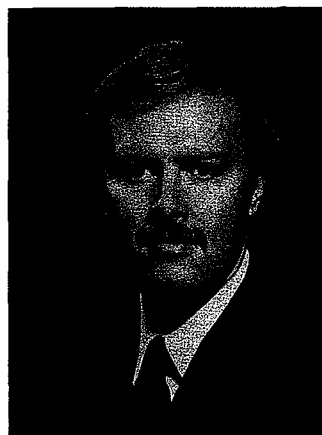
New Directors Elected

At the fall meeting of the NBER Board, two new directors were elected: Mark Drabentstott and Josh S. Weston.

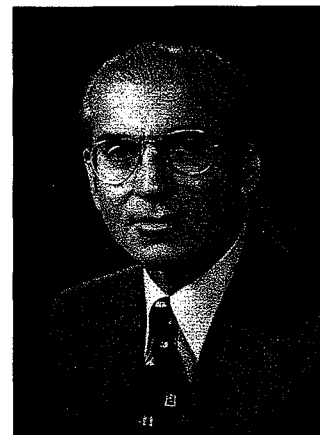
Drabentstott, who is vice president and economist at the Federal Reserve Bank of Kansas City, represents the American Agricultural Economics Association. He

joined the Bank as an agricultural economist in 1981, was named senior economist in 1983, and was promoted to officer in 1985, assistant vice president in 1987, and to his current post in 1990. He holds a B.A. from Earlham College, and an M.S. and Ph.D. from Iowa State University, all in economics.

Josh S. Weston, chairman and chief executive officer of Automatic Data Processing, Inc. (ADP), is representing the Committee for Economic Development, where he is chairman of the research and policy committee. Weston joined ADP as a vice president in 1970. He was elected president and chief operating officer in 1977, and was subsequently named CEO in 1982, and then chairman of the board. He earned his B.S. in economics from City College of New York and his M.S. in economics from the University of New Zealand, where he studied as a Fulbright Scholar.



Mark Drabentstott



Josh S. Weston

1993 Summer Institute

Over 660 economists from 171 universities and organizations around the world attended the NBER's 15th 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. The papers presented at 27 different sessions covered a wide variety of topics. A catalogue of all papers and work in progress can be obtained by writing to: Summer Institute Catalogue, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

Economic Fluctuations Research Meeting

The NBER's Program on Economic Fluctuations met in Cambridge on July 17. John B. Taylor of Stanford

Faculty Research Fellows for 1993–4

Rosanne Altshuler	David M. Cutler*	Jennifer Hunt	Deborah J. Lucas	Joshua Rosenbloom
Andrew Atkeson	Sanghamitra Das	Guido Imbens	Robin L. Lumsdaine	Joshua Rosett
Orazio Attanasio	Steven J. Davis	Adam B. Jaffe	Andrew B. Lyon	Nouriel Roubini
Richard Baldwin	J. Bradford De Long*	Larry E. Jones	Richard K. Lyons	Cecilia E. Rouse
David S. Bates	Sandra Decker	Chinhui Juhn	A. Craig MacKinlay	John P. Rust
Lucian A. Bebchuk	John DiNardo	Joosung Jun	Brigitte Madrian	Xavier Sala-i-Martin
Roland Benabou	Kathryn M. E. Dominguez	Robert Kaestner	Rodolfo Manuelli	John K. Scholz
Eli Berman	Steven Neil Durlauf	Thomas J. Kane	Kiminori Matsuyama	Matthew D. Shapiro
Steven T. Berry	Eric M. Engen	Shawn Kantor	Mark B. McClellan	Andrea Shepard
Giuseppe Bertola	William N. Evans	Steven N. Kaplan	Kathleen M. McGarry	Nachum Sicherman
Timothy J. Besley	Jonathan Feinstein	Anil K. Kashyap	Gilbert E. Metcalf	Kathryn E. Spier
Mark Bills	Joseph P. Ferrie	Nobuhiro Kiyotaki	Naci H. Mocan	Douglas O. Staiger
Tim Bollerslev	Rachel M. Friedberg	Michael W. Klein	Daniel Nelson	Federico A. Sturzenegger
Lael Brainard	David Genesove	Michael M. Knetter	Susan W. Nesbitt	Valerie Y. Suslow
Moshe Buchinsky	William M. Gentry	Sanders Korenman	David Neumark	Deborah L. Swenson
Ricardo J. Caballero	Edward L. Glaeser	Samuel S. Kortum	Steven Olley	Linda Tesar
Charles Calomiris	Sherry A. Glied	Carsten Kowalczyk	Sule Ozler	Aaron Tornell
Andrew Caplin	Linda S. Goldberg	Michael Kremer	Leslie E. Papke	Robert Triest
Eliana A. Cardoso*	Lawrence H. Goulder	Douglas L. Kruse	Christina Paxson	Joel Waldfogel
Anne Case	Shane Greenstein	Saul Lach	Canice Prendergast	James Walker
Alessandra Casella	Jonathan Gruber	Francine LaFontaine	Thomas J. Prusa	Shang-Jin Wei
Frank J. Chaloupka IV	Maria J. Hanratty	Robert J. LaLonde	Andrew D. Racine	David N. Weil
Judith A. Chevalier	Gordon H. Hanson	Jenny Lanjouw	Daniel Raff	Ingrid M. Werner
John H. Cochrane	John C. Heaton	Blake D. LeBaron	Valerie A. Ramey	Holger C. Wolf
Iain M. Cockburn	Rebecca Henderson	Jong-Wha Lee	Sergio Rebelo	Michael Woodford
Dora Costa	James R. Hines, Jr.	Thomas Lemieux	Richard Rogerson	Alwyn Young
Lee A. Craig	Hilary W. Hoynes	Margaret Levenstein	Andrew K. Rose	Stanley E. Zin
Janet Currie				

*On Leave for Government Service

University and Michael Woodford of the University of Chicago organized this agenda:

Roger E. A. Farmer and Jang Ting Guo, University of California, Los Angeles, "Real Business Cycles and the Animal Spirits Hypothesis"

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

Edmund S. Phelps, Columbia University, "Foreign and Domestic Determinants of Unemployment Rates Through Real-Interest and Real-Exchange Rate Channels"

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

John M. Roberts, Federal Reserve Board, "Why Is Inflation Costly to Reduce?"

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

Nobuhiro Kiyotaki, NBER and University of Minnesota, and **John Moore**, MIT, "Credit Cycles"

Discussant: **Mark L. Gertler**, NBER and New York University

Benjamin Eden, University of Iowa, "The Adjustment of Prices to Monetary Shocks When Trade Is Uncertain"

Discussant: **Michael Woodford**

Alan C. Stockman, NBER and University of Rochester, and **Lee E. Ohanian**, University of Pennsylvania, "Short-Run Independence of Monetary Policy Under Pegged Exchange Rates, and Effects of Money on Exchange Rates and Interest Rates"

Discussant: **Maurice Obstfeld**, NBER and University of California, Berkeley

According to Keynes, business cycles are driven by erratic swings in investors' expectations, which he called "animal spirits." More recently, economists have insisted that expectations should be consistent with what actually happens. It was initially thought that this approach left no room for animal spirits; economists in this school switched to the idea that shocks to technology might be responsible for economic fluctuations. **Farmer** and **Guo** show that, even if one accepts the rational expectations approach, it is still possible for business fluctuations to be generated by beliefs. Furthermore, the animal spirits approach provides a better quantitative match to the dynamics of U.S. time series.

Phelps asks what movements in demand and supply have been driving unemployment rates in the postwar era, and which institutional changes have served to moderate unemployment. His dataset describes 17 OECD

countries from 1955 to 1979. Phelps concludes that movements in the average unemployment rate are explained by the sources of the rise in world real interest rates in the 1980s: notably, the explosion of public debt, the considerable rise of public expenditure, and the slow-down of the capital stock; the steady increase of tax rates over the whole period; the large increase in the real oil price in the mid-1970s and early 1980s; and the large increased weight of the young in the labor force in the 1970s. The largest single player in this story is the huge rise in the world interest rate beginning in the late 1970s.

Roberts shows that the conduct of monetary policy and the availability of information explain why reducing inflation entails some loss of output.

Kiyotaki and **Moore** analyze how credit constraints interact with aggregate economic activity over the business cycle. In particular, for an economy in which credit limits are determined endogenously, they investigate how relatively small, temporary shocks to technology or income distribution might generate large, persistent fluctuations in output and asset prices. They also examine how shocks to a particular sector can transmit to the other sectors so that output of different sectors move together.

Eden suggests that when the rate of change in the targeted money supply rises by a certain percentage, more sellers will choose to change their nominal price. As a result, the conditional mean goes up, but the conditional standard deviation is unaffected.

Stockman and **Ohanian** examine the effects of changes in the money supply on exchange rates, interest rates, and production. They consider a two-country model in which some sectors of the economy have predetermined nominal prices in the short run, and other sectors have flexible prices. They find that shocks to the money supply have effects on liquidity both within and across countries, and induce a cross-country real interest differential. Their most striking finding is that countries have a degree of short-run independence of monetary policy, even under pegged exchange rates.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-1804 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 per order 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.

1805. "Measuring the Aggregate Price Level: Implications for Economic Performance and Policy," by Robert J. Gordon (NBER Working Paper No. 3969)
1806. "Theories of Optimal Capital Structure: A Managerial Discretion Perspective," by Oliver Hart
1807. "A Theory of War Finance," by Herschel I. Grossman and Taejoon Han (NBER Working Paper No. 3799)
1808. "On the Sensitivity of R and D to Delicate Tax Changes: The Behavior of U.S. Multinationals in the 1980s," by James R. Hines, Jr. (NBER Working Paper No. 3930)
1809. "The Incidence and Costs of Job Loss: 1982-91," by Henry S. Farber
1810. "New and Old Keynesians," by Bruce C. Greenwald and Joseph E. Stiglitz
1811. "Is the Extended Family Altruistically Linked? Direct Tests Using Microdata," by Joseph G. Altonji, Fumio Hayashi, and Laurence J. Kotlikoff (NBER Working Paper No. 3046)
1812. "Population Aging, Social Security Design, and Early Retirement," by Axel Börsch-Supan
1813. "R and D Investment and International Productivity Differences," by Frank R. Lichtenberg (NBER Working Paper No. 4161)
1814. "'New' Trade Theory and Policy a Decade Old: Assessment in a Pacific Context," by J. David Richardson (NBER Working Paper No. 4042)
1815. "Capital Markets and Economic Fluctuations in Capitalist Economies," by Joseph E. Stiglitz
1816. "Unit Roots in Macroeconomic Time Series: Some Critical Issues," by Bennett T. McCallum (NBER Working Paper No. 4368)

Additional Papers Available

Additional Papers are not official NBER Working Papers but are listed here as a convenience to NBER researchers and prospective readers. Additional Papers are priced the same as Reprints and may be ordered by title from the NBER Publications Department.

"Do Private Capital Markets Insure Regional Risk? Evidence from the United States and Europe," by Andrew Atkeson and Tamim Bayoumi (*Open Economy Review*, 1993)

"Consumption and the Recession of 1990-1," by Olivier J. Blanchard

"What Has Been Learned About Labor Supply in the Past Twenty Years?" by James J. Heckman

"How Much Europe?" by Hans-Werner Sinn

"Industry Evolution and Transition: The Role of Information Capital," by Andrew Atkeson

Bureau Books

Eighth Macro Annual Is Available

The *NBER Macroeconomics Annual 1993*, edited by Olivier J. Blanchard and Stanley Fischer, is now available from the MIT Press. This is the eighth in a series designed to stimulate research on problems in applied economics. This volume includes papers on trends in U.S. commercial banking; Chinese and Eastern European economic reforms; and unemployment in Europe.

Blanchard and Fischer are both professors of economics at MIT and NBER research associates. The price of the "Macro Annual" is \$35.00 for the clothbound edition and \$16.95 for the paperback edition.

Either edition should be ordered 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.

Three NBER Books Out This Fall

Three new NBER volumes were released by the University of Chicago Press this fall. *Foreign Direct In-*

vestment, edited by Kenneth A. Froot, details the dramatic growth in FDI over the last decade. Between 1980 and 1990, the United States, traditionally a source of FDI, became the foremost host of FDI from other countries; at the same time, Japan and other countries in East Asia became important sources of FDI. Furthermore, the mechanics of FDI transactions and the form of investment also have changed in the last ten years. This volume, based on a 1992 conference, includes an introduction and nine papers that describe those changes.

Froot is a research associate in the NBER's Program in International Studies and teaches economics at the Harvard Business School. This book is priced at \$45.00.

Regionalism and Rivalry: Japan and the United States in Pacific Asia, edited by Jeffrey A. Frankel and Miles Kahler, deals with the ways in which the United States and Japan contribute to, and are potentially affected by, regionalism in East Asia. Part I examines whether a trade and financial bloc is emerging in East Asia. Part II looks at how a Japan-centered bloc might heighten the competitiveness of Japanese firms and increase Japanese influence in the region. Part III describes the incentives and obstacles to Japanese leadership in Pacific Asia.

Frankel directs the NBER's research in international studies, and is a professor of economics at the University of California, Berkeley. Kahler is a professor of international relations and an adjunct professor of political science at the University of California, San Diego. Their volume is available for \$60.00.

Business Cycles, Indicators, and Forecasting, NBER Studies in Business Cycles, Volume 28, was edited by James H. Stock and Mark W. Watson. Priced at \$49.95, this volume documents some of the macroeconomic forecasting techniques and models developed over the last ten years, compares their performance to traditional econometric models, and proposes other methods of forecasting and time-series analysis.

The book begins with a study of the historical performance of economic forecasts. The data, collected by the NBER and the American Statistical Association between 1968 and 1990, illustrate the potential for and the limitations of forecasting economic change. Using varying economic models, and in mathematical detail, the next three papers consider different approaches to predicting recessions and expansions. Another paper explains why the difference between interest rates on commercial paper and U.S. Treasury bills predicts real economic activity. An additional study asks whether expansions, contractions, or whole cycles are more or less likely to end as they grow older. Finally, there are two discussions of methods for analyzing economic time series.

This important and useful volume will be of interest to professional forecasters and economists in government, academia, and the business community. Stock and Watson are both research associates in the NBER's Pro-

gram on Economic Fluctuations. Stock is a professor of economics at Harvard's Kennedy School of Government; Watson is an economics professor at Northwestern University.

Current Working Papers

Individual copies of NBER Working Papers, Historical Factors in Long-Run Growth Papers, and Technical Papers are available free of charge to corporate associates. **For all others, there is a charge of \$5.00 per paper requested. (Outside of the United States, add \$10.00 per order for postage and handling.) Advance payment is required on all orders. Please do not send cash.** For further information or to order, please write: National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

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

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

NBER Working Papers

Post-Retirement Increases in Pensions in the 1980s: Did Plan Finances Matter?

Stephen G. Allen, Robert L. Clark, and Ann A. McDermid

NBER Working Paper No. 4413

August 1993

JEL Nos. E31, J14, J41

Aging, Labor Studies

Many firms give increases in pension benefits to retirees after retirement, even though the pension contract does not require such increases. A leading explanation

for this is that benefit increases are part of an implicit contract by which retirees accept lower initial benefits in return for the option of receiving a share of the plan's financial returns above the risk-free rate. We find mixed evidence on the linkage between the financial performance of pension plans and post-retirement benefit increases. Between 1980 and 1985, benefit increases were larger in plans with high funding ratios and lofty rates of return. However, the practice of giving post-retirement increases became much less widespread in the 1980s, despite dramatically improved financial performance across all pension plans.

Patterns in Regional Labor Market Adjustment: The United States

Versus Japan

Edward B. Montgomery

NBER Working Paper No. 4414

August 1993

JEL Nos. J21, E24

Labor Studies

This paper examines regional labor market behavior in the United States and Japan. In contrast with the aggregate picture, labor markets at the prefectural (regional) level in Japan exhibit substantially more persistence than labor markets at the state level in the United States. The distribution (and positions of regions within the distribution) of wages, unemployment, employment growth, and migration remain remarkably constant in Japan for periods of up to 15 years. Although wages, unemployment, and migration appear to be driven by similar factors in both countries, wages appear to be slightly more sensitive, while unemployment is less sensitive, to demand shifts in Japan than in the United States.

Labor Productivity During the Great Depression

Michael D. Bordo and Charles L. Evans

NBER Working Paper No. 4415

August 1993

JEL Nos. E3, N11

Development of the American Economy, Labor Studies, Monetary Economics

In a recent paper, Bernanke and Parkinson studied interwar data on U.S. manufacturing to assess competing theories of the business cycle. They found that short-run increasing returns to labor, or procyclical labor productivity, was at least as strong during the Great Depression as in the postwar period. They concluded that the real business cycle explanation of economic fluctuations is thus doubtful.

This paper points out that, within the dataset analyzed by Bernanke and Parkinson (representing 20 percent of the manufacturing sector), labor productivity during the Great Depression (from 1928Q3 to 1933Q1) was procyclical in some industries and countercyclical in others. Furthermore, our measure of labor productivity for the entire manufacturing sector during this period was

countercyclical. We conclude that it is unlikely that large, negative aggregate demand shocks pushed the 1929–33 economy down a static, neoclassical production function. Another possibility is that firms that typically hoarded labor during recessions chose not to do so during 1929–33.

Top Executives, Turnover, and Firm Performance in Germany

Steven N. Kaplan

NBER Working Paper No. 4416

August 1993

Corporate Finance

This paper examines executive turnover for both management and supervisory boards, and its relationship to firm performance, in the largest companies in Germany in the 1980s. The management board turns over at a rate of 10 percent per year, implying that top executives in Germany have longer tenures than their counterparts in the United States and Japan. This turnover increases significantly with stock performance and particularly poor (that is, negative) earnings, but is unrelated to growth of sales and earnings. Turnover of the supervisory board is not related consistently to any measure of performance.

Trade and Industrial Policy Reform in Developing Countries: A Review of Recent Theory and Evidence

Dani Rodrik

NBER Working Paper No. 4417

August 1993

JEL Nos. F13, F43, O10

International Trade and Investment, Growth

This paper reviews recent theory and evidence on trade and industrial policy reform in developing countries. First, I discuss the theoretical and empirical basis of the rationales for policy reform. Next, I identify and evaluate two sources of heterodoxy: the East Asian experience with interventionist industrial policies; and, recent models of imperfect competition. I then turn to strategic issues in reform, and discuss the theory of piecemeal reform, tax or tariff uniformity, credibility, political economy, and interactions with stabilization policy. The penultimate section reviews the available evidence on the consequences of recent policy reform.

Environmental Costs Paid by the Polluter or the Beneficiary? The Case of CERCLA and Superfund

Don Fullerton and Seng-Su Tsang

NBER Working Paper No. 4418

August 1993

JEL Nos. H23, Q2

Public Economics

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 follows

the “polluter pays” principle by placing retroactive liability on responsible firms. Yet this cost is borne by current shareholders who did not benefit from past low-cost waste management. This paper introduces a “beneficiary pays” principle that burdens consumers who benefited from lower prices. This new principle would replace retroactive liability with taxes that raise product prices. We develop an input–output model to calculate the effects of alternative tax rules on output prices. We find that: 1) the increase in commodity prices attributable to current Superfund taxes is only a small fraction of the price increase that would have covered the cost of controlling hazardous waste fully; and 2) current Superfund taxes do not raise the prices of goods associated with the most pollution.

Trade Liberalization in Disinflation

Dani Rodrik

NBER Working Paper No. 4419

August 1993

JEL Nos. F13, F41

International Trade and Investment

There is a near-consensus among professional economists on the desirability of achieving macroeconomic stabilization *prior* to the removal of microeconomic distortions. Yet this advice was disregarded completely in some of the most important cases of reform during the last decade: Bolivia and Mexico since 1985, Poland since 1990, and Argentina since 1991, for example. In these and many other cases, radical trade liberalization measures were put in place, or existing programs speeded up, *in conjunction with* macroeconomic stabilization packages.

In this paper, I revisit this issue by focusing on recent liberalizations in Latin America. I argue that when trade liberalization is implemented simultaneously with stabilization policies, the theoretical case for the existence of a policy dilemma in exchange rate management is weaker than is usually presupposed. A commitment to a pegged exchange rate, if credible, actually can solve rather than intensify the potential conflict between trade liberalization and exchange rate stability. However, the credibility of disinflation may be endangered by early liberalization.

The Profitability of Colonialism

Herschel I. Grossman and Murat Iyigun

NBER Working Paper No. 4420

August 1993

JEL Nos. F02, F21

This paper develops an analytical framework for studying colonial investment from the perspective of neoclassical political economy. The distinguishing feature of this model is that the metropolitan government restricts the amount of investment in the colony in order to maximize the net profits earned there. The model explicitly includes the threat of extralegal appropriative activities by the indigenous population in the colony.

We identify the conditions, including the technology of

both production and extralegal appropriation, that determine the profitability of colonialism. Our analysis suggests why some countries but not others historically became colonies, and why many colonies that initially were profitable subsequently became unprofitable and were abandoned. The model also has implications for the amount of investment, the allocation of resources between productive and appropriative activities, and the distribution of income in colonies.

The Choice Between Public and Private Debt: An Analysis of Post-Deregulation Corporate Financing in Japan

Takeo Hoshi, Anil K. Kashyap,
and **David S. Scharfstein**

NBER Working Paper No. 4421

August 1993

JEL Nos. G3, G2

Corporate Finance, Monetary Economics

As a result of deregulation, there was a dramatic shift in Japan during the 1980s away from bank debt financing toward public debt financing: in 1975, more than 90 percent of the corporate debt of public companies was bank debt; in 1992, it was less than 50 percent. This paper presents a theory of the choice between bank debt and public debt, and then examines the theory using firm-level data on borrowing sources in Japan. We find that high net worth companies are more prone to use public debt. We also find that the more successful members of industrial groups (or *keiretsu*) and the less successful owner-managed firms tend to access the public debt markets.

Inflation and Growth in an Integrated Approach

Michael Bruno

NBER Working Paper No. 4422

August 1993

International Finance and Macroeconomics

In recent decades, macroeconomic factors in general, and the policy response to common external shocks (such as oil prices and real interest rates) in particular, have played a dominant role in countries' protracted growth crises, as well as in growth renewal and its long-run sustainability. This paper shows that, for the industrial countries through the 1970s and 1980s, there was a marked 20-year inflation and growth "loop," extending beyond the conventional business cycles. With easily identifiable phases of crisis entry, disinflation, and partial growth recovery. The interaction of policy responses to shocks with structural (mainly labor market) features of economies explains differences across countries, both in the depth of the deterioration phase and in the gradual recovery.

The second part of the paper uncovers analogous, although much more dramatic, 15–20-year loops in the crisis and recovery of a group of countries in Latin America (as well as Israel). Likewise, the strong macro path-

dependence of growth in middle-income countries (with cross-country differences in structure and social cohesion) is borne out by comparisons with countries (both in the same region and outside it) that faced similar external shocks, yet exhibited much milder "loops." This paper ends with a brief reference to some analogies with the sequencing of the cycle of growth crisis, adjustment, and structural reform in Eastern Europe.

Innovations and Technological Spillovers

M. Ishaq Nadiri

NBER Working Paper No. 4423

August 1993

JEL No. O3

Productivity

This paper analyzes the evidence from a large number of studies on three specific questions pertaining to R and D investment: 1) Are there diminishing returns to inventive activities? 2) What is the relationship between R and D and productivity, and what are the magnitudes of the returns to a firm's or industry's R and D investment? 3) What are the magnitudes of the benefits from R and D undertaken by other firms, industries, and countries, and the vehicles by which they are transmitted to the recipients?

The evidence on the first issue is still controversial, basically because of the lack of an adequate measure of output and precise measurement of the inputs to the inventive process. Patent counts often are considered as a measure of output, while expenditures on R and D are used as a measure of input in this process. If proper adjustments are made and the significant spillover effects of R and D documented in this paper are taken into account, the possibility of diminishing returns to inventive activities seems implausible.

On the second question, the results clearly suggest a positive and strong relationship between R and D expenditures and growth of output or total factor productivity. The relationship is pervasive, although the magnitudes of the contribution of R and D vary among firms, industries, and countries. On average, net rates of return on own R and D are about 20 percent to 30 percent. There is no clear-cut evidence of decline in the potency of R and D investment in the late 1970s. However, there is evidence that R and D as a factor of production affects not only productivity growth but also the demand for conventional inputs, and is influenced by changes in input prices and the level of demand.

The evidence points to sizable R and D spillover effects both at the firm and industry levels; the social rates of return of R and D often vary from 20 percent to over 100 percent in various industries, with an average somewhere close to 50 percent. The channels of diffusion of the spillovers vary considerably, and their effects on productivity growth are sizable. These results suggest a substantial underinvestment in R and D activities.

International technology trade among the OECD countries has increased substantially in recent years. The diffusion of new technologies has been very rapid; the channels of transmissions have been exports, foreign direct

investment, and multinational enterprises' research operations, the latter being the most dynamic agents of technology transfer. With the further globalization of business activities, international technology transfers will be a major source of new R and D spillovers.

Retirement Systems in Developed and Developing Countries: Institutional Features, Economic Effects, and Lessons for Economies in Transition

Olivia S. Mitchell

NBER Working Paper No. 4424

August 1993

Labor Studies

This paper examines important institutional features of retirement systems in developed and developing countries, and their economic effects. I also identify ways in which public and private retirement systems affect the process of economic adjustment, with special attention to the costs and benefits of encouraging early retirement.

This review shows that a coherent reform plan for a retirement system must identify how much old-age income security is affordable, how the government and private sector can address private market failures in providing this security, and how these objectives can be attained given available financing mechanisms. There is evidence that many retirement systems will be forced to change a great deal in the next few decades. In some cases, retirement benefits will have to be reduced (perhaps by imposing a means test), the age for early retirement will have to be raised, multiple-pillar plans must be integrated and streamlined to rationalize work incentives, and the incentives and opportunities for private saving will be increased. In any case, using high-cost, long-term retirement systems to mitigate short- and medium-term unemployment problems probably will prove costly and inefficient as a solution to problems faced by economies in transition.

Who Should Abate Carbon Emissions?

An International Viewpoint

Graciela Chichilnisky and Geoffrey Heal

NBER Working Paper No. 4425

August 1993

JEL Nos. Q2, H4

Miscellaneous

We review the optimal pattern of carbon emission abatements across countries. We explicitly model the fact that the atmosphere is a public good. Within this framework, we establish that the marginal cost of abatement must be the same in all countries for optimality. These conditions are quite restrictive, and amount to either ignoring distributional issues between countries or operating within a framework in which there can be lump-sum transfers between countries. These results have implications for the use of tradable emission permits, which (as normally advocated) will lead to the equalization of marginal abatement costs across countries.

Growth Effects of Flat Rate Taxes

Nancy L. Stokey and Sergio T. Rebelo

NBER Working Paper No. 4426

August 1993

JEL Nos. H24, H31, O40, O41

Growth

Recent estimates of the potential growth effects of tax reform vary widely, ranging from zero (Lucas, 1990) to eight percentage points (Jones, Manuelli, and Rossi, 1993). Using an endogenous growth model, we assess which features and parameter values are important for determining the quantitative impact of tax reform. We find that factor shares, depreciation rates, the elasticity of intertemporal substitution, and the elasticity of labor supply are critical. On the other hand, the elasticities of substitution in production are relatively unimportant.

Favoritism in Organizations

Canice Prendergast and Robert H. Topel

NBER Working Paper No. 4427

August 1993

Labor Studies

Performance evaluations for workers are typically subjective impressions held by supervisors rather than easily quantifiable measures of output. We argue that perhaps the most important aspect of this is that it gives supervisors the opportunity to exercise their personal preference toward their employees in a way that is detrimental for performance, both for incentive reasons and through misallocation of workers to jobs.

We show that firms will respond to this problem in a number of ways. First, they will make compensation less sensitive to performance, even when workers are risk neutral. Furthermore, firms typically will use bureaucratic procedures for allocating rewards, even though these are known to be inefficient *ex post*. In addition, firms may tie wages to jobs as a means of rewarding the best performers credibly. These organizational changes are used because directly monitoring supervisors' decisions is fraught with problems, among them the creation of "yes men," so that the indirect mechanisms just described are likely to be optimal responses to favoritism.

Assessing Clinton's Program on

Job Training, Workfare, and

Education in the Workplace

James J. Heckman

NBER Working Paper No. 4428

August 1993

Labor Studies

The Clinton administration has made job training and skill upgrading a major priority. Secretary of Labor Robert Reich has already presented a program for skill enhancement, drawing on a new consensus in certain circles of the social science and policy communities about the need to upgrade the nation's skills.

This paper provides background on the problems in the labor market that motivate the new Clinton-Reich

initiatives on training and schooling. It briefly summarizes the proposed strategies and the background philosophy for the Clinton-Reich agenda. It then considers the evidence that supports or contradicts assumptions of their plan. There is a lot of evidence about many of the "new" proposals, because some are reworked versions of old programs that have been evaluated carefully. Other proposals borrow ideas from Germany. I compare the rhetoric that accompanies these proposals in the context of the U.S. labor market. Still other proposals have been evaluated in demonstration projects, but the lessons from these evaluations have not yet influenced administration thinking. In fact, many current plans are based on assumptions that have been discredited in careful empirical studies.

When Do Women Use AFDC and Food Stamps? The Dynamics of Eligibility Versus Participation

Rebecca M. Blank and Patricia Ruggles

NBER Working Paper No. 4429

August 1993

JEL No. I38

Labor Studies

This paper investigates dynamic patterns in the relationship between eligibility for and participation in the Aid to Families with Dependent Children (AFDC) and food stamp programs. We use monthly longitudinal data from the Survey of Income and Program Participation. We find that the majority of spells of eligibility are relatively short, do not result in participation in these programs, and end with increases in income. Participation is most likely to occur among those women with lower current and future earning opportunities, and also is affected by locational and policy parameters. Those who elect to participate in these programs tend to start receiving benefits almost immediately upon becoming eligible, with little evidence of delayed entry into the program. A substantial number of women exit these programs before their eligibility ends; among some of these women at least, it seems likely that unreported changes in income are occurring. In 1989, if all eligible single-parent families had participated in AFDC and food stamps, benefit payments would have been \$13.5 billion higher.

Sustainable Growth and the Green Golden Rule

Andrea Beltratti, Graciela Chichilnisky, and Geoffrey Heal

NBER Working Paper No. 4430

August 1993

JEL Nos. D90, Q20

Miscellaneous

We estimate a growth model with an environmental asset that is both a source of utility and an input to consumption and production. The stock of this asset follows its own ecological dynamics, which are affected by economic activity.

We study the implications of an approach to ranking sequences of consumption and environment over time that places weight on both the characteristics of the sequence over any finite period and over the very long run. Chichilnisky has called these "sustainable preferences." The criterion shows more intertemporal symmetry than the discounted utilitarian approach, which clearly emphasizes the immediate future at the expense of the long run. In this respect, Chichilnisky's criterion captures some of the concerns of those who argue for sustainability and for a heightened sense of responsibility to the future. To characterize optimal paths, we define the "green golden rule," the path that maximizes long-run sustainable utility from consumption and environment.

Did Criminal Activity Increase During the 1980s? Comparisons Across Data Sources

Scott Boggess and John Bound

NBER Working Paper No. 4431

August 1993

JEL No. K42

Labor Studies

It is widely believed that the level of serious criminal activity increased during the 1980s, particularly among the urban underclass. This increase has been mentioned as both a cause and a consequence of the increasingly poor labor market prospects of less-skilled workers. Significant increases in both federal and state incarceration rates seem to support this view. However, data from the Uniform Crime Reports (UCR) suggest only a mild increase in crime over this period, while the National Crime Survey (NCS) actually depicts lower levels of criminal activity. This paper carefully analyzes data from all three of these sources in an attempt to understand the nature of the series and to come to an informed opinion regarding the apparent differences in their trends. We discover that the large increase in the incarceration rate is attributable primarily to an increase in the likelihood of incarceration given arrest. During the latter part of the 1980s, a dramatic increase in the number of arrests and incarcerations for drug law violations also played an important role. The increase in drug-related activity was not registered by either the UCR or NCS because neither series measures the incidence of victimless crime.

Restrictions on Medicaid Funding of Abortion: Effects on Pregnancy Resolutions and Birthweight

Janet Currie, Lucia Nixon, and Nancy Cole

NBER Working Paper No. 4432

August 1993

Labor Studies

Previous research suggests that restricting the availability of abortion reduces average birthweight by increasing the number of unhealthy fetuses that are carried to term. We use data from the National Longitudinal Survey of Youth to ask whether restrictions on Medicaid

funding of abortion have this same effect. We attempt to account for the potential endogeneity of abortion laws by comparing the effects of liberal statutes to those of court injunctions ordering states to fund abortion.

Our results suggest that restrictions *do* increase the probability that African-American and low-income women carry a pregnancy to term, but that they have no direct effect on birthweight. In contrast, measures of the availability of abortion, contraception, and prenatal care at the community level do affect birthweight among African-Americans, but not among whites.

Growth in a Dual Economy

Magnus Blomström and Edward N. Wolff

NBER Working Paper No. 4433

August 1993

JEL Nos. O2, O4

Growth, International Trade and Investment

Growth and structural transformation of the manufacturing sector in developing countries generally are considered to be the result of the expansion of the "modern" (large-scale) sector relative to the "traditional" (small-scale) sector. However, examining the sources of labor productivity growth in Mexican manufacturing does not support such a conclusion. Although we find that labor productivity *levels* vary almost in direct relationship to establishment size, labor productivity *growth* shows no systematic variation by size class. In fact, small establishments have had the same rate of labor productivity growth as larger ones, partly because of the "excise-effect" (that is, the exiting of low-productivity, small plants). Moreover, most of the variation in labor productivity across plant class sizes is caused by differences in capital intensity. The variation in productivity levels across size classes tends to be small. Thus, our results remove some justification for the policy measures that favor large firms in developing countries.

Unemployment Benefits, Labor Market Transitions, and Spurious Flows:

A Multinomial Logit Model

with Errors in Classification

James M. Poterba and Lawrence H. Summers

NBER Working Paper No. 4434

August 1993

JEL Nos. J64, J65, C25

Public Economics

This paper develops an algorithm for analyzing discrete events, such as labor market transitions, when some of these transitions are spurious because of measurement errors. We apply this algorithm to the effect of unemployment insurance (UI) on transitions from unemployment to employment and to leaving the labor force. We find that UI lengthens unemployment spells by reducing both transition rates. We then show that correcting for measurement error *strengthens* the apparent effect of UI on spell durations.

Tax Incentives and the Decision to Purchase Health Insurance: Evidence from the Self-Employed

Jonathan Gruber and James M. Poterba

NBER Working Paper No. 4435

August 1993

JEL Nos. H24, I18

Aging, Health Care, Public Economics

The Tax Reform Act of 1986 introduced a new tax subsidy for the purchase of health insurance by self-employed persons. We analyze the changing patterns of demand for insurance before and after this reform to estimate how its aftertax price affects the choice of whether to buy insurance. We use both traditional models for insurance demand, in which aftertax price is an explanatory variable, and nonparametric tests that compare changes in insurance purchases by self-employed individuals with the coincident changes for other groups. We find that a 1 percent increase in the cost of insurance coverage reduces by as much as 1.8 percentage points the probability that a self-employed household will be insured.

Is Fixed Investment the Key to Economic Growth?

Magnus Blomström, Robert E. Lipsey, and Mario Zejan

NBER Working Paper No. 4436

August 1993

JEL Nos. O4, O5

International Trade and Investment

To determine the direction of causality between them, we examine shares of fixed capital formation in GDP and rates of economic growth for more than 100 countries over successive five-year periods between 1965 and 1985. We find that increases in growth precede increases in rates of capital formation, rather than increased capital formation preceding increased growth. High rates of fixed capital formation accompany rapid growth in per capita income, but we find no evidence that fixed investment is the only or the main source of ignition for economic growth.

Permanent Income, Import Prices, and the Demand for Imported Consumer Durables: A Structural Econometric Investigation

Richard H. Clarida

NBER Working Paper No. 4437

August 1993

JEL No. F41

International Trade and Investment

This paper derives a rational-expectations, permanent-income model of the demand for imported consumer durable goods. I find that imports of consumer durables are quite price elastic in the long run, and that the permanent-income elasticity of imported durable goods demand averages 2.3.

International Evidence on Tradables and Nontradables Inflation

José De Gregorio, Alberto Giovannini, and Holger C. Wolf

NBER Working Paper No. 4438

August 1993

JEL Nos. F40, F31

International Finance and Macroeconomics

Using 1970–85 sectoral data for the OECD, we find that inflation in nontradable goods is higher than inflation in tradables. We identify a shift in demand toward nontradables, and faster growth of total factor productivity in the tradable goods sector, as the prime causes of higher inflation in nontradables. In addition, disinflation attempts and the exchange rate regime appear to have had a significant influence on the relative rate of inflation.

Nominal Income Targeting

Robert E. Hall and N. Gregory Mankiw

NBER Working Paper No. 4439

August 1993

Monetary Economics, Economic Fluctuations

This paper discusses nominal income targeting as a possible rule for the conduct of monetary policy. We begin with why a rule for monetary policy may be desirable, and the characteristics that a good rule should have. We emphasize, in particular, three types of nominal income targets that differ in how they respond to past shocks, to prices, and to real economic activity.

A key question is how any of these rules might be implemented in practice. We suggest that the consensus forecast of future nominal income could play a role in ensuring that the central bank does not deviate from its announced target.

To show how economic performance might have differed historically if the Fed had been committed to some type of nominal income target, we offer simulations of a simple model of the economy. According to the simulations, the primary benefit of nominal income targeting would have been reduced volatility in the price level and the inflation rate. Whether real economic activity would have been less volatile is unclear.

Equity and Nonequity Determinants of FHA Single-Family Mortgage

Foreclosures in the 1980s

Patric H. Hendershott and William R. Schultz

NBER Working Paper No. 4440

August 1993

JEL No. G21

Public Economics

We examine foreclosures on FHA single-family mortgages insured during 1975–87. The importance of the market value of borrower equity, and of the dispersion of national house prices, support much earlier work emphasizing the key role of negative equity in triggering default. The lower the “mean” market value of equity,

and the greater the dispersion, the more likely borrowers will be to have negative equity.

The unemployment rate and the book value of borrower equity also are significant determinants of default. Unemployment can force borrowers to move. The decision to move increases the likelihood of default, because moving costs no longer deter default, and the costs of selling the house reduce the effective equity in it. The book value of equity also is relevant to this decision, because it is what sellers will receive if they move without defaulting. Both of these variables are significant determinants of default, but the employment impact rises as book equity declines. (With large book equity, unemployment should not matter, because selling the house is preferable to default.)

The Life Cycle of a Competitive Industry

Boyan Jovanovic and Glenn M. MacDonald

NBER Working Paper No. 4441

August 1993

JEL No. L6

Productivity, Industrial Organization

Firm numbers first rise, and then fall, as the typical industry evolves. We explain this change in the number of producers, using a competitive model in which opportunities for innovation induce firms to enter, but a firm's failure to implement new technology causes it to exit.

We estimate the model with data from the U.S. automobile tire industry, in which a big shakeout took place during the 1920s. The number of automobiles sold in the United States does not appear to explain this shakeout. Instead, the invention of the Banbury mixer in 1916 appears to have caused the big exit wave. Of course, there were other major inventions in the tire industry, but none seems to have raised the optimal scale of its adopters by enough to cause further shakeouts.

The Term Structure of Forward Exchange Premiums and the Forecastability of Spot Exchange Rates: Correcting the Errors

Richard H. Clarida and Mark P. Taylor

NBER Working Paper No. 4442

August 1993

JEL No. F41

International Finance and Macroeconomics

We present theory and evidence that challenges the view that forward premiums contain little information about subsequent movements in spot rates. Using weekly dollar–mark and dollar–sterling data, we find that spot and forward exchange rates together are represented well by a vector error correction model; there exists exactly the number of cointegrating relationships predicted by a simple theoretical framework; and, a basis for this cointegrating space is the vector of forward premiums. Dynamic forecasts indicate that the information in the forward premiums can be used to reduce the root mean squared forecast error for the spot rate (relative to a random walk forecast) by at least 33 percent at a six-month horizon and by some 50 to 90 percent at a one-year horizon.

Optimality of the Friedman Rule in Economies with Distorting Taxes

**V. V. Chari, Lawrence J. Christiano,
and Patrick J. Kehoe**

NBER Working Paper No. 4443

August 1993

Economic Fluctuations

We find that the Friedman rule will be optimal in three standard models of money if there are homotheticity and separability assumptions on preferences similar to those in the public finance literature on optimal uniform commodity taxation. We show that there is no connection between our results and that of the standard public finance literature that intermediate goods should not be taxed.

International R and D Spillovers

David T. Coe and Elhanan Helpman

NBER Working Paper No. 4444

August 1993

JEL Nos. O4, F1

International Trade and Investment

Investment in R and D affects a country's total factor productivity. Recently, new theories of economic growth have emphasized this link, and also have identified a number of channels through which a country's R and D affects the total factor productivity of its trading partners.

We estimate the effects of the R and D capital stock of a country and its trading partners on the country's total factor productivity. We find that both domestic and foreign R and D capital stocks have large effects on total factor productivity. The foreign R and D capital stocks have particularly large effects on the smaller countries in our sample (22 countries). Moreover, we find that about one-quarter of the worldwide benefits of investment in R and D in the seven largest economies are appropriated by their trading partners.

Trade Blocs, Currency Blocs, and the Disintegration of World Trade in the 1930s

Barry Eichengreen and Douglas A. Irwin

NBER Working Paper No. 4445

August 1993

JEL Nos. N70, F1

International Trade and Investment

The dramatic implosion and regionalization of international trade during the 1930s often has been blamed on the trade and foreign exchange policies that emerged in the interwar period. We provide new evidence on the impact of trade and currency blocs on trade flows from 1928–38 that suggests a blanket indictment of interwar trade policies and payments arrangements is not warranted. Discriminatory trade policies and international monetary arrangements had neither a uniformly favorable nor unfavorable implication for world trade. Instead, the balance of trade-creating and trade-diverting effects depended on the motivations of policymakers and hence on the structure of their policies.

For example, we find that British Commonwealth tariff

preferences affected trade more significantly than the sterling-bloc currency area, but both promoted within-group trade without diverting trade away from nonmembers. Exchange controls and bilateral clearing arrangements enacted by Germany and Central and Eastern European countries, by contrast, dominated other commercial policies in altering trade patterns, but curtailed trade with nonmembers with no offsetting trade-creating effects.

We also find support for Nurkse's hypothesis that exchange rate volatility in the interwar period diminished trade. Our results are relevant to the emerging regional trade and currency areas of today, such as the North American Free Trade Agreement and the European Community's Single Market and European Monetary System. We suggest that their impact lies not in the regional or global character of the policy initiative, but in the structure and design of the underlying policies.

Partial- Versus General-Equilibrium Models of the International Capital Market

Bernard Dumas

NBER Working Paper No. 4446

September 1993

International Finance and Macroeconomics,
Asset Pricing

I discuss and compare two ways of modeling international capital market equilibrium: the orthodox, general-equilibrium approach; and the heterodox, partial-equilibrium Capital Asset Pricing Model (CAPM) approach. The benchmark for this comparison is the model's ability to explain, or take into account, a number of stylized facts of international finance, including: home-equity preference; purchasing power parity deviations and their persistence; and consumption behavior in relation to wealth. In addition, I ask which approach is more likely to help us identify the relevant state variables of the economy. None of the models satisfactorily explains the stylized facts, but the CAPM approach affords the most productive avenue for empirical research in the immediate future.

Lawyers as Agents of the Devil in a Prisoner's Dilemma Game

Orley C. Ashenfelter and David E. Bloom

NBER Working Paper No. 4447

September 1993

Labor Studies

This paper explores the possibility that the costs and benefits of legal representation are structured so that each individual party hopes to exploit the other party, while knowing full well that failing to do so will open up the possibility of being exploited. The first part of the paper shows how the structure of the incentives faced by the parties may be estimated. The second part describes the results of empirical tests in several different settings. The empirical results strongly suggest that the parties do face "prisoner's dilemma" incentives, although no attempt is made to determine whether the parties respond to these interviews.

Credibility of Policies Versus Credibility of Policymakers

Allan Drazen and Paul R. Masson

NBER Working Paper No. 4448

September 1993

JEL Nos. F33, E60

International Finance and Macroeconomics

Standard models of policy credibility, that is, the expectation that an announced policy will be carried out, emphasize the preferences of the policymaker (his "type") and the role of policies in signaling his type. However, whether a policy is carried out also should reflect the state of the economy, so that even a "tough" policymaker may renege on an announced policy in adverse circumstances. We investigate this alternative notion of credibility using an "escape-clause" model of devaluation: a policymaker maintains a fixed parity in good times, but devalues if the unemployment rate gets too high. Our main conclusion is that, if there is persistence in the process driving unemployment, following through with a tough policy in a given period may lower, rather than raise, the credibility of a no-devaluation pledge in subsequent periods. We test this implication on EMS interest rates and find support for our hypothesis.

Specification and Analysis of a Monetary Policy Rule for Japan

Bennett T. McCallum

NBER Working Paper No. 4449

September 1993

JEL Nos. E30, E58

Economic Fluctuations, Monetary Economics

In several small-scale models of the Japanese economy, this paper investigates the performance of an operational monetary policy rule related to ones previously considered for the United States. The rule dictates settings of the monetary base that are designed to produce values of nominal GNP close to targets that grow smoothly at a noninflationary rate. Simulations with quarterly data for 1972–92 yield predominantly favorable results. Experiments with an interest rate instrument also are conducted, but the simulated performance is less desirable. One section discusses issues concerning monetary base control in Japan.

Independent Living and Homeownership: An Analysis of Australian Youth

Steven C. Bourassa, Donald R. Haurin, R. Jean Haurin, and Patric H. Hendershott

NBER Working Paper No. 4450

September 1993

JEL No. R21

Public Economics

This study extends recent work that developed and tested economic models of the joint decisions of household formation and homeownership. The cost of shelter is an important determinant of whether youth live inde-

pendently (apart from parents and nonrelated adults), and the cost of homeownership relative to renting is important to the tenure decision. Simulations suggest that the post-1985 decline and eventual removal of the Australian subsidy for first-time homeowners has lowered the homeownership rate among young households by 23 percent. This is equivalent to slowing the time to first ownership by two years for such households.

Do Low-Income Countries Have a High-Wage Option?

Dani Rodrik

NBER Working Paper No. 4451

September 1993

JEL Nos. F12, O30

International Trade and Investment,

International Finance and Macroeconomics

Poor countries must specialize in standardized, labor-intensive commodities. Middle-income countries may have a richer menu of options available to them if their labor force is reasonably well educated and skilled. This paper is motivated by the possibility that there may exist multiple specialization patterns for countries of the second type.

The multiplicity of equilibriums is created by a coordination problem inherent in high-tech activities. High-tech production may require a range of differentiated intermediate inputs that are nontradable. For the high-tech sector to become viable, a sufficiently large number of intermediaries has to be produced domestically. But if none is currently being produced, there is little incentive for any single firm to produce one on its own. The economy may get stuck in a low-wage, low-tech equilibrium, even though the high-tech sector is viable. As long as the high-tech sector is more capital intensive than the low-tech sector, a high-wage policy would get the high-tech sector going and enhance welfare.

New Goods, Old Theory, and the Welfare Costs of Trade Restrictions

Paul M. Romer

NBER Working Paper No. 4452

September 1993

JEL Nos. O10, F12, B10

Growth

The typical economic model implicitly assumes that the set of goods in an economy never changes. As a result, the predicted efficiency loss from a tariff is small: on the order of the square of the tariff rate. If we loosen this assumption and assume that international trade can bring new goods into an economy, the fraction of national income lost when a tariff is imposed can be much larger: as much as two times the tariff rate. Much of this paper is devoted to explaining why this seemingly small change in the assumptions of a model can have such important positive and normative implications. The paper also asks why the implications of new goods have not been explored more extensively, especially given

that the basic economic issues were identified more than 150 years ago. The mathematical difficulty of modeling new goods no doubt has been part of the problem. An equally if not more important stumbling block has been the deep philosophical resistance that people feel toward the unavoidable logical consequence of assuming that genuinely new things can happen at every juncture: the world as we know it is the result of a long string of chance outcomes.

Consumption Over the Life Cycle and Over the Business Cycle

Orazio P. Attanasio and Martin Browning

NBER Working Paper No. 4453

September 1993

JEL Nos. D30, D91

Economic Fluctuations

This paper assesses the validity of the life-cycle model of consumption. In particular, we address an issue that has received much attention recently, especially in the macroeconomic literature: "excess sensitivity" of consumption growth to income growth. We use a time series of cross sections, and a novel and flexible parameterization of preferences. The former allows us to address aggregation issues directly, while the latter allows both the discount factor and the elasticity of intertemporal substitution (*eis*) to be affected by various observable variables and lifetime wealth.

We find that the excess sensitivity of consumption growth to labor income disappears when we control for demographic variables. This is true both at life-cycle and business-cycle frequencies. Further, estimation of a flexible specification of preferences indicates that the *eis* is a function of several variables, including the *level* of consumption. The *eis* increases with the level of consumption, as expected. Third, the variables that change the *eis* are also important in explaining why we observe excess sensitivity over the business cycle. We are able to reconcile our results with those reported in both the macro and micro literature.

Finally, the *eis* is not very well determined in our specification. However, this result should be taken with care, as we have not made an effort to construct a "preferred" specification, which probably would include additional controls for labor supply behavior.

Our evidence shows that the life-cycle model cannot be dismissed easily. Indeed, we believe that the model does a good job at representing consumption behavior over both the life cycle and the business cycle.

A Cohort Analysis of Saving Behavior by U.S. Households

Orazio P. Attanasio

NBER Working Paper No. 4454

September 1993

JEL Nos. E21, D12

Economic Fluctuations, Public Economics

I analyze the pattern of saving behavior by U.S. house-

holds, using the Consumer Expenditure Survey. My main goal is to explain the decline in aggregate personal saving in the United States in the 1980s. I estimate a "typical" saving-age profile and identify systematic movements of this profile across different cohorts of U.S. households. In addition, I consider different definitions of saving and control for a number of factors that figure in popular explanations of the decline in saving.

I find that the typical saving-age profile presents a pronounced "hump" and peaks around age 60; this profile, at least during the 1980s, was shifted down for those cohorts born between 1925 and 1939. This is consistent with the low level of aggregate saving, because in the 1980s these cohorts were in that part of their life cycle when saving is highest. This result holds for various definitions of saving, with one notable exception: the decline is less pronounced when expenditure on durables is considered as saving. Some other popular explanations of the decline in saving are rejected by the data, including those appealing to the presence of capital gains on real or financial assets.

Diffusion Lags and Aggregate Fluctuations

Boyan Jovanovic and Saul Lach

NBER Working Paper No. 4455

September 1993

JEL No. E3

Economic Fluctuations, Productivity

This paper shows how random product innovations affect the time-series properties of aggregates. We suggest that recurring inventions of new intermediate goods differ in quality, and that their usage spreads gradually through the economy. We examine how fluctuations in per capita GNP are affected by these features of the innovation process. Microdata from the United States show, first, that the dispersion of products' qualities is quite large: its coefficient of variation is 0.56. More importantly, the rate of diffusion of new products is relatively slow: only 4.3 percent of the potential market size is realized every year. Because diffusion is so slow, the model explains only low-frequency movements in per capita GNP in the G-7 countries.

Zoning and the Political Economy of Local Redistribution

Raquel Fernandez and Richard Rogerson

NBER Working Paper No. 4456

September 1993

JEL Nos. H2, H7

Suppose that each community, by majority vote, chooses a property tax rate. Then the proceeds from this tax are redistributed within the community on a per capita basis. Individuals with different initial incomes choose a community in which to reside and the amount of housing to purchase. We examine how a zoning regulation that allows one of the communities to set a minimum housing purchase for each of its residents will affect allocations of tax revenue and welfare. In one case, we assume that

the zoning regulation is exogenous. In the second case, the level of zoning is determined endogenously by majority vote. We find that, contrary to the results of a model with no zoning, wealthy communities may engage in more redistribution than poorer communities do. Further, zoning may cause the wealthy community to become less, rather than more, exclusive. We also find that welfare effects are not monotone in income. It is possible for the wealthiest individuals to be made worse off by the imposition of zoning.

The Efficiency of the Legal System Versus the Income Tax in Redistributing Income

Louis Kaplow and Steven Shavell

NBER Working Paper No. 4457

September 1993

JEL Nos. K00, H20

Law and Economics

Should legal rules be chosen only on the basis of their efficiency, or also on the basis of their distributional effects? We show that redistribution accomplished through legal rules is systematically less efficient than redistribution accomplished through the income tax system, even though the latter distorts incentives to work. In particular, a regime with an inefficient legal rule can be replaced by a regime with an efficient legal rule and a modified income tax system designed to make every person better off.

Realignment Risk and Currency Option Pricing in Target Zones

Bernard Dumas, L. Peter Jennergren, and Bertil Näsälund

NBER Working Paper No. 4458

September 1993

JEL Nos. F31, F33, G13, G15

Asset Pricing, International Finance and Macroeconomics

This paper extends the Krugman target zone model by including a realignment mechanism. The realignment mechanism is such that, except in cases in which a speculative attack occurs, no jump in fundamentals need accompany the jump in the exchange rate. We construct a risk-neutral valuation of currency options. We then illustrate some properties of option values under realignment risk.

The World Price of Foreign Exchange Risk

Bernard Dumas and Bruno Solnik

NBER Working Paper No. 4459

September 1993

JEL Nos. G11, G12, G15

Asset Pricing, International Finance and Macroeconomics

We consider a world capital market in which investors are heterogeneous: investors from different countries differ in the prices they pay for goods that consume the income from their investments. In this setting, the international capital asset pricing market (CAPM) incorpo-

rates rewards for exchange rate risk, as well as the traditional reward for market-covariance risk. This paper seeks to determine whether these additional risk premiums play a significant role in the pricing of securities.

We test a conditional version of the CAPM. It builds on the recent empirical literature pointing out that stock market returns may be predicted in part on the basis of instrumental variables, such as interest rates and dividend yields. All previous tests of the international CAPM with exchange risk premiums considered only the unconditional version and have been inconclusive.

Uncertain Demand, the Structure of Hospital Costs, and the Cost of Empty Hospital Beds

Martin Gaynor and Gerard F. Anderson

NBER Working Paper No. 4460

September 1993

JEL Nos. I11, D24, L20

Health Care

Hospitals face uncertainty over demand for their services, which leads them to hold excess capacity to avoid turning away patients. We reformulate the theory of cost and production to take account of this uncertainty.

We calculate the cost of empty hospital beds. Utilized capacity in the hospital industry, as measured by the inpatient hospital bed occupancy rate, has declined gradually since 1980. It was approximately 65 percent in 1992. Congress and the administration are concerned that the costs associated with empty beds represent wasteful expense. Some have proposed an adjustment to Medicare payment rates that will penalize hospitals with low occupancy rates.

We estimate a short-run cost function for a hospital facing uncertain demand using data from a national sample of over 5000 hospitals for 1983–7. We calculate the cost of an empty hospital bed as \$61,395 in 1987 dollars. We estimate that a 1 percent decrease in the number of hospital beds would decrease hospital costs by slightly over 0.5 percent. These costs are substantial, but smaller than some others have indicated.

Bilateral Search as an Explanation for Labor Market Segmentation and Other Anomalies

Kevin Lang and William T. Dickens

NBER Working Paper No. 4461

September 1993

JEL No. J31

Labor Studies

Since applying for jobs is costly, workers prefer to apply where they are likely to be employed and, therefore, for jobs that attract fewer applicants of higher quality than they are. Since creating vacancies is expensive, firms create more vacancies when many workers are looking for jobs. Our model captures these ideas and accounts for worker heterogeneity by assuming three

types of nearly identical workers. Infinitesimal differences in quality generate a discrete distribution of wages. For some parameter values, lower-quality workers have discretely lower wages and higher unemployment than better-quality workers. Moreover, increasing the number of the lowest-quality workers can make all workers better off.

The Effect of Labor Market Rigidities on the Labor Force Behavior of Older Workers

Michael D. Hurd

NBER Working Paper No. 4462

September 1993

JEL Nos. J14, J26

Aging

Most older workers retire completely from full-time work with no intervening spell of part-time work. This is incompatible with a model of retirement in which tastes for work gradually shift with age toward leisure, and hours may be chosen freely. A survey of institutional arrangements, such as pensions and Social Security, and of normal business practices resulting from fixed costs of employment and team production leads to the conclusion that most workers face rather limited choices: a high-paying year-round job, or low-paying part-time work. Therefore, someone approaching retirement who wants to retire gradually from a career-type job will have to change jobs, losing job-related skills, and to compete for low-paying, easy-entry jobs. Faced with that option, most people retire completely.

Competitive Diffusion

Boyan Jovanovic and Glenn MacDonald

NBER Working Paper No. 4463

September 1993

JEL No. L1

Productivity

The usual explanation for why the producers of a given product use different technologies involves "vintage capital": a firm understands the frontier technology, but still can prefer an older, less efficient technology in which it has made specific investments in physical and human capital. This paper develops an alternative, "information-barrier" hypothesis: firms differ in the technologies they use because it is costly for them to overcome the informational barriers that separate them. The paper makes both innovative and imitative effort endogenous.

We focus on the slow spread of diesel locomotives, which cannot be explained by the vintage-capital hypothesis alone. Contrary to that hypothesis, for instance, railroads were buying new steam locomotives long after the diesel first came into use. That is exactly as the information-barrier hypothesis would imply.

Getting Together and Breaking Apart: The Decline of Centralized Collective Bargaining

Richard B. Freeman and Robert Gibbons

NBER Working Paper No. 4464

September 1993

Labor Studies

We study the stability of centralized wage-setting systems in light of the ongoing decentralization of labor relations in much of the western world. The decline of peak-level bargaining in Sweden, the traditional archetype of centralized collective bargaining, is the key case we study, but is intended to speak to other cases as well.

Like many earlier analysts, we argue that centralization offers potential economic gains by internalizing the costs of inefficient wage inflation. However, with this potential benefit comes a cost: centralized decisions are not sufficiently responsive to local conditions. To avoid excessive inflexibility, the center can allow for "wage drift" at the local level (that is, local wage settlements above the central agreement). But once the center allows wage drift, it becomes difficult to distinguish between justifiable drift caused by local economic conditions and unjustifiable drift in the self-interest of local bargaining pairs. Thus, centralized wagesetting systems face a trade-off: allowing less drift makes it easier to monitor local bargaining pairs, but harder to achieve the appropriate responsiveness to local conditions.

We develop a model of this trade-off, and consider how the center's optimal policy moves toward decentralization (that is, toward allowing more drift) as the cost of inflexibility rises. We then interpret the evolution of centralized bargaining in Sweden in light of the model. We argue that centralized bargaining flourished when the private-sector, blue-collar workers dominated the work force, but began to wane as public-sector and white-collar unions grew in strength, as skill differentials in decentralized labor markets grew in size, and as product market competition intensified (especially through the shortening of product life cycles).

A Domino Theory of Regionalism

Richard E. Baldwin

NBER Working Paper No. 4465

September 1993

JEL Nos. F01, F13, F15

International Trade and Investment

Regional liberalization sweeps the globe like wildfire while multilateral trade talks proceed at a glacial pace. Why are countries eager to liberalize regionally but reluctant to do so multilaterally? Some suggest that multilateralism is too cumbersome for contemporary trade issues. This paper proposes a very different answer, though.

Recent regionalism is caused by two idiosyncratic events, multiplied by a domino effect. The triggering events—the U.S.–Mexico FTA and the EC's 1992 program—have nothing to do with the GATT talks. The domino effect is simple: political equilibriums, which bal-

ance anti- and pro-membership forces, determine governments' stances on regional liberalization. Domestic exporters to regional blocs are a powerful pro-membership constituency. An event that triggers closer integration within an existing bloc harms the profits of nonmember exporters, thus stimulating them to boost their pro-membership political activity. The extra activity alters the political equilibrium, leading some countries to join. This enlargement further harms nonmember exporters, since they now face a disadvantage in a greater number of markets. This second round effect brings forth more pro-membership political activity, and a further enlargement of the bloc. The new political equilibrium is marked by larger regional trading blocs. In the meantime, regionalism appears to spread like wildfire.

Scale, Scope, and Spillovers: The Determinants of Research Productivity in the Pharmaceutical Industry

Rebecca Henderson and Iain Cockburn

NBER Working Paper No. 4466

September 1993

JEL Nos. O3, L65, C65

Productivity

This paper presents the results of a study of the determinants of research productivity in the pharmaceutical industry. Using disaggregated, internal firm data at the research program level from ten major pharmaceutical companies, we find no evidence of increasing returns to scale at either the firm or the research program level. However, our results suggest that there are three benefits to running research programs within the context of larger and more diversified R and D efforts: economies of scale arising from sharing fixed costs; economies of scope arising from the opportunity to exploit knowledge across program boundaries within the firm; and the enhanced ability to absorb internal and external spillovers. We also find that spillovers between firms may play a major role in increasing research productivity. The paper also speaks directly to the question of firm heterogeneity. A significant proportion of the "firm effect" identified in previous studies can be explained by the slowly changing composition of the research portfolio, as well as by less easily measured aspects of innovative capability.

Optimal Transparency in a Dealership Market with an Application to Foreign Exchange

Richard K. Lyons

NBER Working Paper No. 4467

September 1993

JEL Nos. G15, G14

International Finance and Macroeconomics

This paper addresses the issue of optimal transparency in a multiple-dealer market. In particular, we ask: would risk-averse dealers prefer ex ante that signed or-

der flow were observable? We answer this question with the solution to a mechanism design problem. The resulting incentive-efficient mechanism is one in which signed order flow is not observable. Rather, dealers prefer a slower pace of price discovery, because it induces additional risk sharing. Specifically, slower price discovery permits additional trading with customers prior to revelation; this reduces the variance of unavoidable position disturbances, thereby reducing the marketmaking risk inherent in price discovery. We then apply the framework to the spot foreign exchange market in order to better understand the current transparency in that market.

Firms' Use of Outside Contractors: Theory and Evidence

Katharine G. Abraham and Susan K. Taylor

NBER Working Paper No. 4468

September 1993

JEL Nos. J41, L14

Labor Studies

A firm's decision to contract out for business support services may be influenced by the wage and benefit savings it could realize, the volatility of its output demand, and the availability of specialized skills possessed by the outside contractor. Analysis of newly available establishment-level data shows that all three of these factors help to explain observed contracting behavior. The reported empirical findings are relevant both for understanding the recent growth in business support service contracting and for understanding firms' relationships with their own employees.

Health Insurance Availability and the Retirement Decision

Jonathan Gruber and Brigitte C. Madrian

NBER Working Paper No. 4469

September 1993

JEL Nos. H51, I10, J26

Aging, Health Care

Because individuals aged 55-64 may face large and uncertain medical expenditures without the guarantee of public insurance coverage provided by Medicare, the availability of post-retirement health insurance could be an important determinant in their retirement decisions. We investigate this effect by focusing on state and federal "continuation of coverage" mandates that grant the retirees the right to continue purchasing health insurance through a previous employer for a specified number of months after leaving the firm. We exploit variation in the timing and generosity of these laws.

Using data from the Current Population Survey and the Survey of Income and Program Participation on 55-64-year-old males, we find a sizable and significant effect of continuation coverage on retirement: one year of mandated continuation benefits raises retirement rates by 20 percent. The effect appears to be uniform at all ages, not larger near the age of eligibility for Medicare. There is also a large increase in the insurance

coverage of individuals who would have retired in the absence of continuation benefits. Our findings have important implications for policies that change the insurance coverage of early retirees, including national health insurance.

Saving and Growth: A Reinterpretation

Christopher D. Carroll and David N. Weil

NBER Working Paper No. 4470

September 1993

JEL Nos. E21, O40

Economic Fluctuations, Growth

We examine the relationship between income growth and saving using both cross-country and household data. We find that growth Granger-causes saving at the aggregate level, but that saving does not Granger-cause growth. We also find that households with predictably higher income growth save more than households with predictably low growth. We argue that standard permanent-income models of consumption cannot explain these findings, but that a model of consumption with habit formation may. The positive effect of growth on saving implies that previous estimates of the effect of saving on growth may be overstated.

Tests of Microstructural Hypotheses in the Foreign Exchange Market

Richard K. Lyons

NBER Working Paper No. 4471

September 1993

JEL Nos. F31, G15

International Finance and Macroeconomics

This paper introduces a three-part dataset on transactions to test various hypotheses about the spot foreign exchange market. In particular, I test for the effects of trading volume on quoted prices through the two channels stressed in the literature: the information channel and the inventory-control channel. I find that trades have both a strong information effect and a strong inventory-control effect, supporting both strands of microstructure theory. The bulk of equity-market studies also find an information effect; however, these studies typically interpret this as evidence of inside information. Since there are no insiders in the foreign exchange market, this finding suggests a broader conception of the information environment, at least in this context.

Cross-Sectional Efficiency and Labor Hoarding in a Matching Model of Unemployment

Giuseppe Bertola and Ricardo J. Caballero

NBER Working Paper No. 4472

September 1993

JEL Nos. E24, J63

Economic Fluctuations

We study positive and normative aspects of steady-

state equilibrium in a market in which firms of endogenous size experience idiosyncratic shocks and undergo a costly search process to hire their workers. The stylized model we propose highlights interactions between job-security provisions and sectoral shocks in determining the natural rate of unemployment, the allocation of labor, and the extent of labor hoarding. The model also rationalizes cross-sectional asymmetries of gross employment flows at the firm level. In our model, in which productivity and search costs are dynamically heterogeneous across firms, decentralized wage bargains imply important cross-sectional inefficiencies, which overshadow the static search inefficiencies on which simpler models focus.

Better Late Than Early: Vertical Differentiation in the Adoption of a New Technology

Prajit K. Dutta, Saul Lach, and Aldo Rustichini

NBER Working Paper No. 4473

September 1993

JEL Nos. O3, L15

After the initial breakthrough in the research phase of R and D, a new product undergoes a process of change, improvement, and adaptation to market conditions. We model the strategic behavior of firms in this development phase of R and D. We emphasize that a key dimension to this competition is the innovations that lead to product differentiation and quality improvement. In a duopoly model with a single adoption choice, we derive the level and diversity of product innovations endogenously. We demonstrate the existence of equilibria in which one firm enters early with a low-quality product, while the other continues to develop the technology and eventually markets a high-quality good. In such an equilibrium, no monopoly rent is dissipated and the later innovator makes more profits. Incumbent firms may well be the early innovators, contrary to the predictions of the "incumbency inertia" hypothesis.

Good Policy or Good Luck? Country Growth Performance and Temporary Shocks

William Easterly, Michael Kremer, Lant Pritchett, and Lawrence H. Summers

NBER Working Paper No. 4474

September 1993

JEL No. O40

Growth

Much of the new growth literature stresses country characteristics, such as education levels or political stability, as the dominant determinant of growth. However, growth rates are highly unstable over time, with a correlation across decades of 0.1 to 0.3, while country characteristics are stable, with cross-decade correlations of 0.6 to 0.9. Shocks, especially to terms of trade, play a large role in explaining variance in growth. These find-

ings suggest either that shocks are important relative to country characteristics in determining long-run growth, or that worldwide technological change determines long-run growth while country characteristics determine relative income levels.

Patent Protection: Of What Value and for How Long?

Jean Olson Lanjouw

NBER Working Paper No. 4475

September 1993

JEL Nos. O31, O34

Productivity

I empirically estimate the private value of patent protection for four technology areas—computers, textiles, combustion engines, and pharmaceuticals—using new patent data for West Germany from 1953 to 1988. Patentees must pay to keep their patents in force. After developing a model of optimal renewal decisions incorporating both learning about an innovation and the market, as well as the possibility of infringements, I calculate the distribution of returns over the life of a group of patents for each technology. My results indicate that learning is completed within six years, that obsolescence is rapid, and that the distributions of patent value are very skewed.

Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?

Brigitte C. Madrian

NBER Working Paper No. 4476

September 1993

JEL Nos. H51, I10, J63

Productivity

This paper assesses the impact of employer-provided health insurance on job mobility by exploring the extent to which workers are locked into their jobs because the exclusion of preexisting conditions makes it expensive for individuals with medical problems to relinquish their current insurance. I compare the difference in the turnover rates of those with high and low medical expenses for those with and without employer-provided health insurance. Using data from the 1987 National Medical Expenditure Survey, I estimate that job-lock reduces the voluntary turnover rate of those with employer-provided health insurance by one-fourth, from 16 percent to 12 percent per year.

Intergenerational Transfers, Aging, and Uncertainty

David N. Weil

NBER Working Paper No. 4477

September 1993

JEL Nos. E21, J14

Aging

Research on intergenerational transmission of wealth

has pointed to uncertainty—about the date of one's own death, for example—as a potential source of significant bequests. In this paper, I examine the effects of this same uncertainty on the behavior of those who expect to receive bequests. Potential heirs who are prudent will consume less than would be warranted by the size of their expected bequests, and thus average consumption will rise at the age when actual bequests are received.

Population aging, by changing the relative sizes of the bequeathing and the receiving generations, raises the average size of bequests received and reduces the saving of the receiving generation. I show that accounting for the effects of uncertainty slows down the reduction in saving that results from population aging.

Trade, Jobs, and Wages

Paul R. Krugman and Robert Z. Lawrence

NBER Working Paper No. 4478

September 1993

JEL No. F00

International Finance and Macroeconomics,
International Trade and Investment

There is a broad consensus among U.S. opinion leaders that our economic problem is largely one of failures of international competition: trade deficits have eroded our manufacturing base; inability to sell on world markets has been a major drag on economic growth; and imports from low-wage countries have caused a widening of income inequality. This paper summarizes recent evidence on these issues, and shows that while there may be a grain of truth to each complaint, the effect in each case is quantitatively minor. The arithmetic of "competitiveness" just doesn't work.

Limited Insurance Portability and Job Mobility: The Effects of Public Policy on Job-Lock

Jonathan Gruber and Brigitte C. Madrian

NBER Working Paper No. 4479

September 1993

JEL Nos. H51, I10, J63

Public Economics, Health Care, Labor Studies

The link between health insurance and the workplace in the United States has led to concern over the possibility of reductions in job mobility, or "job-lock," induced by insurance. Designing health insurance reforms that retain employer-based coverage but mitigate the extent of job-lock requires understanding the policies that job-lock responds to.

We study a policy of limited insurance portability, adopted by a number of states and the federal government over the last 20 years. "Continuation of coverage" mandates grant individuals the right to continue purchasing health insurance through their former employers for some period of time after leaving their jobs. We find that the passage of these mandates caused a significant increase in the job mobility of prime-age male workers. This suggests that a sizable share of job-lock arises from short-run concerns over portability, rather than from long-run problems.

Subjective Performance Measures in Optimal Incentive Contracts

George Baker, Robert S. Gibbons, and Kevin J. Murphy

NBER Working Paper No. 4480

September 1993

JEL Nos. J33, J41

Labor Studies

Objective measures of performance are seldom perfect. As a consequence, incentive contracts often include important subjective components that mitigate the incentive distortions caused by these imperfect measures. This paper explores the combined use of subjective and objective measures of performance in implicit and explicit incentive contracts.

Naturally, objective and subjective measures often are substitutes. We show that if objective measures are sufficiently close to perfect, then no implicit contracts are feasible (because the firm's fallback position after renegeing on an implicit contract is too attractive). We also show that objective and subjective measures can reinforce each other: if objective measures become more accurate, then in some circumstances the optimal contract puts more weight on subjective measures (because the improved objective measures increase the value of the ongoing relationship, and so reduce the firm's incentive to renege). Finally, we analyze the use of subjective weights on objective performance measures, and provide case-study evidence consistent with our analyses.

Could Stable Money Have Averted the Great Contraction?

Anna J. Schwartz, Michael D. Bordo, and Ehsan U. Choudhri

NBER Working Paper No. 4481

October 1993

JEL No. E50

Monetary Economics

We test the hypothesis that the Great Contraction would have been attenuated if the Fed had not allowed the money stock to decline. We simulate a model that estimates separate relations for output and the price level, and assumes that output and price dynamics are not especially sensitive to policy changes. The simulations include a strong and a weak form of Friedman's constant money growth rule. The results support the hypothesis that the Great Contraction would have been mitigated and shortened if the Fed had followed a constant money growth rule.

Lessons from the East Asian NICs: A Contrarian View

Alwyn Young

NBER Working Paper No. 4482

October 1993

JEL Nos. O40, O10, O53

Growth

The unusually rapid and prolonged growth of both

output and exports in the newly industrializing countries (NICs) of East Asia has led many economists to believe that productivity growth there, particularly in the manufacturing sectors, has been extraordinarily high. This view in turn has led to a growing belief in the "dynamic" (that is, total factor productivity) gains from an outward orientation. But this view fails to take into account the equally unusual rapid growth of both capital and labor input in these economies.

Using the Summers and Heston and OECD datasets, I do some simple calculations to show that the East Asian NICs are not, in general, substantial outliers as regards productivity growth in the aggregate economy and in manufacturing in particular. The principal lessons to be drawn from the NICs concern the potential gains from factor accumulation and the sectoral reallocation of resources, that is, "static" neoclassical gains that have fueled the dynamic growth of these economies for more than 20 years.

Using Geographic Variation in College Proximity to Estimate the Return to Schooling

David Card

NBER Working Paper No. 4483

October 1993

JEL Nos. J24, I21

Labor Studies

This paper explores the use of proximity to college as an exogenous determinant of schooling. I find that men who grew up in labor markets with a college nearby have significantly higher education and earnings than other men. The gains in education and earnings are concentrated among men with poorly educated parents—those who otherwise would stop schooling at relatively low levels. When proximity to a college is taken as an exogenous determinant of schooling, the implied estimates of the return to schooling are 25–60 percent higher than conventional estimates.

Since the effect of a nearby college on educational attainment varies by family background, it is possible to test whether college proximity is legitimately exogenous. My results affirm that marginal returns to education among children of less-educated parents are as high, and perhaps much higher, than the rates of return estimated by conventional methods.

Self-Defeating Regional Concentration

Kiminori Matsuyama and Takaaki Takahashi

NBER Working Paper No. 4484

October 1993

JEL Nos. F12, O11, R13

International Trade and Investment

We present a simple model of a two-region economy in which undesirable concentration may occur. With freedom to choose where to live, individuals in this economy concentrate in one region in their pursuit of a better life, and end up becoming worse off. We charac-

terize the conditions under which such self-defeating concentration occurs in terms of a few key parameters, including economies of scale in nontradable service sectors, regional differences in labor productivity in tradable goods sectors, and substitutability of tradable goods in consumption.

Credit Channel or Credit Actions?

An Interpretation of the Postwar

Transmission Mechanism

Christina D. Romer and David H. Romer

NBER Working Paper No. 4485

October 1993

JEL Nos. E52, E58, E51

Monetary Economics, Economic Fluctuations

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

Income Distribution, Political

Instability, and Investment

Alberto Alesina and Roberto Perotti

NBER Working Paper No. 4486

October 1993

Miscellaneous

We successfully test the following hypotheses on a sample of 70 countries for 1960–85: income inequality, by fueling social discontent, increases sociopolitical instability. That instability, by creating uncertainty in the politicoeconomic environment, reduces investment. As a consequence, income inequality and investment are related inversely. And, since investment is a primary engine of growth, we thus identify a channel for an inverse relationship between income inequality and growth.

We measure sociopolitical instability with indexes that capture the occurrence of more-or-less violent phenomena of political unrest. We test our hypotheses by estimating a two-equation model in which the endogenous variables are investment and an index of sociopolitical instability.

Measuring Noise in Inventory Models

Louis J. Maccini and Steven N. Durlauf

NBER Working Paper No. 4487

October 1993

JEL No. G22

Economic Fluctuations

This paper has two purposes. One is to assess different models of inventory behavior in terms of their ability to approximate the realized data on inventories. We do this initially for the pure production smoothing model, and then for a sequence of generalizations of the model. Our analysis both performs specification tests and measures the deviations of the data from each null model, which we refer to as model noise. This involves the introduction of a noise ratio, which provides a metric for measuring the magnitude of the noise component of the data.

Second, we explore whether observed cost shocks, including in particular carefully measured series on raw materials prices, can be helpful in explaining inventory movements. We find that the basic production level smoothing model of inventories, augmented by buffer stock motives, observed cost shocks properly measured, and to a lesser extent stockout avoidance motives, appears to approximate monthly inventory data well.

Population Increase, Extralegal

Appropriation, and the End of Colonialism

Herschel I. Grossman and Murat Iyigun

NBER Working Paper No. 4488

October 1993

JEL Nos. F02, J22

Miscellaneous

Between 1946 and 1976, the European powers granted independence to all of their large colonies in Africa and Southeast Asia. This paper attempts to provide an economic explanation for this remarkable ending to the era of colonialism. Our main theoretical innovation is to consider the effect of population increase on the allocation of time by the indigenous population between productive and subversive activities. Our analysis suggests that the increase in population during the colonial period increased the potential return to extralegal appropriation of the profits of colonial companies, until the colonies became a net burden on the metropolitan governments. The analysis also suggests that there was less subversive activity in colonies in which the market for indigenous labor was monopsonized because monopsonistic employers internalized the potential negative effect of extralegal appropriation on net profits.

Dynamic Pricing in Retail Gasoline Markets

Severin Borenstein and Andrea Shepard

NBER Working Paper No. 4489

October 1993

Industrial Organization

This paper tests for price patterns in retail gasoline markets consistent with those predicted by models of implicit collusion among firms. Recent supergame mod-

els show that the highest supportable collusive price is a function of today's profit relative to expected future profit: collusive prices are higher when predictable changes in demand or cost cause firms to expect that collusive profits are increasing rather than declining. *Ceteris paribus*, collusive profits will be expected to increase when demand is expected to increase and/or costs are expected to decline. Using panel data on sales volume, and retail and wholesale prices in 59 cities over 72 months, we find results consistent with these predictions. Controlling for *current* demand and input price, the elasticity of current retail margins with respect to expected demand next month is about 0.37. The elasticity of current margins with respect to wholesale price next month is about -0.37. These results are not consistent with inventory effects.

Optimal Fiscal Policy in a Business Cycle Model

V. V. Chari, Lawrence J. Christiano, and Patrick J. Kehoe

NBER Working Paper No. 4490

October 1993

Economic Fluctuations

We develop the quantitative implications of optimal fiscal policy in a business cycle model. In a stationary equilibrium, the *ex ante* tax rate on capital income is approximately zero. There is an equivalence class of *ex post* capital income tax rates and bond policies that support a given allocation. The tax rate on labor income fluctuates very little, and inherits the persistence properties of the exogenous shocks. Thus, there is no presumption that optimal labor tax rates follow a random walk. The welfare gains from smoothing labor tax rates and making *ex ante* capital income tax rates zero are small. Most of the welfare gains come from an initial period of high taxation on capital income.

Estimates of the Returns to Schooling from Sibling Data: Fathers, Sons, and Brothers

Orley C. Ashenfelter and David J. Zimmerman

NBER Working Paper No. 4491

October 1993

JEL No. J31

Labor Studies

We use data on brothers, and fathers and sons, to estimate the economic returns to schooling. Our goal is to determine whether the correlation between earnings and schooling is caused, in part, by the correlation between family backgrounds and schooling. The basic idea is to contrast the differences between the schooling of brothers, and fathers and sons, with the differences in their respective earnings. Since individuals linked by family affiliation are more likely to have similar innate ability and family backgrounds than randomly selected individuals, our procedure provides a straightforward control for unobserved family attributes.

Our empirical results indicate that, in the sample of brothers, the ordinary-least-squares estimates of the return to schooling may be biased upward by some 25 percent by the omission of family background factors. Adjustments for measurement error, however, imply that the intrafamily estimate of the returns to schooling is biased downward by about 25 percent, so that the ordinary-least-squares estimate suffers from very little overall bias. Using data on fathers and sons introduces some ambiguity into these findings, because commonly used specification tests reject our simplest models of the role of family background in the determination of earnings.

Small Business and Job Creation: Dissecting the Myth and Reassessing the Facts

Steven J. Davis, John C. Haltiwanger, and Scott Schuh

NBER Working Paper No. 4492

October 1993

JEL Nos. J63, J21

Economic Fluctuations, Labor Studies

We investigate how job creation and destruction vary by employer size in the U.S. manufacturing sector during 1972 to 1988. We find, in general, that the conventional wisdom about the job-creating prowess of small business rests on misleading interpretations of the data. Further, many previous studies of the job creation process rely on data that are not suitable for drawing inferences about the relationship between employer size and job creation.

Large plants and firms do account for most of the newly created and newly destroyed manufacturing jobs. And, survival rates for new and existing manufacturing jobs increase sharply with employer size. Finally, smaller manufacturing firms and plants exhibit sharply higher *gross* rates of job creation but not higher *net* rates.

International Business Cycles: Theory and Evidence

David K. Backus, Patrick J. Kehoe, and Finn E. Kydland

NBER Working Paper No. 4493

October 1993

JEL Nos. F11, F30, F41

International Finance and Macroeconomics

We review recent work comparing properties of international business cycles with those of dynamic general equilibrium models. We emphasize two discrepancies between theory and data. First, the consumption/output/productivity anomaly: in the data, we generally find that the correlation across countries of output fluctuations is larger than the analogous consumption and productivity correlations. In theoretical economies, we find for a wide range of parameter values that the consumption correlation exceeds the productivity and output correlations.

The second anomaly concerns relative price movements: the standard deviation of the terms of trade is considerably larger in the data than it is in theoretical economies. We speculate on changes in theoretical structure that might bring theory and data closer together.

Sticking It Out: Entrepreneurial Survival and Liquidity Constraints

Douglas Holtz-Eakin, David Joulfaian, and Harvey S. Rosen

NBER Working Paper No. 4494

October 1993

JEL No. H30

Public Economics

We examine why some individuals survive as entrepreneurs, and analyze the growth of entrepreneurial enterprises, conditional on surviving. Our focus is the role of access to capital; that is, to what extent do liquidity constraints increase the likelihood of entrepreneurial failure?

We assume that if entrepreneurs cannot borrow to attain their profit-maximizing levels of capital, then those with substantial personal financial resources will be more successful than those without. We study the 1981 and 1985 federal individual income tax returns of a group of people who received inheritances and identify those individuals who were sole proprietors in 1981. We then determine the extent to which the decision to remain a sole proprietor was influenced by the magnitude of the inheritance, which increased liquidity.

We find that liquidity constraints exert a noticeable influence on the viability of entrepreneurial enterprises. For example, a \$150,000 inheritance increases by 1.3 percentage points the probability that an individual will continue as a sole proprietor. Conditional on the enterprise's surviving, the receipts will increase by almost 20 percent.

European Exchange Rate Credibility Before the Fall

Andrew K. Rose and Lars E. O. Svensson

NBER Working Paper No. 4495

October 1993

JEL No. F31

International Finance and Macroeconomics

We analyze realignment expectations that measure exchange rate credibility for European exchange rates, using daily financial data since the inception of the European Monetary System. It is difficult to find economically meaningful relationships between realignment expectations and macroeconomic variables, although there are signs that lower inflation improves credibility. Statistically, many movements to realignment expectations are common to Exchange Rate Mechanism (ERM) participants. There were few indications of poor ERM credibility before late August 1992; the dimensions of the currency crisis of September 1992 appear to have taken both policymakers and private agents largely by surprise.

The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform Act

Martin Feldstein

NBER Working Paper No. 4496

October 1993

JEL No. H2

Public Economics

This paper reports new estimates of the sensitivity of taxable income to changes in tax rates based on a comparison of the tax returns of the *same* individual taxpayers before and after the 1986 tax reform. This comparison is done by using a panel of more than 4000 individual tax returns created by the Treasury that matches tax returns for the same taxpayers in different years.

The analysis emphasizes that the response of taxable income is much more general than the response of traditional measures of labor supply, and is likely to be much more sensitive to tax rates.

The evidence shows a substantial response of taxable income to changes in marginal tax rates. The differences-of-differences calculations imply an elasticity of taxable income with respect to the marginal net-of-tax rate that is at least one, and could be substantially higher.

The paper includes a brief discussion and simulation analysis of the implications of these estimates for the likely impact of the 1993 tax rate increases on tax revenues. Even the lowest estimated elasticity implies that the tax rate changes enacted in 1993 will lead to little additional personal income tax revenue.

The Impact of Alcohol Consumption and Marijuana Use on High School Graduation

Tetsuji Yamada, Michael Kendix, and Tadashi Yamada

NBER Working Paper No. 4497

October 1993

JEL No. I10

Health Economics

We use data from the National Longitudinal Survey of Youth to estimate the relationship between high school graduation and alcohol and marijuana use among high school students. We also estimate these students' demands for each of these substances.

Our results show that there are significant adverse effects of alcohol and marijuana use on high school graduation. In addition, we find that beer taxes, minimum drinking age laws, and marijuana decriminalization have a significant impact on the demand for these substances.

Our findings have important policy implications. We find that a 10 percent increase in the beer tax reduces alcohol consumption among high school students, which in turn raises the probability of high school graduation by about 3.7 percent. Further, a 10 percent increase in liquor prices raises the probability of high school graduation by 6.6 to 8.2 percent. Raising the minimum drinking age for liquor also reduces liquor and wine consumption, and consequently improves the probability of high school graduation.

Fiscal Anarchy in the United Kingdom— Modeling Poll Tax Noncompliance

Timothy Besley, Ian Preston, and Michael Ridge

NBER Working Paper No. 4498

October 1993

JEL Nos. H26, H71, K42

Public Economics

The United Kingdom's experience with the poll tax reminds us that even in an economy with a relatively well-developed detection and legal system, one cannot take tax compliance for granted. The experience of the poll tax provides a unique opportunity to study many dimensions of tax compliance. We model nonpayment rates in a short panel of data on the 366 English local authorities. The transparent observability of individual and aggregate liabilities makes reliable measurement of rates of nonpayment possible. Moreover, these rates rose to unprecedented levels, as well as exhibiting considerable variation across authorities. Together with the variation in local taxes both between districts and over time, this creates an ideal opportunity for empirical investigation. Our empirical specification allows us to investigate the determinants of compliance as a function of authority characteristics from census and other geographical data. Moreover, the analysis takes seriously the possibility of neighborhood influences across authority boundaries. Our empirical results confirm the idea that higher taxes lead to larger compliance problems, and that attempts to enforce compliance have a positive effect. Neighborhood effects on noncompliance were less conspicuous, figuring significantly, if at all, only in the final year.

Fiscal Policy and Economic Growth: An Empirical Investigation

William Easterly and Sergio T. Rebelo

NBER Working Paper No. 4499

October 1993

JEL Nos. O40, E62

Growth

We describe the empirical regularities linking fiscal policy variables, the level of development, and the rate of growth. We use historical data, recent cross-section data, and newly constructed public investment series. Our main findings are: 1) there is a strong association between the level of development and the fiscal structure: poor countries rely heavily on international trade taxes, while income taxes are important only in developed economies. 2) Fiscal policy is influenced by the scale of the economy, measured by its population. 3) Investment in transport and communication is correlated consistently with growth, while the effects of taxation are difficult to isolate empirically.

The Dependent Economy Model with Both Traded and Nontraded Capital Goods

William Easterly and Sergio T. Rebelo

NBER Working Paper No. 4500

October 1993

JEL Nos. F21, F41

International Trade and Investment,

International Finance and Macroeconomics

Models of the dependent economy with investment have been criticized for arbitrarily assuming that capital is either tradable or nontradable, and for choosing either the traded or nontraded sector to be capital intensive. Our model incorporates both types of capital, and shows that it is the relative sectoral intensity of nontraded capital that matters for the dynamic adjustment of the relative price of nontradables. When the traded sector is relatively intensive in nontraded capital, the saddlepath is flat (at the long-run value of the relative price of nontradables). When the nontraded sector is relatively intensive in nontraded capital, the saddlepath is sloped negatively. The relative sectoral intensity of traded capital primarily affects the adjustment of the current account. In particular, we consider the role of the complementarity or substitutability of traded and nontraded capital in the production structure on the behavior of the current account. We illustrate the dynamic behavior of the model by considering a permanent increase in foreign transfers.

Did 401(k) Plans Replace Other Employer-Provided Pensions?

Leslie E. Papke, Mitchell Petersen,

and James M. Poterba

NBER Working Paper No. 4501

October 1993

JEL Nos. H24, G23, J14

Aging, Public Economics

This paper reports the findings from a new survey of firms that provide 401(k) plans for their employees. Our results suggest that few 401(k) plans replaced preexisting defined-benefit pension plans, although a substantial fraction replaced previous defined-contribution thrift and profit-sharing plans. Our survey results also provide new evidence on patterns of 401(k) participation. We find significant persistence in firm-level participation rates from one year to the next, which supports the view that 401(k) participants are not making marginal decisions on whether or not to contribute to the plan in a given month, or even year, but rather making long-term commitments to participate in these plans.

Dynamic General Equilibrium Models with Imperfectly Competitive Product Markets

Julio J. Rotemberg and Michael Woodford

NBER Working Paper No. 4502

October 1993

Economic Fluctuations

We discuss the consequences of introducing imper-

fectly competitive product markets into an otherwise standard neoclassical growth model. We pay particular attention to the consequences of imperfect competition for the explanation of fluctuations in aggregate economic activity. The market structures we consider include monopolistic competition, the "customer market" model of Phelps and Winter, and the implicit collusion model of Rotemberg and Saloner. We also review empirical evidence relevant to the numerical calibration of imperfectly competitive models. We then analyze the effects of imperfect competition on the economy's response to several kinds of real shocks, including technology shocks, shocks to the level of government purchases, and shocks that change individual producers' degree of market power. Finally, we discuss the role of imperfect competition in allowing for fluctuations caused solely by self-fulfilling expectations.

Fixing Exchange Rates: A Virtual Quest for Fundamentals

Robert P. Flood and Andrew K. Rose

NBER Working Paper No. 4503

October 1993

International Finance and Macroeconomics

Fixed exchange rates are less volatile than floating rates. But the volatility of macroeconomic variables, such as money and output, does not change very much across exchange rate regimes. This suggests that exchange rate models based only on macroeconomic fundamentals are not likely to be very successful. It also suggests that there is no clear trade-off between reduced exchange rate volatility and macroeconomic stability.

Fixed Exchange Rates as a Means to Price Stability: What Have We Learned?

Lars E. O. Svensson

NBER Working Paper No. 4504

October 1993

JEL Nos. F31, F33, F41, F42

International Finance and Macroeconomics

This paper discusses what we have learned about fixed exchange rates as a means to achieve price stability from last year's currency crises in the Exchange Rate Mechanism and the Nordic countries. After discussing the explanations for the crises, I conclude that fixed exchange rates are not a short-cut to price stability. Monetary stability and credibility have to be built at home, and cannot be imported easily from abroad. Fixed exchange rates are more fragile and difficult to maintain than previously thought. They may even be in conflict with price stability, by inducing a procyclical destabilizing monetary policy, and by inducing an inflation bias. Building monetary credibility is even more important with flexible exchange rates.

The Consumer Price Index as a Measure of Inflation

Michael F. Bryan and Stephen G. Cecchetti

NBER Working Paper No. 4505

October 1993

JEL Nos. E31, E52

Economic Fluctuations, Monetary Economics

As inflation approaches zero, it becomes increasingly important to examine the price index on which monetary policy is based. The most popularly used aggregate price statistic in the United States, the Consumer Price Index (CPI), appears to be a focal point in monetary policy deliberations. One problem associated with using the CPI, a fixed-weight index of the cost of living, is that there are likely to be biases in the index as a measure of inflation.

We use a simple statistical framework to compute a price index that is immune to one of the potentially important biases inherent in the CPI as a measure of inflation: weighting bias. Using a dynamic factor model, we are able to compute the common inflation element in a broad cross section of consumer price changes. We conclude that, although there was a large positive weighting bias during the 15 years beginning in 1967, the weighting bias in the CPI as a measure of inflation has been insignificant since 1981.

International Capital Mobility, Public Investment, and Economic Growth

Richard H. Clarida

NBER Working Paper No. 4506

October 1993

JEL No. F41

International Finance and Macroeconomics

This paper presents a neoclassical model of international capital flows, public investment, and economic growth. Because public capital is not traded and is not perfectly substitutable for private capital, the open economy converges only gradually to the Solow steady state, notwithstanding the fact that international capital mobility is perfect. Along the convergence path, the economy initially runs a current account deficit that reflects a consumption boom and a surge in public spending. Over time, the rate of public investment declines, as does the rate of growth in the standard measure of multifactor productivity in the private sector, the Solow residual.

In the empirical section of the paper, I use the multivariate maximum-likelihood approach of Johansen (1991) to test the hypothesis that the log of the Solow residual and the log of the public capital stock in the United States, France, Germany, and Britain are cointegrated. I find that productivity and public capital are cointegrated in each of the four countries. The estimated relationship between productivity and public capital is quite similar across countries. These results do not convey any information regarding causality, though. One plausible interpretation of the finding of cointegration between productivity and public capital is that productivity is exogenous with respect to public capital, but that public capital is

not exogenous, and thus is Granger caused by productivity. I test this hypothesis, and find that it can be rejected for all four countries. However, there is also evidence that public capital is not exogenous with respect to measured productivity. I conclude that the structural relationship between public capital and productivity needs to be investigated further in light of the cointegration and causality results reported in this paper.

Optimal Awards and Penalties When the Probability of Prevailing Varies Among Plaintiffs

A. Mitchell Polinsky and Daniel L. Rubinfeld

NBER Working Paper No. 4507

October 1993

JEL No. K41

Law and Economics

This article derives the optimal award to a winning plaintiff and the optimal penalty on a losing plaintiff when the probability of prevailing varies among plaintiffs. Optimality is defined in terms of achieving a specified degree of deterrence of potential injurers with the lowest litigation cost. We find that the optimal penalty on a losing plaintiff is positive, in contrast to common practice in the United States. By penalizing losing plaintiffs and raising the award to winning plaintiffs (relative to what it would be if losing plaintiffs were not penalized), it is possible to discourage plaintiffs with a relatively low probability of prevailing from suing without discouraging plaintiffs with a relatively high probability, and thereby to achieve the desired degree of deterrence with lower litigation costs. We develop this result first in a model in which all suits are assumed to go to trial, and then in a model in which settlements are possible.

The Selection Hypothesis and the Relationship Between Trial and Plaintiff Victory

Joel Waldfoegel

NBER Working Paper No. 4508

October 1993

JEL Nos. K41, K13

Law and Economics

The selection hypothesis (Priest and Klein) explains the selection of cases for trial from the underlying population of cases filed, based on the position of the legal standard, the degree of stake asymmetry, and the predictability of trial outcomes. This paper develops implications of that hypothesis for the relationship between trial rates and plaintiff win rates.

I find strong evidence for the selection hypothesis in estimated relationships between trial rates and plaintiff win rates at trial, across case types and judges. I then estimate the decision standard, the degree of stake symmetry, and the uncertainty parameter for each of three major case types: contracts, property rights, and torts. I am able to infer that tried cases are not represen-

tative of filed cases, and that stakes are higher for plaintiffs in contract and property rights cases and for defendants in tort cases. Finally, I infer that the uncertainty surrounding case outcomes is higher for tort cases than for the others. This supports the view of critics of the tort system that legal standards in tort cases are not clearly understood.

Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania

David Card and Alan B. Krueger

NBER Working Paper No. 4509

October 1993

JEL No. J3

Labor Studies

On April 1, 1992, New Jersey's minimum wage increased from \$4.25 to \$5.05 per hour. To evaluate the impact of the law, we surveyed 410 fast food restaurants in New Jersey and Pennsylvania before and after the rise in the minimum. Comparisons of the changes in wages, employment, and prices at stores in New Jersey relative to stores in Pennsylvania (where the minimum wage remained fixed at \$4.25 per hour) yield simple estimates of the effect of the higher minimum wage.

Our empirical findings challenge the prediction that a rise in the minimum wage reduces employment. Relative to stores in Pennsylvania, fast food restaurants in New Jersey increased employment by 13 percent. We also compare employment growth at stores in New Jersey that initially were paying high wages (and were unaffected by the new law) to employment changes at lower-wage stores. Stores that were unaffected by the minimum wage had the same employment growth as stores in Pennsylvania, while stores that had to increase their wages also increased their employment.

Privatization of Social Security: Lessons from Chile

Peter Diamond

NBER Working Paper No. 4510

October 1993

JEL Nos. H55, J14

Aging, Public Economics

In Chile, all covered workers must place 10 percent of monthly earnings in a savings account with a highly regulated intermediary that manages a single fund and provides survivors' and disability insurance. Workers pay a commission charge, in addition to the mandatory 10 percent, to finance this insurance and to cover the costs and profits of the intermediaries. On becoming eligible to receive benefits, a worker can choose between a sequence of phased withdrawals and a real annuity. In addition, there is a sizable guaranteed minimum pension. Unlike the purchased annuities, the minimum pension is not indexed, but is adjusted by the government from time to time.

The Chilean reform gets high marks for defending the system from political risk and for its effects on capital accumulation and on the functioning of the capital market. The Chilean reform gets low marks for the provision of insurance and for administrative cost.

Perhaps the most surprising aspect of the Chilean reform is the cost of running a privatized social security system, higher than the "inefficient" system that it replaced. Valdes-Prieto has estimated that the average administrative charge per effective affiliate while active is U.S. \$89.10 per year (for 1991), which is 2.94 percent of average taxable earnings. This is close to 30 percent of the 10 percent mandatory savings rate. The cost per person is not far from costs observed in other privately managed pension systems, such as defined-benefit private pensions in the United States. However, it compares unfavorably with administrative costs in well-run unified government managed systems. The issue here is the administrative efficiency of reliance on the private market, not anything particularly costly about the Chilean system.

Trade Policy, Exchange Rates, and Growth

Sebastian Edwards

NBER Working Paper No. 4511

October 1993

JEL Nos. F1, F13

International Trade and Investment,
International Finance and Macroeconomics

This paper analyzes the relationship between trade policy and economic performance. In the first part, I use a cross-country dataset to investigate the relationship between trade policy and productivity growth. I find that countries that are more open to the rest of the world have experienced faster growth in total factor productivity than countries with high trade barriers. In the second part, I investigate the recent Latin American experiences with trade liberalization reforms. I show that, in the last few years, the Latin American countries have gone from having one of the most distorted external sectors, to having very low degrees of protectionism. I document the extent of the liberalization efforts and investigate its effect on productivity and exports.

Anti-Competitive and Rent-Shifting Aspects of Domestic-Content Provisions in Regional Trade Blocs

Florencio Lopez-de-Silanes, James R. Markusen, and Thomas F. Rutherford

NBER Working Paper No. 4512

October 1993

JEL Nos. F12, F13

International Trade and Investment

Regional trade agreements must specify domestic-content rules (rules of origin) that define the conditions under which a good qualifies as "domestic" and so may be traded freely within the bloc. We analyze such rules, focusing in particular on oligopolistic industries in which

foreign multinationals producing within the bloc rely much more on imported intermediate inputs than domestic firms do. We argue that, in such a situation, domestic content provisions are anti-competitive, reducing overall final output of the industry, and shifting rents (in the absence of free entry) to domestic firms. It is possible that the anti-competitive aspect of the rules is sufficiently strong that total industry profits rise, and the equilibrium demand for the substitute domestic inputs falls (the scale effect of reduced output outweighs a substitution effect in favor of domestic intermediates). The latter effect is more likely, to the extent that the foreign multinationals can switch from producing within the bloc to exporting to the bloc. We then examine these ideas numerically, using an applied general equilibrium model of the North American auto industry.

Discrete Plant-Location Decisions in an Applied General Equilibrium Model of Trade Liberalization

James R. Markusen and Thomas F. Rutherford

NBER Working Paper No. 4513

October 1993

JEL No. F12

International Trade and Investment

This paper makes a first step toward a more realistic approach to analyzing international trade in which firms face discrete choices about the numbers and locations of their plants. We apply the model to the North American auto industry in the context of the draft North American Free Trade Agreement. We find that production is initially excessively geographically diversified. Autos are produced in fewer locations as trade barriers are lowered, though. There is also a "non-monotonicity" case, in which a plant is first closed and then reopened as trade barriers are progressively lowered. Finally, plants in Canada and Mexico may increase production when locations are fixed, but close down when locations are endogenous and optimized.

Short-Term Contracts as a Monitoring Device

Patrick Rey and Joseph E. Stiglitz

NBER Working Paper No. 4514

October 1993

This paper focuses on two separate problems. The first is that, frequently, the most profitable use of funds involves long-term investments, which militates for long-term debt contracts. The second problem is monitoring the investor's use of funds, as exemplified by the U.S. S&L saga. We argue that short-term debt provides investors, who can withdraw their funds, with a real threat over firms.

We show that short-term investors have desirable incentives to both exert control and invest in monitoring. This monitoring concern provides an explanation of the often lamented disparity between the maturity of banks' assets and liabilities. We also explore in detail the trade-

off between long-term and short-term debt, including the possibility of multiple contracts and of priority rules.

A Small Open Economy in Depression: Lessons from Canada in the 1930s

**Caroline M. Betts, Michael D. Bordo,
and Angela Redish**

NBER Working Paper No. 4515

November 1993

JEL Nos. E32, N12

Monetary Economics

We ask whether U.S. disturbances and their international propagation can explain the global Depression. Using common trends in U.S. and Canadian data for the interwar period, we decompose fluctuations in Canadian output into those caused by worldwide versus country-specific disturbances. We find that the onset, depth, and duration of the collapse of output in both Canada and the United States are attributable primarily to a common, permanent output shock. This leaves little significant role for idiosyncratic disturbances that originated in either economy.

The Importance of Precautionary Motives in Explaining Individual and Aggregate Saving

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

NBER Working Paper No. 4516

November 1993

JEL Nos. E21, H31

Aging, Economic Fluctuations, Public Economics

We examine the predictions of a life-cycle model about individual and aggregate wealth accumulation. Individuals face uncertainty about their length of life, earnings, and out-of-pocket medical expenditures, and there are imperfect insurance and lending markets. Relative to life-cycle or buffer-stock alternatives, our augmented model more closely matches a variety of features of U.S. data, including: aggregate wealth, cross-sectional differences in wealth-age and consumption-age profiles by education group, and short-run time-series comovements of consumption and income.

Short-Run Independence of Monetary Policy Under Pegged Exchange Rates, and Effects of Money on Exchange Rates and Interest Rates

Alan C. Stockman and Lee E. Ohanian

NBER Working Paper No. 4517

November 1993

JEL No. F41

International Finance and Macroeconomics

Economists generally assert that countries sacrifice monetary independence when they peg their exchange

rates, while central bankers assert the opposite. This paper examines the effects of changes in the money supply on exchange rates, interest rates, and production in a two-country model. Some sectors have predetermined nominal prices in the short run, and other sectors have flexible prices. Money supply shocks have effects on liquidity both within and across countries, and they induce a cross-country differential in real interest rates. The model predicts that liquidity effects are highly nonlinear and are not likely to be captured well by linear models, particularly those involving only a single country. The most striking implication of this model is that countries have a degree of short-run independence of monetary policy even under pegged exchange rates.

Beauty and the Labor Market

Daniel S. Hamermesh and Jeff E. Biddle

NBER Working Paper No. 4518

November 1993

JEL Nos. J31, J71

Labor Studies

We develop a theory of sorting across occupations based on looks, and apply it to an analysis of earnings differentials by looks. We use the 1977 Quality of Employment survey, the 1971 Quality of American Life survey, and the 1981 Canadian Quality of Life survey; all contain interviewers' ratings of the respondents' physical appearance. Holding demographic and labor market characteristics constant, we find that plain people earn less than people of average looks, who earn less than the good looking. Further, the penalty for plainness is slightly larger than the premium for beauty. The effects also are slightly larger for men than for women. However, unattractive women are less likely than others to participate in the labor force, and are more likely to be married to men with unexpectedly low human capital. Better-looking people sort into occupations in which beauty is likely to be more productive, but the impact of individuals' looks on their earnings is mostly independent of occupation.

Index-Option Pricing with Stochastic Volatility and the Value of Accurate Variance Forecasts

Robert F. Engle, Alex Kane, and Jaesun Noh

NBER Working Paper No. 4519

November 1993

Asset Pricing

In pricing primary-market options, and in making secondary markets, financial intermediaries depend on the quality of forecasts of the variance of the underlying assets. Hence, the gain from improved pricing of options measures the value of a forecast of underlying asset returns. We use NYSE index returns over 1968–91 to suggest that pricing index options of up to 90-days maturity would be more accurate when: 1) using ARCH specifications in place of a moving average of squared returns; 2) using Hull and White's (1987) adjustment for stochas-

tic variance in Black and Scholes's (1973) formula; 3) accounting explicitly for weekends, and for the slow-down of variance whenever the market is closed.

A Test of Efficiency for the S&P 500 Index Option Market Using Variance Forecasts

Robert F. Engle, Alex Kane, and Jaesun Noh

NBER Working Paper No. 4520

November 1993

Asset Pricing

Autoregressive models of implied volatility derived from observed option prices are commonly used to forecast future option prices [see Day and Lewis (1990), and Harvey and Whaley (1992)]. In contrast, the ARCH model, proposed by Engle (1982), considers dynamic behavior in volatility, using only the returns on an asset to forecast future volatility.

We assess the performance of these two volatility prediction models for S&P 500 data on the options market from September 1986 to December 1991. We focus on two agents who trade straddles, each using one of the two methods of forecast. Each agent prices options according to a chosen method of forecast, buying (or selling) straddles when the forecast price for tomorrow is higher (or lower) than today's market closing price. At the end of each day, the rates of return are computed.

We find that the agent using the GARCH forecast method earns more profit than the agent using the implied volatility regression forecast model. In particular, the agent using the GARCH forecast method earns a profit higher than the cost of \$0.25 per straddle.

The Economic Reality of *The Beauty Myth*

Susan Averett and Sanders Korenman

NBER Working Paper No. 4521

November 1993

JEL Nos. J71, J12, J16

We investigate income, marital status, and hourly pay differentials by body mass in a sample of 23-to-31-year-olds drawn from the 1988 National Longitudinal Survey of Youth. Obese women have lower family incomes than women whose weight-for-height is in the "recommended" range. The results for men are weaker, and mixed.

We find similar results when we compare same-sex siblings in an attempt to control for differences in family background or social class. Differences in economic status by body mass for women increase markedly when we use an earlier weight measure, or when we restrict the sample to persons who were single and childless when the earlier weight was reported. There is some evidence of labor market discrimination against obese women. However, differences in marriage probabilities and in spouse's earnings account for 50 to 95 percent of their lower economic status. There is no evidence that obese African-American women suffer an economic penalty relative to other African-American women.

Historical Factors in Long-Run Growth

Price Wars and the Stability of Collusion: A Study of the Pre-World War I Bromine Industry

Margaret Levenstein

NBER Historical Paper No. 50

September 1993

JEL Nos. L13, N61

Bromine producers colluded to raise prices and profits during most of the period between 1885 and 1914. Collusion was punctuated by price wars in which prices fell sharply. I compare the characteristics of these price wars with those in the Green-Porter and Abreu-Pearce-Stachetti models. Some of the bromine price wars resulted from the imperfect monitoring problems in these models; they were short and mild. More severe price wars were part of a bargaining process in which firms tried to force a renegotiation to a new, collusive equilibrium with a different distribution of rents.

Technical Papers

Some Evidence on Finite Sample Behavior of an Instrumental Variables Estimator of the Linear Quadratic Inventory Model

Kenneth D. West and David W. Wilcox

NBER Technical Paper No. 139

July 1993

JEL Nos. C32, E22

Economic Fluctuations

We evaluate some aspects of the finite sample distribution of an instrumental variables estimator of a first order condition of the Holt et al. (1960) linear quadratic inventory model. We find that for some, but not all, empirically relevant sample sizes and data-generating processes, asymptotic theory predicts a wide dispersion of parameter estimates, with a substantial probability of getting estimates with incorrect signs. For such data-generating processes, simulation evidence suggests that different choices of left-hand side variables often produce parameter estimates with the opposite sign. More generally, while the asymptotic theory often provides a good approximation to the finite sample distribution, sometimes it does not.

Estimating Conditional Expectations

When Volatility Fluctuates

Robert F. Stambaugh

NBER Technical Paper No. 140

August 1993

JEL No. C10

Asset Pricing

I calculate asymptotic variances of estimated parameters in models of conditional expectations assuming a GARCH process for conditional volatility. Under such heteroskedasticity, OLS estimators of parameters in single-period models can have substantially larger asymptotic variances than GMM estimators using additional multiperiod moment conditions: an approach yielding no efficiency gain under homoskedasticity. In estimating models of long-horizon expectations, the VAR approach provides an efficiency advantage over long-horizon regressions under homoskedasticity. That ordering can be reversed under heteroskedasticity, especially when the conditional mean and variance are both persistent. In such cases, the VAR approach maintains a slight efficiency advantage if the OLS estimator is replaced by an alternative GMM estimator. Heteroskedasticity can dramatically increase the apparent asymptotic power advantages of long-horizon regressions to reject constant expectations against persistent alternatives.

Back to the Future: Generating

Moment Implications for

Continuous-Time Markov Processes

Lars Peter Hansen and José Alexandre Scheinkman

NBER Technical Paper No. 141

September 1993

JEL No. C1

Asset Pricing

Continuous-time Markov processes can be characterized conveniently by their infinitesimal generators. For such processes, there exist forward- and reverse-time generators. We show how to use these generators to construct moment conditions implied by stationary Markov processes. Generalized method-of-moments estimators and tests can be constructed using these moment conditions. The resulting econometric methods are designed to be applied to discrete-time data obtained by sampling continuous-time Markov processes.

Why Long Horizons? A Study of Power

Against Persistent Alternatives

John Y. Campbell

NBER Technical Paper No. 142

September 1993

JEL Nos. C22, G12

Asset Pricing

This paper studies tests of predictability in regressions with a given AR(1) regressor and an asset return dependent variable measured over a short or long horizon. The paper shows that when there is a persistent

predictable component in the return, an increase in the horizon may increase the R^2 -statistic of the regression and the approximate slope of a predictability test. Monte Carlo experiments show that long-horizon regression tests have serious size distortions when asymptotic critical values are used, but some versions of such tests have power advantages that remain after size is corrected.

Inventory Models

Kenneth D. West

NBER Technical Paper No. 143

September 1993

JEL Nos. C51, C52, E22

Economic Fluctuations

This paper surveys econometric aspects of recent research on inventory models. I emphasize the issues relevant to the estimation of instrumental variables, including choice of instruments, covariance matrix estimation, methods for testing, and the implications of unit root nonstationarity. I also briefly discuss estimation of a decision rule implied by the model, and, finally, the implications of some stylized facts about inventories for inventory models.

Automatic Lag Selection in

Covariance Matrix Estimation

Kenneth D. West and Whitney K. Newey

NBER Technical Paper No. 144

September 1993

JEL Nos. C13, C14

Economic Fluctuations

We propose a nonparametric method for automatically selecting the number of autocovariances to use in computing a heteroskedasticity- and autocorrelation-consistent covariance matrix. For a given kernel for weighting the autocovariances, we prove that our procedure is asymptotically equivalent to one that is optimal under a mean squared error loss function. Monte Carlo simulations suggest that our procedure performs tolerably well, although it does result in size distortions.

Econometric Evaluation

of Asset Pricing Models

Lars Peter Hansen, John Heaton, and Erzo Luttmer

NBER Technical Paper No. 145

October 1993

JEL No. G12

Asset Pricing, Economic Fluctuations

We evaluate intertemporal asset pricing models using specification-error and volatility bounds. We then formulate analog estimators of these bounds, give conditions for consistency, and derive the limiting distribution of the estimators. Our analysis incorporates market frictions, such as short-sale constraints and proportional transactions costs. We show how to use the methods to assess specific asset pricing models, and to provide nonparametric characterizations of asset pricing anomalies.

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