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Program Report

Economic Growth

Robert J. Barro and Paul M. Romer

In the 1950s and 1960s, there was widespread interest among economists in the long-run rate of economic growth. Initially, economists followed the pattern set by Robert M. Solow's seminal papers and developed the theory of dynamic models in tandem with empirical work on growth accounting.¹ But by the 1970s, theoretical and empirical work on growth and development diverged. Professional interest in growth waned, despite the paramount importance of these issues. Two years ago, we created a growth project to encourage the kind of interaction between theory and evidence that once had been so successful.

Recent Trends in Empirical and Theoretical Work

Two recent sources of data have been influential in stimulating renewed empirical work on growth. In *Phases of Capitalist Development*, Angus Maddison summarized much of his work on constructing comparable sets of data that extend over a century or more for a small set of developed countries. Separately, Alan Heston and Robert Summers have compiled national income accounts data for a large cross section of countries since World War II. Because these data correct for differences in relative prices in different countries, they permit more meaningful comparisons of the level of income per capita than were previously possible.

¹R. M. Solow, "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics* 70 (1956), pp. 65-94, and "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics* 39 (1957), pp. 312-320.

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This issue of the *Reporter* highlights the Bureau's Project on Economic Growth. Next, David S. Scharfstein describes his research into corporate finance in the United States and Japan. After a biographical sketch, news of NBER conferences, the Conference Calendar, and other NBER news and reports, the *Reporter* concludes with short summaries of recent NBER Working Papers.

From the early analyses of these data, several questions emerged.² First, why is it that poor countries, on average, do not catch up with the rest of the world? Traditional theory suggests that convergence should take place almost automatically. Further, productivity and income per capita within the developed countries have converged to a substantial degree.

Second, why do long-run data show a correlation between the rate of savings and the rate of growth? According to the neoclassical model of growth, the only explanation for the correlation is that variation in the rate of technical change induces variation in both

²P. M. Romer, "Increasing Returns and Long-Run Growth," *Journal of Political Economy* 94 (1986), pp. 1002-1037, and "Crazy Explanations for the Productivity Slowdown," in S. Fischer, ed., *NBER Macroeconomics Annual 1987*, Cambridge, MA: MIT Press, 1987; and W. J. Baumol, "Productivity Growth, Convergence, and Welfare," *American Economic Review* 76 (1986), pp. 1072-1085.

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the rate of savings and the rate of growth. But the magnitude and importance of the observed correlation suggest other possibilities: that variation in the savings rate might cause variation in the rate of growth; or that variation in government policy might cause variation in both the savings rate and the rate of growth.

More extensive investigation of the Heston and Summers data, supplemented by data collected by Robert J. Barro, identified other important correlations.³ Everything else equal, a higher rate of investment by either the private or public sector, a lower share of government consumption spending, higher school enrollment rates, greater political stability, and lower fertility all are correlated with a faster rate of growth. This sample, with its large number of poor countries, also reveals evidence about convergence. Everything else held constant, a lower level of initial income per capita is associated with a faster rate of growth. This means that poor countries would grow faster if the other variables did not vary systematically with the level of income. But they do. Poor countries have lower rates of investment, lower school enrollment rates, higher fertility rates, and less political stability. Barro and Xavier Sala-i-Martin also find that income per capita in U.S. regions has converged over the past 150 years.⁴

All of these empirical findings point to the importance of alternative models in which the long-run growth rate can be influenced by policy variables and individual preferences. It is difficult to believe that exogenous differences in the rate of technological change alone can lead to this pattern of correlations. Two complementary approaches are developing now to provide more theories linking growth, technological change, savings, and policy variables. The first assumes that even though technology is intangible, it is analogous to education or on-the-job experience and therefore can be modeled using the same perfectly competitive framework that is applied to human capital in the labor market.

The second approach emphasizes the observation that ideas that constitute a technology differ fundamentally from other economic goods. According to this second view, ideas and technological change are not transmitted in the perfect markets used in the neoclassical growth model and in the analysis of human capital. Both types of models are described in greater detail below.

Growth with Perfect Markets

When economists first assumed that technological change was determined outside of the economic sys-

³R. J. Barro, "Economic Growth in a Cross Section of Countries," *NBER Working Paper No. 3120, September 1989*, and P. M. Romer, "Human Capital and Growth: Theory and Evidence," *NBER Working Paper No. 3173, November 1989*.

⁴R. J. Barro and X. Sala-i-Martin, "Economic Growth and Convergence Across the United States," *NBER Working Paper No. 3419, August 1990*.

tem, they intended this specification to be provisional. Recent work on growth with perfect markets extends neoclassical models so that all economic improvement can be traced to actions taken by people who respond to economic incentives. Sergio T. Rebelo, and Larry E. Jones and Rodolfo Manuelli, construct models in which persistent growth can arise from a convex, stationary technology if additional variables are added.⁵ Rebelo's paper, which builds on work by Robert E. Lucas, Jr., shows that a capital good sector with constant returns to scale can lead to persistent growth.⁶ Jones and Manuelli show that even such fixed factors as labor can be introduced into this sector, provided that output is asymptotically a constant returns function of the capital stocks, as assumed by Rebelo. In both of these analyses, human capital keeps growth going.

In a paper that also uses a linear technology based on human capital, Gary S. Becker, Kevin M. Murphy, and Robert F. Tamura examine the interaction between the decision by parents to invest in more children and the decision to invest in more human capital per child.⁷ Adding a description of the preferences that affect fertility decisions, they show that, depending on the initial conditions, a country could end up either on a path with low growth in the population and rapid growth in per capita income or become trapped in an equilibrium with rapid growth in the population and stagnant income per capita. The model also reproduces one of Barro's strongest empirical findings: that high investment in education is associated with low fertility.

A well-known deficiency of the neoclassical model is that neither policy nor preferences can affect the steady-state rate of growth. The importance of this limitation sometimes is minimized by observing that even in the neoclassical model, policy and preferences do matter somewhat along the transition path to a steady-state growth path. Robert G. King and Rebelo have shown, however, that the transition dynamics in the neoclassical model explain only a small part of growth.⁸

Growth with External Effects

Human capital theory as developed in labor economics offers one way to model the accumulation of

⁵S. T. Rebelo, "Long-Run Policy Analysis and Long-Run Growth," NBER Working Paper No. 3325, April 1990; and L. E. Jones and R. Manuelli, "A Convex Model of Economic Growth," NBER Working Paper No. 3241, January 1990.

⁶R. E. Lucas, Jr., "On the Mechanics of Economic Development," NBER Reprint No. 1176, May 1988.

⁷G. S. Becker, K. M. Murphy, and R. F. Tamura, "Human Capital, Fertility, and Economic Growth," NBER Working Paper No. 3414, August 1990.

⁸R. G. King and S. T. Rebelo, "Transitional Dynamics and Economic Growth in the Neoclassical Model," NBER Working Paper No. 3185, November 1989, and "Public Policy and Economic Growth: Developing Neoclassical Implications," NBER Working Paper No. 3338, April 1990.

ideas, but there are aspects of innovation and invention that this approach does not address. When a carpenter learns a new skill, like how to hammer a nail, there is no threat that someone else will be able to free ride on the benefits of his investment in human capital. Nor does the new skill raise the productivity of his co-workers. In contrast, some discoveries can raise the productivity of many different firms or people at no cost to the discoverer, and these discoveries sometimes can be exploited by free riders who do not compensate the discoverer.

Many of the recent models of endogenous growth have captured these aspects of ideas by allowing for external increasing returns and knowledge spillovers. In the learning-by-doing formulation first outlined by Kenneth Arrow, a discovery is assumed to have no direct value to the person who makes it. Discoveries arise as an unintended side effect of some other activity and then are freely exploited by others. Mervyn A. King and Mark Robson show that the particular assumption used by Arrow, and subsequently by Romer, that the stock of economywide knowledge is proportional to the stock of capital, is quite restrictive.⁹ A plausible, and more general form of knowledge spillovers can lead to complicated dynamics, important forms of persistence in rates of growth, and very different predictions about how such policy variables as taxes can influence growth.

Nancy L. Stokey uses a model based on knowledge spillovers from education and skill acquisition to show how the introduction of new goods can be linked to increases in human capital, and to address the effects of trade between developed and less developed countries.¹⁰

In contrast, Jess Benhabib and Boyan Jovanovic have shown that the cross-country correlation between the rate of investment and the rate of growth is consistent with a model with no external effects.¹¹ In their model, the underlying fundamentals are the same in each country, but persistent random shocks to the technology can induce the correlation that is observed.

One of the interesting developments of the last ten years is the increasingly close connection between growth theory and the theory of macroeconomic fluctuations. The real business cycle models that evolved from the neoclassical model of growth have analogs that are based on growth models with external effects. For example, Murphy, Andrei Shleifer, and Robert W. Vishny have shown how a specific type of external increasing returns could generate macroeconomic fluctu-

⁹M. A. King and M. Robson, "Endogenous Growth and the Role of History," NBER Working Paper No. 3151, October 1989.

¹⁰N. L. Stokey, "Human Capital, Product Quality, and Growth," NBER Working Paper No. 3413, August 1990.

¹¹J. Benhabib and B. Jovanovic, "Externalities and Growth Accounting," NBER Working Paper No. 3190, November 1989.

tuations.¹² Ricardo J. Caballero and Richard K. Lyons use time-series data for manufacturing industries to show that business cycle fluctuations are consistent with the presence of strong external increasing returns to scale.¹³

Growth with Market Power

Models with learning-by-doing and knowledge spillovers can explain how accidental discoveries arise and are exploited but cannot explain intentional attempts to make discoveries. In the microeconomic analysis of innovation and invention, market power is an essential part of the incentives that induce people to search for new discoveries. Because of secrecy or explicit legal protection of patents and copyrights, the discoverer of a new idea expects to be able to charge a price for use of the idea that is higher than the opportunity cost (equal to zero) of letting it be used by others. Models with external effects depart from the perfect markets assumptions of welfare economics, but they retain the price-taking assumptions that greatly simplify the formal analysis. Models that recognize the importance of market power must abandon price taking as well, and for this reason are more difficult to analyze.

In an extension of earlier work that focused only on external effects, Romer argues for the fundamental importance of market power in the analysis of innovation and technological change, even at the aggregate level.¹⁴ The key concepts in the analysis of ideas are the ones developed for the analysis of public goods: rivalry and excludability. In general, a good that is not rivalrous introduces a nonconvexity into the technology. Research in public finance has shown that if this nonconvexity is local, perfect price-taking competition can be supported between groups of people organized into coalitions called clubs. Jeremy Greenwood and Jovanovic analyze a growth model in which information about investment projects has this partially nonrival character.¹⁵ In their analysis, the clubs are interpreted as perfectly competitive financial intermediaries. But if the nonconvexity is global, as it is for many ideas, then price taking cannot be supported and explicit attention to market power is required.

In a separate paper, Romer uses a model with market power and explicit R and D.¹⁶ He finds that increased

trade between similar regions, such as North America and Europe, will speed up growth because of the increase in market size. In a series of papers that use this model of the introduction of new goods, Gene M. Grossman and Elhanan Helpman show that trade can have complicated and offsetting effects on growth, especially when countries differ in some fundamental way, as in a product cycle model of trade between a developed and a less developed country.¹⁷

Innovation in these models is described as being associated with the introduction of new goods. Philippe Aghion and Peter Howitt develop an alternative model in which innovation consists of improvements in existing goods.¹⁸ They are able to capture the dual character of innovation, which creates monopoly profits for some at the same time that it destroys monopoly profits for others. Grossman and Helpman refine this model of quality improvement, illustrate its close formal resemblance to the model in which new goods are introduced, and consider its trade implications.¹⁹

Policy

One of the conclusions common to all of the endogenous growth models, both the perfect markets and the imperfect markets models, is that policy choices and preferences influence long-run growth rates. In this sense, all of these models are quite distinct from the exogenous growth models. If consumers are more patient, growth will be faster. If government taxes or distortions discourage the activity that generates growth, growth will be slower. All of these models support general lessons from development outlined by Anne O. Krueger.²⁰ Bad government policies can affect both the level of income and the long-run rate of growth, and the welfare losses can be very large. In an explicit example, William Easterly shows how policies that affect the sectoral allocation of resources can have large effects on growth rates and welfare.²¹

Beyond these general lessons, the specific policy conclusions depend on the structure of the model. For example, in Barro and Sala-i-Martin, the optimal gov-

¹²K. M. Murphy, A. Shleifer, and R. W. Vishny, "Increasing Returns, Durables, and Economic Fluctuations," NBER Working Paper No. 3014, June 1989.

¹³R. J. Caballero and R. K. Lyons, "The Role of External Economies in U.S. Manufacturing," NBER Working Paper No. 3033, July 1989.

¹⁴P. M. Romer, "Are Nonconvexities Important for Understanding Growth?" NBER Working Paper No. 3271, February 1990.

¹⁵J. Greenwood and B. Jovanovic, "Financial Development, Growth, and the Distribution of Income," NBER Working Paper No. 3189, December 1989.

¹⁶P. M. Romer, "Endogenous Technological Change," NBER Working Paper No. 3210, December 1989.

¹⁷G. M. Grossman and E. Helpman, "Comparative Advantage and Long-Run Growth," NBER Working Paper No. 2809, January 1989; "Endogenous Product Cycles," NBER Working Paper No. 2913, March 1989; and "Growth and Welfare in a Small Open Economy," NBER Working Paper No. 2970, May 1989.

¹⁸P. Aghion and P. Howitt, "A Model of Growth Through Creative Destruction," NBER Working Paper No. 3223, January 1990.

¹⁹G. M. Grossman and E. Helpman, "Quality Ladders and the Theory of Growth," NBER Working Paper No. 3099, September 1989, and "Quality Ladders and Product Cycles," NBER Working Paper No. 3201, December 1989.

²⁰A. O. Krueger, "Government Failures in Development," NBER Working Paper No. 3340, April 1990.

²¹W. Easterly, "Policy Distortions, Size of Government, and Growth," NBER Working Paper No. 3214, December 1989.

ernment fiscal policy is different in models with perfect markets, external effects, and market power.²²

Project Activities

To support research on growth and to facilitate communication among economists doing research on empirical and theoretical topics, the growth project holds small research meetings on a regular basis, typically in the fall or spring. Because their intent is to foster interaction among different areas of economics, the meetings offer an eclectic collection of papers and participants, with interests that include abstract equilibrium theory, history, macroeconomics, development, industrial organization, the microeconomics of research and development, and productivity analysis. The most recent meeting is described on pages 20–21 of the Summer 1990 issue of the *NBER Reporter*. Many of the papers from that meeting are scheduled for publication in a special May 1991 issue of the *Quarterly Journal of Economics (QJE)* devoted to growth theory.

To facilitate exchange of data and encourage replication of results, the project increasingly is taking responsibility for maintaining and distributing datasets. Heston and Summers have been invited to present descriptions and updates on their dataset in two different project meetings. A paper describing the most recent revision and extension (Penn World Table Mark 5) will be published in the *QJE* special issue.²³

Conclusions

The theoretical work of the last few years has established that policy can have a significant effect on growth. The empirical work demonstrates that the range of variation in growth rates is large, so that if only a small part of that variation can be traced to variation in policy, then the welfare gains from adopting better policies can be very important. Together, the empirical work and the theoretical work have outlined the set of policies that are most likely to foster growth: support for education; incentives for investment in physical capital; protection of intellectual property rights; support for R and D; international trade policies that encourage the production and worldwide transmission of ideas; and the avoidance of large government-induced distortions in the market. Ongoing theoretical and empirical work is directed at going beyond this menu of policy choices. Ultimately, economists should be able to quantify the effects of these different policies and to lead us sooner to reliable answers to the oldest question in economics: What is it that determines the wealth of nations?

²²R. J. Barro and X. Sala-i-Martin, "Public Finance in Models of Economic Growth," *NBER Working Paper No. 3362*, May 1990.

²³Anyone interested in obtaining documentation and floppy disks containing the cross-century data collected and analyzed by Barro can write to Holger Wolf at the NBER in Cambridge. Also, in 1991, floppy disks containing the Penn World table can be obtained by writing to the Publications Department of the NBER in Cambridge. In the future, we plan to make available a dataset containing personal income by state for the United States from 1880 to the present.

Research Summary

U.S.–Japanese Corporate Finance

David S. Scharfstein

For at least two decades, Japanese corporate investment consistently has outpaced U.S. corporate investment. One of the leading explanations of this phenomenon—and a favorite among U.S. corporate managers—is that the cost of capital is lower in Japan than in the United States. The combination of lower real interest rates and higher stock prices makes it cheaper for Japanese firms to borrow money and issue equity, enabling them to invest more. But how do we square this explanation with the view held by many economists that capital is mobile across national borders? If capital is indeed cheaper in Japan than in the United States, why don't U.S. companies go bargain hunting for capital in Japan?

The answer may lie in differences in the *structure* of corporate financial markets between the two countries.

1) In 1977, the average debt–equity ratio of Japanese companies was roughly four times that of U.S. companies; it is now about the same.

2) Until fairly recently, about 90 percent of all Japanese corporate debt took the form of short-term bank loans; during the same period, only about 30 percent of U.S. corporate debt was financed by banks.

3) In a sample of financially distressed U.S. public companies, roughly one-half filed for reorganization under Chapter 11 of the Bankruptcy Code; in a comparable sample of Japanese companies, none filed for bankruptcy protection.

These stark differences in financing behavior suggest that there is more to understanding the cost of capital differences than a simple comparison of interest rates and stock prices. I have conducted research with Takeo Hoshi, Anil K. Kashyap, and David N. Weil that may shed some light on how structural differences in the two financial markets—many of which are quickly disappearing—could explain in part why corporate investment in Japan has been higher than in the United States.

Relationship Banking in Japan

Historically, the linchpin of Japanese corporate finance has been the close relationship between a firm and its main bank. The main bank provides debt financing, owns some of the company's equity (by statute, no more than 5 percent), and may even place bank execu-

tives in top management positions. This system is similar in many respects to West Germany's, but it contrasts sharply with U.S. financing practices. Here, large companies generally have a more arm's-length relationship with the capital market; their debt and equity tend to be held diffusely. Japanese banking practices are driven more by relationships, while U.S. banking practices are driven more by price.

For many Japanese companies, the main bank relationship is part of a larger industrial structure known as the *keiretsu*, a group of companies centered around affiliated banks and other financial institutions. These companies also have strong product-market ties to each other that are strengthened by cross-share ownership. Historically, the links have been strongest in the six largest keiretsu—Mitsubishi, Mitsui, Sumitomo, Fuyo, Dai-ichi Kangyo, and Sanwa.

This corporate financial structure can facilitate investment through at least two distinct channels. First, the main bank and keiretsu system can provide a ready source of funds to companies that otherwise would be unable to raise capital in a decentralized market. Thus, even though the system may not affect the cost of capital, it can affect the *availability* of capital. Second, the main bank and keiretsu system can lower the costs of financial distress. This facilitates investment in two ways: by ensuring that companies with valuable investment opportunities are able to exploit them; and by enabling companies to take on more debt, which generally is thought to be cheaper than equity. I consider each of these channels in turn.

Liquidity Constraints and Investment

In a frictionless capital market, companies with valuable investment projects should have no trouble raising the funds they need to finance these projects. But if the capital market has a hard time distinguishing good investments from bad, or if the capital market suspects that managers may squander the funds, companies may be frozen out of the market for new capital.

Information and incentive problems of this sort probably are most severe in situations in which shareholders and debtholders have small stakes: no small shareholder or bondholder has an incentive to become informed about the company and ensure that its funds are used appropriately.

The model of the uninformed, small shareholder and bondholder is probably an apt description of many large public companies in the United States. However, this model—implicit in the leading theories of corporate finance—simply is not accurate for most large Japanese companies. Because banks own both large debt and equity stakes in their client companies, they have much stronger incentives to monitor the companies than a small bondholder or shareholder does.

Hoshi, Kashyap, and I tried to see whether this is the case by comparing the investment behavior of Japanese firms with close bank relationships to those with

generally weaker bank ties.¹ We implemented this by comparing firms with strong keiretsu affiliation to the smaller number of independent firms that were unaffiliated with a keiretsu.

After controlling for other factors that might affect the attractiveness of investment, we found that liquidity was a more important determinant of investment for independent firms than for keiretsu firms. A Y100 increase in liquidity (as measured by cash flow net of interest payments) led to a Y50 increase in depreciable investment for independent firms, but only a Y4 increase in investment for keiretsu firms.

One interpretation of these results is that companies with close bank relationships find it easier to raise external funds than those with more arm's-length, price-driven capital market relationships. As a result, investment by keiretsu firms tends to be unconstrained, while investment by independent firms—many fewer in number—appear to be liquidity constrained.

This finding suggests that, while there may be no difference in the cost of capital between the United States and Japan, there may be a difference in the "availability of capital" between the two countries. Because large firms in the United States generally lack the kind of close bank relationships that Japanese firms have, their investment may well be more liquidity constrained. This could explain why Japanese companies appear to invest more and U.S. companies appear to be reluctant to sink funds in long-term capital investments, as many observers argue.

The Costs of Financial Distress

Financially distressed companies often have a difficult time raising capital. This is not surprising: the factors that led them to financial trouble in the first place may make further investment unattractive. But it also may be that, if a firm has many creditors, free-rider problems reduce their incentive to grant financial relief or extend credit to distressed companies: individual creditors bear the full costs of providing capital or forgiving debt, but share the benefits with others. These problems can spill over and disrupt supplies and sales: suppliers may not be willing to extend trade credit and make long-term commitments; and customers may be wary about whether the firm will be able to meet its implicit and explicit warranties. As a result, purely financial difficulties can create crippling economic ones.

These problems are likely to be less severe for Japanese firms with strong main bank relationships. Because the debt and equity of individual Japanese firms are held in large amounts by just a few financial institutions, it is hard to believe that free-rider problems are important. And for keiretsu firms there is an additional benefit. Because suppliers and customers of keiretsu

¹T. Hoshi, A. K. Kashyap, and D. S. Scharfstein, "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups," *Quarterly Journal of Economics*, forthcoming.

firms typically own equity in the distressed firm, and because they also have close ties to the banks that are lending to the firm, they will tend to be more willing to help in times of trouble.

Hoshi, Kashyap, and I found evidence consistent with this view.² Controlling for other factors that might affect investment, we found that keiretsu firms tend to invest 46 percent more after the onset of distress than their unaffiliated counterparts do. If the firm is not in a keiretsu, but nevertheless has a close main bank relationship, it also tends to invest more. A 10 percent increase in the fraction of a firm's bank debt that comes from its main bank results in an increase in investment of 2.4 percent. We found similar results for sales.

Interestingly, these workouts occurred outside of the Japanese bankruptcy courts. By contrast, U.S. companies rely much more heavily on the bankruptcy courts to resolve disputes arising from financial distress. Although bankruptcy laws differ somewhat in the two countries, this difference probably is attributable to the greater reliance on bond financing in the United States. Bonds are simply more difficult to restructure than bank debt. Indeed, the U.S. Trust Indenture Act of 1939 prohibits companies from changing the principal, interest, and maturity of a bond without *unanimous* consent of the bondholders. This effectively forces U.S. firms to take one of two steps: either to try to buy back their bonds, which for a number of reasons is quite difficult to do, or to file for Chapter 11 reorganization to use the court's powers to restructure the firm's liabilities.³ The reliance on the bankruptcy courts certainly adds considerable administrative expense and may lengthen the period of financial distress.

The historically higher leverage of Japanese companies can be understood in light of this evidence. If Japanese firms have lower costs of financial distress than U.S. firms do, they can take on more debt. This also means that they can take advantage of debt's tax-favored status, thereby lowering their cost of capital.

High Land Prices and the Cost of Capital

As is often noted, an acre of commercial land in Tokyo is worth 150 times more than an acre in New York, and the value of all the land in Japan is estimated to be worth three times all the land in the United States. In a recent paper with Kashyap and Weil, I argue that high Japanese land prices actually may have been a boon to Japanese investment.⁴ When land prices increase—and they

have nearly tripled in the last five years—firms that own land earn a capital gain on their land. They can use this valuable land as collateral for new loans. Firms that otherwise might have had a hard time raising new funds now have a much easier time raising capital.

We found evidence to support this view. Throughout the late 1970s and the 1980s, firms with large land holdings tended to invest more than firms with small land holdings. These effects were largest in years when land prices increased a lot. They also were more important for firms in slow-growth industries, such as steel, in which the costs of raising new funds otherwise would have been very high.

Of course, the high price of land also can discourage investment, because it raises the price of building new plant and equipment on land. But it can be an unambiguous spur to certain types of investment, such as mergers and acquisitions and investment abroad. The high price of land may explain why Japanese firms have been able to invest so aggressively in the United States and Europe.

Changes in Japanese Corporate Finance

The Japanese main bank system may be collapsing. Substantial deregulation of Japanese financial markets has enabled many companies to go directly to domestic and foreign bond markets to raise capital. With this shift to direct finance has come a dramatic decline in debt-equity ratios. Increasingly, Japanese companies are beginning to resemble U.S. companies with diffusely held debt and equity.

This raises an important question that Hoshi, Kashyap, and I have tried to address in a recent paper.⁵ If bank financing is so efficient, why are firms moving toward direct finance and away from bank finance? We do not know the answer, but here are some possibilities:

1) Bank financing actually was inefficient. Deregulation enabled firms to choose the more efficient form of direct financing.

2) Direct finance is inefficient, but managers prefer it to bank finance with its intense monitoring of their activities.

3) Bank financing is more efficient for some firms, while direct finance is more efficient for others. Firms choose the type of financing that is more efficient for them.

I suspect that there is some truth to all three explanations. It seems that the firms that now rely more heavily on bond financing are the more successful, cash-rich firms; those that have continued to use bank financing have tended to be less successful. Successful firms may not need bank financing, either because they have proved themselves to be reliably creditworthy over

²T. Hoshi, A. K. Kashyap, and D. S. Scharfstein, "The Role of Banks in Reducing the Costs of Financial Distress in Japan," NBER Working Paper No. 3435, September 1990, and *Journal of Financial Economics*, forthcoming.

³R. Gertner and D. S. Scharfstein, "A Theory of Workouts and the Effects of Reorganization Law," unpublished, 1990.

⁴A. K. Kashyap, D. S. Scharfstein, and D. N. Weil, "The High Price of Land and the Low Cost of Capital: Theory and Evidence from Japan," unpublished, August 1990.

⁵T. Hoshi, A. K. Kashyap, and D. S. Scharfstein, "Bank Monitoring and Investment: Evidence from the Changing Structure of Japanese Corporate Banking Relationships," in R. G. Hubbard, ed., *Asymmetric Information, Corporate Finance, and Investment*, Chicago: University of Chicago Press, 1990.

many years or because they have so much cash and valuable collateral that anyone would be willing to lend to the firm. For these firms, it makes sense to avoid the greater transaction costs of intermediated finance and go directly to the capital market. On the other hand, less successful firms without much cash need to be monitored. For them, bank financing is more efficient.

An important question arises if this interpretation is correct: Is the main bank system sustainable if only unsuccessful firms use it? Good firms implicitly may have subsidized bad ones through the main bank system. Without other options, successful firms were forced to borrow from high-priced banks. But, with financial deregulation, successful firms have had other, cheaper alternatives. Banks may no longer be willing to provide guaranteed funding or to bail out distressed firms, if they no longer can lend to successful firms. In the end, financial deregulation actually may have undermined the main bank system, driving Japanese companies away from relationship banking and toward the U.S. system of price banking. An open and important question remains: What effects will this have on the cost of capital, the availability of capital, and economic performance in Japan?

NBER Profile

David S. Scharfstein

David S. Scharfstein is a faculty research fellow in the NBER's Program in Financial Markets and Mone-



tary Economics and an associate professor at MIT's Sloan School of Management.

Scharfstein received an A.B. from Princeton University in 1982 and a Ph.D. from MIT in 1986. Before joining the MIT faculty in 1987, he taught at Harvard Business School. Scharfstein also was an NBER Olin Fellow in 1989-90, and currently is a Batterymarch Fellow.

His research, which has been published in the *American Economic Review* and other journals, focuses on corporate finance. In particular, he writes on Japanese financial structure, the interaction between capital and product markets, and the economics of financial distress.

Scharfstein and his wife, Sarah Feldman, a physician, live in Cambridge. His hobbies are playing basketball and tennis, and traveling.

Conferences

Output Measurement in the Services Sector

An NBER-CRIW (Conference on Research in Income and Wealth) conference on output measurement in the services sector took place on May 4-5. Zvi Griliches, NBER and Harvard University, organized the program with the assistance of Ernst R. Berndt, NBER and MIT; Timothy F. Bresnahan, NBER and Stanford University; and Marilyn Manser, Bureau of Labor Statistics (BLS). The program was:

Michael Mohr, Bureau of Economic Analysis (BEA), "The Measurement and Deflation of Services Outputs and Inputs in BEA's Gross Product Origination Estimates: Past Practice and Planned Improvements"
Discussant: Martin Neil Baily, NBER, University of Maryland, and Brookings Institution

Edwin R. Dean and Kent Kunze, BLS, "Productivity Measurement in Service Industries"
Discussant: W. Erwin Diewert, NBER and University of British Columbia

Paul A. Armknecht and Daniel H. Ginsburg, BLS, "Improvements in Measuring Price Changes in Consumer Services: Past, Present, and Future"
Discussant: Robert E. Lipsey, NBER, Queens College, and City University of New York

Walter Y. Oi, University of Rochester, "Productivity in the Distributive Trades: The Shopper and the

Economies of Massed Reserves”
 Discussant: Sherwin Rosen, NBER and University of Chicago

Timothy F. Bresnahan, and Paul Milgrom and Jonathan Paul, Stanford University, “The Real Output of the Stock Exchange”
 Discussant: Bengt Holmstrom, Yale University

Andreas Hornstein, Federal Reserve Bank of Minneapolis and University of Minnesota, and Edward C. Prescott, NBER, Federal Reserve Bank of Minneapolis, and University of Minnesota, “On Measuring the Output of Insurance Businesses”
 Discussant: Finn Forsund, University of Oslo

Dennis J. Fixler and Kimberly D. Zieschang, BLS, “User Costs, Shadow Prices, and the Real Output of Banks”
 Discussant: Diana Hancock, University of Santa Clara

Allen N. Berger, Federal Reserve Board, and David B. Humphrey, Federal Reserve Bank of Richmond, “Measurement and Efficiency Issues in Commercial Banking”
 Discussant: Frank Wykoff, Pomona College

Robert J. Gordon, NBER and Northwestern University, “Productivity in the Transportation Sector”
 Discussant: Robin C. Sickles, NBER and Rice University

Dale W. Jorgenson, Harvard University, and Barbara M. Fraumeni, Northeastern University, “Investment in Education and U.S. Economic Growth”
 Discussant: Michael Rothschild, NBER and University of California at San Diego

Ann Dryden Witte, NBER and Wellesley College; Swati Mukerjee, Bentley College; and Sheila Hollowell, Wellesley College, “Output Measurement and Quality Adjustment for Day Care”
 Discussant: Marilyn Manser

Elizabeth Kremp, NBER, and Jacques Mairesse, NBER and INSAE, “Productivity Differences at the Micro Level in French Service Firms”
 Discussant: Catherine J. Morrison, NBER and Tufts University

Donald Siegel, State University of New York at Stony Brook, and Zvi Griliches, “Purchased Services, Outsourcing, Computers, and Productivity in Manufacturing”
 Discussant: M. Ishaq Nadiri, NBER and New York University

Alan Heston and Robert Summers, University of Pennsylvania, “Measuring Final Product Services for International Comparisons”
 Discussant: Charles R. Hulten, NBER and University of Maryland

Richard Murray, Swedish Agency for Administrative Development, “Measuring Public Sector Output: The Swedish Report and Its Aftermath”
 Discussant: Gerald Faulhaber, University of Pennsylvania

Mohr describes how the BEA has improved the source data and estimating procedures used to measure gross output and GNP produced by U.S. industries, and the inputs of services they consume. Double deflation—the separate deflation of gross output and materials purchased to compute real value added—is preferred for estimating industry real GNP. But in the past, only 28 percent of the real GNP produced by the private sector was estimated by double deflation; the real GNP for only two out of 32 service-producing industries was obtained by this method. By contrast, 80 percent of private sector real GNP in the forthcoming BEA data will be estimated by double deflation, and the real gross product originating in 22 service-producing industries will be estimated by this method. Eventually, nearly 100 percent of industry GNP will be derived from the double-deflation procedure.

Mohr also describes important improvements in three other measurement areas: 1) the development of annual purchased input cost structures; 2) the development and use of imported input cost shares and price deflators for the product-class inputs consumed by U.S. industries; and 3) expansion of industry GNP estimates to include three-digit detail for all goods-producing and many services industries.

Dean and Kunze discuss the BLS productivity measures, published for 173 industries, 39 of which do not produce goods. These 39 measures cover 42 percent of all workers in service industries in the private business sector. There is at least one industry measure for every industry division within the service sector. The authors describe in detail how these output measures are developed. They also present annual rates of growth for 1967–73, 1973–9, and 1979–87.

Over the past 25 years, the market basket used for the Consumer Price Index (CPI) has shifted from predominantly commodities to one that is service oriented. Armknecht and Ginsburg discuss changes that have occurred in the measurement of services prices in the CPI. They also discuss current studies designed to improve price measurement and quality adjustment, new pricing procedures for auto and tenants’ insurance, and methods for handling quality changes in medical care. Finally, the authors discuss two areas of potential improvement: alternative measures of medical care, by pricing treatments rather than specific services; and shifting to a flow-of-services approach for automobile transportation services.

Oi analyzes the “output” of a retail firm as a composite bundle. Stores consummate mutually advantageous transactions by matching buyers and sellers, moving goods in time and space, providing product information, and supplying ancillary services that reduce the sum of transaction and transformation costs. These services obviously can be supplied by specialists (retailers, wholesalers, and brokers), producers of goods, or consumers. The distributive trades accounted for only 8.2 percent of all jobs in 1900, but expanded to provide 25.5 percent of total employment in 1980. Reductions in transport, communication, and storage costs have al-

tered the behavior of consumers, encouraging price competition. In 1940, there was one food store for every 78 households; by 1980, each food store served 481 households. This trend toward larger stores can account for part of the growth in labor productivity. Store size also is related positively to store hours and inventory turnover. In 1988, over 70 percent of employees in supermarkets were on part-time work schedules because of the increase in sales during peak hours.

Finally, Oi notes, labor productivity is related to the composition of the product line. Supermarkets have expanded the breadth of their product line by adding delicatessens and bakeries where sales per person-hour are lower. On the other hand, gasoline service stations narrowed their product line by dropping repairs and oil changes. Labor productivity has climbed at an annual rate of 4 percent in self-service gasoline sales, but at a far lower rate in grocery stores. Measuring labor productivity in the distributive trades must take account of: 1) the resources supplied by the customer-shopper; 2) the economies of scale and massed reserves; 3) shifts in the makeup of the composite bundle of services supplied by retailers; and 4) the division of functions among retailers, producers, and consumers.

Bresnahan, Milgrom, and Paul observe that trading on stock exchanges has grown during the last three decades, suggesting dramatic growth in the real output of the stock exchange. Focusing on the "informational" rather than the "administrative" output of the stock exchange, the authors build on the standard model of information gathering and trading to investigate two informational hypotheses: 1) more informative securities prices align investor and management incentives better; and 2) better information in securities prices informs management about investment prospects. They conclude that the improved information content of stock prices likely represents an unimportant improvement in the output of the stock exchanges.

Hornstein and Prescott explore the problem of measuring the real output of the insurance sector in light of recent developments in general equilibrium theory. These developments, along with an extension, permit a priced commodity to be a complex incentive-compatible contract. They conclude that current methods are likely to undermeasure productivity change in the insurance sector.

The measurement of bank output is hindered by the absence of an explicit charge for many of the financial services provided. Because banks act as intermediaries in a regulated environment with fractional reserve requirements, they use the proceeds of intermediation to cover the cost of providing these services. To resolve this measurement problem, national income accountants have imputed the value of the uncharged-for services. Fxler and Zieschang formulate portfolio share equations to estimate the opportunity cost of money. The data come from the Federal Deposit Insurance Corporation Call Reports and include banks with assets over \$300 million for 1984-8. They find that real bank output grew 40 percent over the period. This esti-

ated growth in output is not sensitive to the opportunity cost of money used to construct the quantity index.

The operating costs of banks of similar scale and product mix vary greatly. Berger and Humphrey find that standard explanatory variables, including scale, mix, input prices, branches, and so on do not explain much of the dispersion. Cost differences among banks also are very stable over the three years examined: 1980, 1984, and 1988. This suggests that the differences more likely represent long-term differences in managerial efficiency than short-term differences in luck. The cost differences also are strongly negatively related to long-term profits, suggesting that omitted variables, such as product quality differences or different risk-return financial strategies, are not important.

Gordon examines the behavior of total factor productivity (TFP) in the transportation sector and its three main subsectors: airlines, railroads, and trucking. In contrast to the U.S. national income and product accounts (NIPAs), which exhibit a productivity growth slowdown for transportation after 1973 that is more severe than for the economy as a whole, Gordon finds no slowdown at all. Two main factors account for the difference. First, he shows that the NIPAs significantly understate the growth of both airline and railroad output after 1973. Second, he develops new measures of capital input for airlines that take quality improvements in aircraft operating performance more fully into account than official measures do. His capital input measure grows much more rapidly before 1973, implying that TFP grew more slowly before that date and slowed down less after that date.

Jorgenson and Fraumeni describe the impact of investment in education on U.S. economic growth. They develop estimates of lifetime labor incomes that include measures of the economic value of both market and nonmarket labor activities. They also present new estimates of the sources of U.S. economic growth that incorporate the effects of changes in the educational composition of the labor force and changes in the quality of hours worked. The authors find that investment in human and nonhuman capital accounts for the largest part of U.S. economic growth during the postwar period.

Witte, Mukerjee, and Hollowell adjust output in day care for the quality of care provided. By estimating a marginal valuation of child care using cost functions, they find that regardless of whether dollar or physical measures of output are used, and whether or not quality adjustments are made, the output of the day care industry grew during the 1970s and 1980s. Physical measures of output are substantially higher than dollar measures. Further, the level and growth of output of the day care industry is lower when quality adjustments are made. This suggests that currently available national data tend to overstate both levels and rates of growth of output.

Kremp and Mairesse analyze productivity in nine French service sectors from 1984-7, using a balanced sample of firms with more than 20 employees. They examine the average characteristics and the sources

of heterogeneity across sectors and across firms. They then estimate production functions for the pooled and separate service sectors. They reject the assumption of unitary elasticity of substitution in favor of an elasticity greater than one. There are no returns to scale with respect to the number of persons, and the elasticity with respect to hours per employee is even lower.

Increases in purchased services, foreign outsourcing, and investments in computers are alleged to have resulted in an understatement of input growth in manufacturing and thus an overstatement of growth in productivity, GNP, or value added in industries that are heavily engaged in these activities. Using Census Bureau data, Siegel and Griliches examine whether the improvement in measured manufacturing productivity growth since 1979 can be attributed to an increase in the rate of foreign and domestic outsourcing. They find that an industry's propensity to outsource is unrelated to its acceleration in productivity, although their measures of foreign outsourcing and service sector inputs in manufacturing are not comprehensive. They also report that some sectors were not consistently defined over time, probably because of a decline in the amount of information solicited from establishments by the Census Bureau in conducting its economic surveys. They also explore the problem of industry reclassification of large plants. However, they find no systematic relationship between an industry's post-1979 productivity growth and attrition or "switches" in its ASM (Annual Survey of Manufactures) plants.

Do the share of the labor force in the service sector and the share of income spent on services rise with income or over time? Heston and Summers use aggregate data on countries and household data on consumer expenditures to answer this question. They find that extra income does not lead to a significant increase in the share of services. The intercountry analysis leads to mixed conclusions concerning trends over time in the share of service expenditures, while the intracountry analysis indicates an unambiguous upward movement in services.

Murray describes measures of productivity in the public sector in Sweden. He considers the problem of aggregation in choosing final output, in weighting outputs together, and in the treatment of quality. In general, he finds declining productivity for 1960 through 1985. He also demonstrates the feasibility of measuring public sector output and dispels the myth that public sector outputs are so unique, intangible, and many-sided that measurement of them is hopeless.

A conference volume, published by the University of Chicago Press, is forthcoming. This article was prepared with the assistance of Amy Schwartz of Tufts University.

Politics and Economics in the Eighties

A conference on "Politics and Economics in the Eighties" was held on May 14-15 in Cambridge. Alberto Alesina, NBER and Harvard University, and Geoffrey Carliner, NBER, organized the following program:

James E. Alt, Harvard University, "Leaning into the Wind or Ducking out of the Storm? U.S. Monetary Policy in the 1980s"

Discussant: Benjamin M. Friedman, NBER and Harvard University

Morris P. Fiorina, Harvard University, "Elections and the Economy in the 1980s: Short and Long-Term Effects"

Discussant: William D. Nordhaus, NBER and Yale University

Mathew D. McCubbins, University of California at San Diego, "Party Governance and U.S. Budget Deficits: Divided Government and Fiscal Stalemate"

Discussant: Robert J. Barro, NBER and Harvard University

Thomas Romer, Carnegie-Mellon University, and Barry R. Weingast, Stanford University, "Political Foundations of the Thrift Debacle"

Discussant: Robert Litan, Brookings Institution

John Ferejohn, Stanford University, "Welfare Policy in the 1980s"

Discussant: Lawrence H. Summers, NBER and Harvard University

Keith T. Poole, Carnegie-Mellon University, and Howard Rosenthal, Carnegie-Mellon University and MIT, "The Spatial Mapping of Minimum Wage Legislation"

Discussant: Charles C. Brown, NBER and University of Michigan

I. M. Destler, University of Maryland, "United States Trade Policymaking in the Eighties"

Discussant: Anne O. Krueger, NBER and Duke University

Charles H. Stewart III, MIT and Stanford University, "The Politics of Tax Reform in the 1980s"

Discussant: David F. Bradford, NBER and Princeton University

Alt analyzes the actions of the Federal Reserve in the 1980s as an agent with several principals. Because Fed chairmen want to be reappointed and U.S. presidents want to be reelected, Alt predicts that changes in monetary policy before and after the election will depend on whether an incumbent is running, how probable his reelection is, and how long the chairman and president have served, among other things. He finds that making the Fed more accountable to the president, or coordinating presidential and congressional economic intentions more closely, could exacerbate political business cycles.

Fiorina reviews the impact of national economic con-

ditions on election outcomes and party identification in the 1980s. Despite much popular commentary about the uniqueness of Reagan's "Teflon" presidency, Fiorina shows that the economy had the same effect on elections in the 1980s as it did in the 1970s and 1960s. Fiorina also finds that economic conditions in the 1980s tended to increase the percentage of voters who identified themselves as Republicans. In particular, the Democrats lost ground with the middle- and upper-income groups, while gaining only in the poorest segment of the population.

McCubbins argues that the deficits of the 1980s are the consequence of divided government. Once the deficits of the 1980s were in full bloom, Reagan was able to prevent Congress from enacting a tax increase. The compromise required to overcome the mutual checks held by the House Democrats and the Senate Republicans over each other's spending programs led to increased spending on nearly every function of government. Spending has been held in check since the Democrats took control of both houses of Congress in 1986, especially for Republican programs such as defense.

Romer and Weingast study the political sources of the savings and loan (S&L) crisis in the mid-1980s. "Gambling for resurrection" by insolvent thrifts that were allowed to remain open was the main source of the exploding losses. But why did regulators not stop the gambling and why was Congress so slow to respond? The authors argue that by delaying FSLIC recapitalization and keeping recapitalization low, Congress limited the number of insolvent S&Ls that regulators could force to close or reorganize. Congress also intervened in the regulatory process by preventing enforcement of existing rules, and by passing new legislation that relaxed many regulatory provisions. In sum, congressional action and inaction, motivated largely by normal legislator strategies of constituent service, resulted in policies that created the debacle.

Ferejohn examines federal spending on welfare programs in the 1980s. In his first year in office, Reagan was able to halt spending increases in a variety of domestic programs. The programs that shrank or disappeared had weak political foundations, especially those that benefited the poor. Programs with solid political support from middle-class voters managed to survive intact. Ferejohn concludes that Reagan's impact was largely transient and is not likely to shift the direction of change of the welfare system fundamentally.

The minimum wage increased dramatically in real terms from the end of World War II until 1968 and decreased equally dramatically thereafter. The increases voted in 1989 recoup only a small portion of the decline during the Reagan years. Poole and Rosenthal find that roll call voting on minimum wages is highly partisan and structured along liberal-conservative lines. The decline in the real minimum wage in the 1980s reflects Republican dominance of the White House and the Senate and, most likely, changing preferences of individual members of Congress.

Despite unprecedented trade deficits and conse-

quent pressure from affected industries, liberal U.S. trade policies survived the 1980s in remarkably good shape, according to Destler. There were marginal increases in import protection, and a substantial shift toward aggressiveness on exports, but proposals for more fundamental change proved unsuccessful. Destler suggests that one major reason was a system of executive-congressional power-sharing: members of Congress were able to use trade issues to enhance their visibility and political standing *without* actually legislating on the level of protection for specific products.

Stewart examines the political and institutional foundations of tax reforms in the 1980s. Although the decade was characterized by unusual volatility, much of the debate about tax policy was structured along the century-long divisions that have separated the two major political parties. Additional tax policymaking was influenced significantly by democratizing reforms in the House of Representatives during the 1970s, which made the House more sensitive to electoral pressures to change the tax structure early in the 1980s. Later in the decade, further changes to the tax structure were possible as congressional leaders found ways to circumvent the prior decade's democratization.

Also attending the conference were: Kathryn M. Dominguez and Dani Rodrik, NBER and Harvard University; Geoffrey Garrett, Stanford University; Claudia D. Goldin, NBER and University of Pennsylvania; Herschel I. Grossman, NBER and Brown University; Paul L. Joskow, James M. Poterba, and Nancy L. Rose, NBER and MIT; William Keech, University of North Carolina; Robert Keohane, Paul Peterson, and Kenneth A. Shepsle, Harvard University; John Londregan, Carnegie-Mellon University; Sule Ozler, University of California at Los Angeles; J. David Richardson, NBER and University of Wisconsin at Madison; and Nouriel Roubini, NBER and Yale University.

The conference proceedings will be published as an NBER book. Its availability will be announced in a future issue of the *NBER Reporter*.

The Economics of Populism in Latin America

Over 175 economists and distinguished guests attended a conference on "Macro Policies and Income Distribution in Latin America: The Economics of Populism" in Washington on May 18-19. The conference, which was sponsored by the NBER with the cooperation of the Inter-American Development Bank, was organized by NBER Research Associates Rudiger Dornbusch, MIT, and Sebastian Edwards, University of California at Los Angeles. The program was:

Rudiger Dornbusch and Sebastian Edwards, "The Economic Populism Paradigm"

- Eliana A. Cardoso, NBER and Tufts University, and Ann Helwege, Tufts University, "Populism, Proficiency, and Redistribution"
 Discussant: William Cline, Institute for International Economics
- Robert R. Kaufman, Rutgers University, and Barbara Stallings, University of Wisconsin, "The Political Economy of Populism"
 Discussants: Alberto Alesina, NBER and Harvard University, and Paul Drake, University of California at San Diego
- Federico A. Sturzenegger, MIT, "Description of a Populist Experience: Argentina, 1973-6"
 Discussants: Affonso Pastore, University of São Paulo, and Guido diTella, Embassy of Argentina
- Felipe Larrain, CIEPLAN and Harvard University, and Patricio Meller, CIEPLAN, "The Socialist-Populist Chilean Experience: 1970-3"
 Discussants: Vittorio Corbo, World Bank, and Simon Teitel, Inter-American Development Bank
- Paulo Rabello de Castro, Fundação Getulio Vargas, and Marcio Ronci, RC Consultores, Brazil, "Sixty Years of Populism in Brazil"
 Discussant: Leopoldo Solis, Instituto de Investigación Económica y Social Lucas Alaman, A.C.
- Roque B. Fernandez, CEMA, "What Have Populists Learned from Hyperinflation?"
 Discussant: José de Gregorio, MIT
- Carlos Bazdresch, Centro de Investigación y Docencia Económicas, and Santiago Levy, Boston University, "Populism and Economic Policy in Mexico, 1970-82"
 Discussant: Enrique Cardenas, University of the Americas, Puebla
- Miguel Urrutia, Fedesarollo, "On the Absence of Populism in Colombia"
 Discussants: Juan Cariaga, Inter-American Development Bank, and Guillermo A. Calvo, International Monetary Fund
- Ricardo Lago, World Bank, "The Illusion of Pursuing Redistribution through Macropolicy: Peru's Heterodox Experiment, 1985-90"
 Discussants: Javier Iguiniz, Universidad Pontificia Católica, Lima, and Miguel Savastano, University of California at Los Angeles
- José Antonio Ocampo, Federación Nacional de Cafeteros, "Collapse and (Incomplete) Stabilization of the Nicaraguan Economy"
 Discussants: Ann Helwege, and Arnold Harberger, University of California at Los Angeles

Dornbusch and Edwards define populist policies as emphasizing growth and income redistribution while downplaying the importance of fiscal and external constraints and deemphasizing the risk of inflation. Populists see idle resources as *prima facie* evidence that aggregate demand is insufficient. They advocate redistribution toward the working class to increase demand enough that the economy approaches full em-

ployment. Then increased tax receipts at the higher level of income will balance the budget. Increased utilization of capacity will allow firms to spread fixed costs over a larger output, lowering prices and increasing external competitiveness, thereby mitigating the external finance gap. Dornbusch and Edwards stress the similarity of the macroeconomic experience under populist programs in various countries, evolving in four stages. Initially, existing reserves and inventories allow rapid output expansion at frozen prices and sharply increased real wages. In the second phase, evolving bottlenecks enforce realignments of prices and exchange rates or strict controls. The maintenance of high real wages requires pervasive subsidies of consumer goods for urban workers, worsening the budget deficit. Inflation accelerates but wages keep up. Increasing shortages lead to rapid inflation, demonetization, and capital flight in the third stage. Internal and external budget constraints become binding and enforce real depreciation and reduction in real wages, signifying the failure of the populist program. In the final phase, orthodox stabilization takes place, returning the economy to the status quo ante, alas at lower real wages. Capital flight and reduced investment lead to a lasting reduction in welfare.

Cardoso and Helwege find that populist programs have failed to improve the distribution of income significantly, contrary to their stated intentions. In their initial successful stages, populist policies favor urban labor in the official sector to the detriment of workers in the urban unofficial sector and the rural areas. In addition, the inevitable stabilization at the end of the populist program generates a recession likely to worsen income distribution. The authors note that responsible fiscal policies, realistic exchange rates, and stable economic environments have proved more effective in improving the living standards of the poor.

Kaufman and Stallings examine the relationships among income distribution, the political system, and the emergence of populist policies. A more unequal income distribution and a more polarized political system increase the likelihood of populist episodes. Past experiences with failed populist policies and the reduced availability of external finance limit the scope for populist policies in the near future. However, the authors argue that populism will recur unless market-oriented policies can deliver sustained improvements in the distribution of income.

Sturzenegger finds that the Argentine experience from 1973-6 broadly conforms to the Dornbusch-Edwards paradigm. Initial successes could not be sustained in the face of binding internal and external financing constraints. Asking why policymakers adopt policies apparently doomed to failure, the author considers a number of partial answers rooted in political business cycle analysis. He concludes that a complete explanation for the adoption of apparently irrational policies remains to be found.

Larrain and Meller stress that while the macroeconomic experience in Chile under Allende was similar to

the Dornbusch-Edwards paradigm, the Allende government actually was socialist rather than populist. The Allende government employed populist policy to demonstrate support for its main objective: the restructuring of the Chilean economy, rather than as an end in itself. Thus, in contrast to the typical populist experience, the Allende government redistributed private domestic and foreign assets to the state on a substantial scale.

De Castro and Ronci maintain that Brazilian populism was not the passive response of politicians to existing social pressures. Rather, the adoption of populist policies reflects the rational calculations of politicians aiming to consolidate authoritarian power. The same motive prevents the emergence of independent authorities, in particular the establishment of an independent central bank, and thus facilitates the continuance of populist policies.

Fernandez argues that the heterodox policy of freezing prices prior to fiscal reform has been discredited as governments have failed to cut budget deficits. Previous failures have reduced the credibility of heterodox stabilization programs, making immediate fiscal reform a prerequisite for the success of future programs. The author stresses the importance of domestic debt, credibility, and financial crises as additional determinants of the success of heterodox stabilization programs. In particular, he notes that the debt dynamics might make debt restructuring a prerequisite for successful stabilization.

Bazdresch and Levy stress that neither incompetence nor lack of experience can explain the persistent adoption of populist policies in Mexico. Rather, populist policies were adopted by weak governments otherwise unable to rally sufficient support for their objectives. Strong governments capable of implementing their policy objectives will have less incentive to resort to populist policies. The authors note that in the end, populist policies have failed to improve income distribution, because the poor have borne the burden of the inevitable adjustment.

Urrutia finds that a well-developed system of checks and balances has prevented the emergence of populism in Colombia. In its place, "clientelism" developed, characterized by a pragmatic class of professional politicians aiming to ensure reelection by building up local voter support. A long-standing democratic tradition, far-reaching regionalization of the political process, long political horizons, and intellectual outward orientation severely constrain the ability of the central political authority to engage in populist policies.

Lago finds a close correspondence between the Peruvian experience from 1985-90 and the Dornbusch-Edwards paradigm. The protracted recession following the initial boom offset the initial improvement in income distribution. Deficient public and private investment resulting from internal financing constraints and highly distorted prices has reduced the growth potential for the near future. In assessing the most recent events, the author stresses that the existence of a de jure indepen-

dent central bank headed by a de facto independent president can form a crucial element in the control of hyperinflation.

Ocampo emphasizes that land reform and nationalization differentiate the Sandinista economic program in Nicaragua from the classical populist paradigm. Nevertheless, the macroeconomic developments bear some resemblance to the populist experiences of other countries. The first attempts to suppress inflation with wage and price controls shared the populist deemphasis on fiscal reform. The ensuing hyperinflation resulted in an orthodox stabilization of cutting the government budget deficit. This led to a further decline in real wages.

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

The Political Economy of Tax Reforms

A new conference series, the NBER East Asian Seminar in Economics, was launched with a conference on "The Political Economy of Tax Reforms and Their Implications" in Seoul, Korea on June 14-16. The conference, cosponsored by the Korea Development Institute (KDI), was organized by Anne O. Krueger, NBER and Duke University; Takatoshi Ito, NBER and Hitotsubashi University; and Bon Ho Koo, KDI. The program was:

JAPAN

Masaaki Homma, University of Osaka, "Tax Reform in Japan"

Yukio Noguchi, Hitotsubashi University, "Aging of Population, Social Security, and Tax Reform"

Discussants: Maria S. Gochoco, University of the Philippines; Tatsua Hatta, University of Osaka and Harvard University; Hiromitsu Ishi, Hitotsubashi University; and Charles E. McLure, Jr., NBER and Stanford University

Takatoshi Ito, and Thomas Barthold, U.S. Congress Joint Committee on Taxation, "Bequest and Gift Taxes and Their Impacts on Savings Behavior: U.S.-Japan Comparison"

Tatsuo Hatta, and Hideki Nishioka, Osaka University, "Efficiency Gains from Reducing the Average Capital Income Tax Rate in Japan" (This paper is described later in this issue in "Joint Session on Japanese Economic Policies.")

Discussants: Chi-Ming Hou, Chung-Hua Institute for Economic Research; Hiromitsu Ishi; Medhi Krongkaew, Thammasat University; Anne O. Krueger; and Assaf Razin, NBER and Tel Aviv University

KOREA

Tae-Won Kwack, Seoul City University, and Kye-Sik Lee, KDI, "Tax Reform in Korea"

Discussant: Kun-Young Yun, Yonsei University

Kun-Young Yun, "Taxation of Income from Foreign Capital in Korea"

Discussants: Kwang Choi, Hankook University of Foreign Studies, and Ching-Huei Chang, Institute of the People's Three Principles

John Whalley, NBER and University of Western Ontario, and Irene Trela, University of Western Ontario, "Taxes, Outward Orientation, and Growth Performance in Korea (NBER Working Paper No. 3377)"

Discussants: Chi-Ming Hou, Hiromitsu Ishi, Medhi Krongkaew, Anne O. Krueger, and Assaf Razin

TAIWAN

Chuan Lin, Chung-Hua Institute for Economic Research, "An Appraisal of Business Tax Reform in Taiwan: The Case of Value-Added Taxation"

Discussants: Kwang Choi and Ching-Huei Chang

Ching-Huei Chang, and Peter W. H. Cheng, National Cheng-Chi University, "Tax Policy and Foreign Direct Investment in Taiwan"

Discussants: Kwang Choi; Toshihiro Ithori, University of Osaka; Toshiaki Tachibanaki, Kyoto University; and Twatchai Yongkittikul, Thailand Development Research Institute

INTERNATIONAL TAXATION

Charles E. McLure, Jr., "The Political Economy of Tax Reforms and Their Implications for Interdependence: United States"

Discussant: Toshiaki Tachibanaki

Assaf Razin, and Efraim Sadka, Tel Aviv University, "International Interactions between Tax Systems and Capital Flows"

Parthasarathi Shome and Vito Tanzi, International Monetary Fund, "The Role of Taxation in the Development of the East Asian Economies"

Discussants: Toshihiro Ithori; Takatoshi Ito; Joseph Lim, University of the Philippines; and John Whalley

Japan

In 1988, the new Takeshita administration began an effort to complete tax reform begun ten years earlier in Japan. Homma estimates that slightly over 30 percent of Japanese households will see a modest to large increase in their taxes when the reform is complete. The largest tax increases will fall on pensioners, unmarried taxpayers, two-earner families earning less than Y8 million (about \$54,000), and families with one full-time and one part-time worker who together earn less than Y4 million. The largest beneficiaries of the reform will be upper-middle-class families earning Y7 million to Y10 million, one-earner couples with children, and families earning Y4-Y6 million. The best prospects for further reform in Japan are: 1) eliminating tax prefer-

ences for particular taxpayers; 2) broadening the tax base by accounting for land price increases and reducing the special tax treatment of the agricultural industry; 3) replacing the subtraction method of bookkeeping in order to better enforce the consumption tax; and 4) reformulating the special treatment of small- or medium-sized traders along international lines.

Based on trends in the Japanese tax burden, social security payments, and population, Noguchi concludes that the Shohi-zei consumption tax, implemented in 1989, will be important in spreading the future tax burden evenly among different generations. The tax burden in Japan is still low compared to other countries, largely because of relatively lower social security expenditures in national income. However, the aging of the Japanese population will lead to dramatic increases in social security payments. Using the current tax system to pay for this will place an unsustainable burden on workers.

Ito and Barthold describe and compare the gift and bequest (estate) tax systems in the United States and Japan. Then, using tax data, they estimate intergenerational transfers. They find that in Japan, a substantial portion of wealth, especially land, is bequeathed from one generation to the next.

Korea

Kwack and Lee show that, historically, taxes have not been an effective policy tool in Korea because of extensive government intervention, inefficient tax administration, and low tax compliance. However, following recent political changes, an increased emphasis on equity, and a reduction in direct government influence over resource allocation, tax policy has moved to the center of economic policymaking. Current tax reform issues revolve around a badly convoluted income tax system, the need to control land speculation, and efforts to reform the "real name" system that will prevent evasion of taxes on investment income.

Yun studies the impact of opening Korea's capital markets to the world. He shows that when the capital market is open, and the international capital flow is unrestricted, it is optimal to set the effective tax rate on foreign capital at zero. In this light, the overall effective tax burden levied by the Korean government on foreign capital income is reasonable. Further, in the presence of a foreign tax credit system in the home country, a positive tax becomes optimal; however, the actual optimal level may not be attainable because of tax treaties with other nations. Yun's work, however, does not support the generous preferential tax treatments under the Korean Foreign Capital Inducement law. Further, Yun estimates that the effective tax rate on income from all capital in Korea is negative at the corporate level and positive at the equity holder and debtholder level. In an open capital market, such a system would encourage investment but discourage savings. This could hurt long-term growth of the economy.

Whalley and Trela investigate the contribution of taxation and outward-oriented policies to Korean growth, through induced intersectoral resource transfers and impacts on effort and labor supply in agriculture and manufacturing. They also emphasize how, in Korea's extraordinary growth performance since the early 1960s, tax policy has been used in several different ways to achieve the perceived economic objectives of the time. In the earlier years of Korean growth, taxes played a relatively modest role, accounting for less than 10 percent of actual Korean growth from 1962-82 and during the intensive outward-oriented phase in 1962-72.

Taiwan

The introduction of the value-added tax (VAT) in Taiwan in 1986 represented the first step in reforming the indirect tax system. Although the goal has been to make the tax system more socially equitable and economically efficient, there has been no government action in that direction since 1986. Lin believes that the problems that remain are severe. For example, increasing economic development accompanied by political democratization eventually will give rise to demands for decentralization. A tax-sharing system could satisfy the needs of provincial and municipal governments. Second, the large administrative costs of the uniform invoice system could be reduced by integrating income taxes, or by lowering the tax rate to reduce tax evasion and expand the tax base. The VAT system could be enlarged, and the size of the small entrepreneur tax category reduced. Finally, to balance the regressive effect of future increases in VAT, further tax exemptions for foods, unprocessed agricultural products, and medicines would be needed.

Chang and Cheng consider the possible impact of tax reform in Taiwan on foreign direct investment (FDI). Currently, tax incentives save eligible firms about one-third of what they would pay otherwise. Aggregate time-series data from Taiwan for 1972-87 show that the effect of tax preferences on FDI is insignificant. However, firm-specific data from 1984-6 show that tax preferences have no significant effect on manufacturing firms in general, but a strong effect on investment in electronics. This effect may be overestimated somewhat because of other tax preferences available to electronics.

International Taxation

McLure briefly describes the 1981 changes in U.S. tax law and the salient features of the Tax Reform Act of 1986. He then discusses the political economy of the 1986 tax reform, or how "the impossible became the inevitable." McLure examines those aspects of recent U.S. tax changes that directly affect foreigners most strongly, including effects on international flows of trade and capital and induced effects on foreign tax laws via tax competition. Finally, he draws lessons for other countries from the discussion of international

issues—both lessons for single countries acting unilaterally, and lessons for the community of nations.

Razin and Sadka analyze three policy issues that arise with the international integration of capital markets: the effects of the opening up of an economy to international capital movements on the size of government and the structure of taxes; the incentive to restrict the size of capital exports in the presence of capital flight; and the provisions of the taxation of foreign-source income from capital that emerge from international tax competition and from the advantages of international tax harmonizations. They suggest that a significant tax restructuring could follow the process of integration of the world capital markets. They also highlight the significance of coordination among national tax authorities for the smooth functioning of a worldwide system of taxing capital income.

Focusing on Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand, Shome and Tanzi examine the role of taxation in the development process. They ask whether as countries develop they adopt the VAT, simplify their income taxes on wider revenue bases, or reduce effective protection. The authors also question whether certain tax policies might be successful in some environments—homogeneous, centralized societies such as in Korea, Singapore, and Taiwan—but not in others.

In addition to the authors and discussants, the conference was attended by: Suan Tan, University of Hong Kong, and S. C. Tsiang, Chung-Hua Institute for Economic Research.

International Seminar on Macroeconomics

The thirteenth annual International Seminar on Macroeconomics (ISOM) was held in Mannheim, West Germany, on June 19-20. ISOM is cosponsored by the National Bureau of Economic Research, the European Economic Association, and La Maison des Sciences de l'Homme. This year's conference was hosted by the Institut für Volkswirtschaftslehre und Statistik at the Universität Mannheim. ISOM is jointly organized each year by Robert J. Gordon of the NBER and Northwestern University and by Georges de Ménil of the Ecole des Hautes Etudes en Sciences Sociales (EHESS).

The overall theme for this year's conference was a retrospective on the major developments in macroeconomics of the 1970s and early 1980s. The papers and their discussants were:

John Y. Campbell, NBER and Princeton University, and N. Gregory Mankiw, NBER and Harvard University, "The Response of Consumption to Income: A Cross-Country Investigation"

Discussants: John H. Cochrane, NBER and University of Chicago, and David F. Hendry, Nuffield College, Oxford University, and Center for Economic Policy Research (CEPR)

Gabriel Sensenbrenner, Northwestern University and Brookings Institution, "Aggregate Investment, the Stock Market, and the Q Model: Robust Results for Six OECD Countries"

Discussants: John Y. Campbell, and Heinz König, Universität Mannheim

David F. Hendry, and Neil R. Ericsson, Federal Reserve Board, "Modelling M1 Demand in the United Kingdom and the United States"

Discussants: John S. Flemming, Bank of England, and Uwe Westphal, Universität Hamburg

Michael P. Clements, University of Oxford, and Graham Mizon, University of Southampton, "Empirical Analysis of Macroeconomic Time Series: VAR and Structural Models"

Discussants: Gebhard Kirchgässner, Universität of Osnabrück, and Christopher A. Sims, NBER and University of Minnesota

Katsuhito Iwai, University of Tokyo, "Can Rational Expectations Survive in an Imperfectly Competitive World? New Developments in Macroeconomics from a Far Eastern Perspective"

Discussants: William H. Branson, NBER and Princeton University, and Edmond Malinvaud, College de France and EHESS

Jean Pierre Danthine, Université de Lausanne and CEPR, and John B. Donaldson, Columbia University, "Methodological and Empirical Issues in Real Business Cycle Theory"

Discussants: Bennett T. McCallum, NBER and Carnegie-Mellon University, and Jürgen von Hagen, Universität Bonn

Horst Entorf, Universität Mannheim, "Real Business Cycles Under Test: A Multicountry, Multisector Exercise"

Discussants: Charles I. Plosser, NBER and University of Rochester, and Lucrezia Rechlin, OFCE, Paris

Paul M. Romer, NBER and University of Chicago, and Luis Rivera-Batiz, University of Chicago, "International Trade with Endogenous Technical Change"

Discussants: Mervyn A. King, NBER and London School of Economics, and Charles Wyplosz, EHESS

Campbell and Mankiw use quarterly data from Canada, France, Japan, Sweden, and the United Kingdom to examine whether individuals consume current rather than permanent income. They test whether liquidity constraints explain why current income affects consumption and find that variables that predict income growth also predict consumption growth. However, they find no evidence to support the hypothesis that changes in real or nominal interest rates have direct effects on consumption growth when one accounts for the effect of current income. In addition, Campbell and Mankiw find that financial deregulation did not de-

crease the effect of current income on consumption.

Sensenbrenner compares the Q model of aggregate investment with the "neoclassical" Jorgenson approach. His results show that a dynamic Q investment equation is as satisfactory as the Jorgenson equation from an empirical perspective, while still remaining preferable from a theoretical standpoint. Sensenbrenner uses the dynamic Q model to account for intertemporal investment inertia across six OECD countries, demonstrating that the dynamic Q model is superior to the Jorgenson specification in that the latter does not predict that a lagged dependent variable should be included in the investment regressions. Sensenbrenner justifies his treatment of the lagged dependent variable by reinterpreting the cost-of-adjustment function in his version of the Q model.

Hendry and Ericsson develop constant, data-coherent M1 money demand equations for the United States and United Kingdom to explain the great velocity decline, the recent M1 explosion, and the notorious "missing money" puzzle. They find that the "missing money" was not the result of financial innovation, while the large increases in M1 observed in the mid- to late 1980s were primarily the result of M1's lagged adjustment to falling interest rates and inflation and to the introduction of interest-bearing checking accounts.

Clements and Mizon argue that vector autoregression (VAR) and structural models serve complementary rather than competing functions. The unrestricted VAR model constitutes an important benchmark of comparison against the alternative structural models. A statistically well-specified, constant parameter VAR model provides a basis for testing hypotheses of Granger noncausality, exogeneity, and a priori theory. Clements and Mizon use this approach to examine wages, prices, productivity, and unemployment in West Germany, the United States, and the United Kingdom.

Iwai uses a Chamberlainian model of monopolistic competition in which errors in expectations are caused by macroeconomic imbalances to illustrate the logical inconsistency of the hypothesis of rational expectations. He finds that whenever a macroeconomic balance is disturbed in a monopolistically competitive economy, the economy may begin a cumulative price increase or decrease, which eventually leads to a self-generating hyperinflation or deflation. He also examines a monopolistically competitive economy with costly price adjustment.

Danthine and Donaldson survey the methodological import of real business cycle (RBC) theory, summarize the current state of empirical knowledge about business cycle phenomena, and discuss the significance of the most common criticisms of RBC models. They also evaluate the performance of existing models and review recent efforts to explain the employment variability puzzle, arguing that such a search points to the need for including non-Walrasian elements in RBC models.

Entorf finds that the multisector Long and Plosser model implies that nonconsumer sectors are exogenous while consumption is endogenous. However, evi-

dence from the United Kingdom and Germany suggests that output fluctuations in consumer goods sectors precede those in the nonconsumer sectors. Entorf extends the Long and Plosser model to account for stochastic demand disturbances. Using U.S. and French time series, he cannot confirm the lead-lag structure predicted by RBC theory. He also finds that the basic RBC assumption, that shocks originate exclusively from changes in technology, is misleading. Entorf concludes that only a more explicit modeling of demand influences will reconcile RBC theory with empirical observation.

In their paper on international trade with endogenous technical change, Romer and Rivera-Batiz examine the effects of restrictions on trade in a model that includes increasing returns to scale in aggregate production. In assessing both across-the-board and selective tariffs, the authors find that both growth and welfare are always lower under such trade restrictions than under a free trade regime. Specifically, trade restrictions can have three distinct effects. Positive tariffs lead directly to a reduction in the returns to a research sector, while simultaneously diminishing alternative opportunities for inputs that are used in research. By contrast, selective tariff protection induces redundant research effort and produces negative level and growth effects, thereby unambiguously eroding real welfare.

Selected papers from ISOM 1990 will be published in the *European Economic Review* in spring 1991.

Exchange Rate Targets and Currency Bands

A conference on "Exchange Rate Targets and Currency Bands," jointly sponsored by the NBER and the Centre for Economic Policy Research (CEPR), was held at the University of Warwick, England, on July 10-11. The program, organized by Paul R. Krugman, NBER and MIT, and Marcus M. Miller, CEPR and University of Warwick, was:

Renzo Avesani, Università de Trento, "Endogenously Determined Target Zones and Optimal Demand for International Reserves"

Discussant: Giuseppe Bertola, CEPR and Princeton University

Francisco Delgado, University of Pennsylvania, and Bernard Dumas, NBER and University of Pennsylvania, "Monetary Contracting Between Central Banks and the Design of Sustainable Exchange Rate Zones" (NBER Working Paper No. 3440)

Discussant: Leonardo Bartolini, Princeton University

Giuseppe Bertola, and Ricardo J. Caballero, Columbia University, "Reserves and Realignments in a Target Zone"

Discussant: Lars E. O. Svensson, NBER and University of Stockholm

Marcus M. Miller, and Alan Sutherland, University of Warwick, "Britain's Return to Gold and Impending Entry into the EMS: Expectations, Joining Conditions, and Credibility"

Discussant: Gregor Smith, Queen's University

Willem H. Buiter and Vittorio U. Grilli, NBER and Yale University, "The 'Gold Standard Paradox' and Its Resolution" (NBER Working Paper No. 3178)

Discussant: Maurice Obstfeld, NBER and Harvard University

Paul R. Krugman, and Julio J. Rotemberg, NBER and MIT, "Speculative Attacks on Target Zones"

Discussant: Bernard Dumas

Gregor Smith, and Michael Spencer, Queen's University, "Estimation and Testing in Models of Exchange Rate Target Zones and Process Switching"

Discussant: Hossain Samiei, Fitzwilliam College, Cambridge, England

Lars E. O. Svensson, "The Term Structure of Interest Rate Differentials in a Target Zone: Theory and Swedish Data" (NBER Working Paper No. 3374)

Discussant: Gabriela Mundaca, Bank of Norway

Kenneth A. Froot, NBER and MIT, and Maurice Obstfeld, "Intrinsic Bubbles: The Case of Stock Prices" (NBER Working Paper No. 3091)

Discussant: Paolo Pesenti, Yale University

Barry J. Eichengreen, NBER and University of California at Berkeley, and Peter M. Garber, NBER and Brown University, "Before the Accord: U.S. Monetary-Financial Policy, 1945-51" (NBER Working Paper No. 3380)

Discussant: Kenneth A. Froot

Panel Discussion: "Exchange Rate Targets, Currency Bands, and Policy"

Panelists: Paul R. Krugman; Philippe Moutot, Banque de France; Francesco Papadia, Banca d'Italia; and Antti Suvanto, Bank of Finland

Avenasi finds that when fundamentals follow a random walk (strictly speaking, a Brownian motion process), and provided that those fundamentals are initially within the prescribed range, the optimal policy for a central bank is to intervene by infinitesimal amounts at the boundaries of an exchange rate band. He argues, however, that the observed dynamics of exchange rates would be captured better if the continuous Brownian motion that describes the fundamentals were accompanied by a Poisson—or "jump"—process, which would illustrate the effects of significant "news" on the fundamentals, for example. Finally, Avenasi defines an exchange rate system to be sustainable when the expected present discounted value of expenditures on reserves is finite.

Delgado and Dumas argue that the sustainability of a regime depends mainly on agents' perceptions of the crisis it is designed to avert. They analyze the collapse to a free float from fixed exchange rates and from one- and two-sided zones and investigate switches from fixed rates to one- or two-sided zones, and realignments. They find that the reserves needed by the central bank to prevent a speculative attack are larger in the case of unilateral collapse (a switch to a one-sided target zone) than in the case of a coordinated suspension of intervention (a switch to a float). Further, the size of the required reserves is correlated inversely with the width of the initial two-sided target zone.

Bertola and Caballero assume that the probability (and/or size) of jumps in the fundamentals caused by interventions is related to the net interventions that have taken place already. Therefore, the process driving reserves is stationary, and the exchange rate regime is sustainable. Conditional on the level of reserves, the theoretical relationship between exchange rates and fundamentals is nonlinear. However, this nonlinearity disappears when the conditional relationships are weighted by long-run frequency of reserves.

Miller and Sutherland compare the United Kingdom's return to the gold standard in the 1920s to the current debate on the United Kingdom joining the exchange rate mechanism (ERM) of the European Monetary System (EMS). Miller and Sutherland argue that the anticipation of a change in regime in the 1920s had a positive effect on the dollar value of sterling. They note that the trend appreciation of sterling, which others have viewed as exogenous, probably reflected the deliberate tightening of monetary policy in order to expedite sterling's return to gold. Their principal point, however, is that price sluggishness was important. Miller and Sutherland suggest that the major difference between the 1920s and the present is the lack of credibility of an ERM peg for sterling. Whereas in the 1920s there were no doubts about the commitment to return to gold, the prime minister has been explicit in her view that the United Kingdom's entry into the ERM should involve no irrevocable locking of the currencies. Miller and Sutherland find that some of the disinflationary benefits implied by a credible commitment to lock into a hard currency are diminished as credibility is reduced.

A country that has exhausted its gold reserves in defending the existing exchange rate may find that the switch to a free float leads to a sharp appreciation of its currency. Buiters and Grilli seek to identify how this "gold standard paradox" will occur. They find that the paradox does not arise if the fundamentals follow a pure random walk, but it does arise in the case of a random walk with a trend, or if the fundamentals tend to revert to a mean. However, this paradox will not occur if arbitrageurs are willing to speculate against such an appreciation. This, in turn, will postpone the switch to a float until it can take place without appreciation.

Krugman and Rotemberg propose an alternative solution to the gold standard paradox. They maintain

that a central bank that has exhausted its own gold reserves will still be prepared to buy gold at the par value or, equivalently, that the central banks would like to return to gold if the opportunity arose. Thus, the regime following the collapse of the gold standard would not really be a free float but rather a one-sided target zone, so that the gold standard may be interpreted as a boundary between two imperfectly defensible target zones. If reserves are not sufficient to defend the zone when fundamentals change, then at any point in time, they will all be held by only one central bank, and they will be transferred from one to the other at a certain critical value of the fundamentals. Similarly, even if reserves are initially large, the assumption that a fixed amount cannot be replenished implies that after a certain time they will be exhausted by a speculative attack.

Since the models of exchange rates typically do not specify precisely what the fundamentals are, and the statistical distribution of the exchange rate is not known, Smith and Spencer argue that standard econometric techniques are not applicable. They generate simulated exchange rate data and calculate moments to be compared with those computed from the actual data. They then identify the parameters that display the best match between simulated and observed data. Smith and Spencer consider the exchange rate of the Italian lira vis-à-vis the Deutschmark using daily data from January 1987 to September 1988. They find that the discrepancies between simulated and actual moments are not negligible, but they claim that their model is broadly consistent with the observed data.

Svensson examines the implications of a target zone model for the term structure of international interest rate differentials. Using Swedish monthly data for February 1986 to October 1988, he confirms that international interest rate differentials decrease with the exchange rate, and that the bands on these interest rate differentials also will decrease with the term of maturity. On the other hand, he finds that only a limited proportion of the total variability of interest rate differentials is explained by variations in the exchange rate. He cites the risk of devaluation and the presence of exchange controls and risk premiums as possible explanations for the remaining variability.

Froot and Obstfeld consider the case of intrinsic bubbles, which are driven by the fundamentals and not by extraneous factors. They argue that these may account for such phenomena as persistent overvaluation or undervaluation in the stock market, and for extreme sensitivity of stock price to dividends. They regress the price/dividend ratio on a constant and dividends. This relationship is nonlinear because of the presence of a bubble. Froot and Obstfeld note, however, that the same result could arise from expected changes or other phenomena.

Eichengreen and Garber use a target zone model to interpret U.S. economic policy in the run-up to the Treasury-Fed Accord. They attribute the stability of nominal interest rates in periods of rapid inflation and deflation to the presence of an implicit target zone for

the price level, under the assumption that shocks to the real interest rate, emanating from the real economy, generate the dynamic effects. If the real interest rate is high, prices increase because an associated rise in the nominal rate contracts the demand for real balances. If real rates rise to a point that triggers intervention, anticipation of the monetary contraction and its associated deflation keep the price level from exceeding an upper bound of a zone. The zone on the price level, and the credible commitment of the central bank to defend it, will affect expectations of inflation and also determine a target zone for the nominal interest rate. They justify the authorities' adoption of a target zone for prices on the grounds that the postwar economy was characterized by a sustained high level of aggregate demand and considerable inflationary pressures, and also because of the need to stabilize interest rates in order to avoid capital losses of commercial banks, which might jeopardize financial stability. By the time the target zone collapsed in 1951, its maintenance would have required a severe monetary contraction. Other objectives, especially the financing of the Korean War, has become more pressing, and fear of financial instability has diminished appreciably. The Treasury-Fed Accord that followed brought the operation of the target zone to a definite end.

In the panel discussion, Papadia noted the emphasis in the theoretical literature on speculative attacks on fixed rate systems and recalled the widespread skepticism at the inception of the ERM in 1989. He noted that this initial skepticism now has virtually disappeared, at least among policymakers; the EMS displays many of the features of a monetary union as well as serving as an exchange rate mechanism. The risk of an exchange rate crisis for a monetary union should be nonexistent, since it is an irrevocable commitment to accommodate any change in the demand for any of the currencies participating in the union, and central banks have many means of defending such a monetary union.

Moutot agreed that the ERM should be regarded as a transitional arrangement in the run-up to a monetary union. He noted that the introduction of Poisson or "jump" processes provided a promising development in the understanding of observed intramarginal interventions. He suggested that a more detailed specification of the fundamentals—for example, acknowledging the importance of fiscal policy—would represent a useful extension of the theory, as would a "game theoretic" approach to the EMS.

Suvanto noted that the Finnish currency band was introduced in 1977 to give the central bank a greater measure of independence domestically. The arrangement did not work properly until capital controls had been removed and domestic financial markets were liberalized. The Bank of Finland, in fact, defended a "band within a band," which allowed some leverage for policy on demand pressures by moving the narrower band within the larger band. This "large band" was widened in 1988 from 2.25 percent to 3 percent in order to allow for such adjustments.

Krugman argued that the Louvre Accord appeared to stabilize exchange rates even before actions were taken in its defense. The new literature on target zones offers a rationalization of this so-called "honeymoon" effect, and it also provides a justification for this kind of exchange rate system to constitute an anchor for expectations.

Also attending the conference were: George Alogoskoufis, Birkbeck College and CEPR; Adrian Blundell-Wignall, OECD; Samuel Brittan, *Financial Times*; Clive Crook, *The Economist*; Francesco Giavazzi, NBER and Università degli Studi di Bologna; Brian Henry, Bank of England; Andrew Hughes-Hallett, CEPR and University of Strathclyde; Martin Klein, University of Bonn; Olli-Pekka Lehmussaari, Bank of Finland; Christopher Melliss, HM Treasury; Laura Papi and Robert Sidelsky, University of Warwick; William Perraudin, International Monetary Fund; Mark Salmon, CEPR and European University Institute, Florence; Paul Weller, CEPR and Cornell University; Michael Wickens, CEPR and University of Southampton; and Frederic Zumer, University of Paris.

The conference volume, to be edited by Paul R. Krugman and Marcus M. Miller, will be published in 1991.

Industrial Organization/ Firms and Industries

About 30 members and guests of the NBER's projects on "Industrial Organization" and "Firms and Industry" met in Cambridge on July 12–13. NBER researchers Nancy L. Rose and Paul L. Joskow of MIT, Timothy Bresnahan of Stanford University, R. Glenn Hubbard of Columbia University, and Ariel Pakes of Yale University, organized the following program:

Frank A. Wolak, Jr., Stanford University, "Econometric Models of Asymmetric Information Environments: An Application to California Water Utility Regulation"

Garth Saloner, Stanford University, and Andrea Shepard, MIT, "Adoption of Technologies with Network Externalities"

Jan K. Brueckner, Pablo T. Spiller, and Nichola Dyer, University of Illinois, Urbana-Champaign, "Fare Determination in Airline Hub-and-Spoke Networks"

Brendan O'Flaherty, Columbia University, and Aloysius Siow, University of Toronto, "Up or Out Rules in the Market for Lawyers"

Clifford M. Winston, Brookings Institution, and Frederic Mannering, University of Washington, "Brand Loyalty and the Decline of American Automobile Firms"

B. Peter Pashigian and Brian Bowen, University of Chicago, "The Rising Cost of Time and the Substitution between National Brands and Retail Services"

Catherine J. Morrison, NBER and Tufts University, "Market Power, Economic Profitability, and Productivity Growth Measurement: An Integrated Structural Approach"

Wolak uses data on the Class A California Water Utility industry to investigate firms' costs and production choices given their private information. He finds that larger firms appear to be more efficient, and labor efficiency is associated with firms that pay higher wages.

The 1970s witnessed the introduction of several innovations in banking technology, including the automated teller machine (ATM). Using data from that decade, Saloner and Shepard find that, over the first nine years in which ATMs were available, multibranch banks were up to 50 percent more likely to adopt the ATM technology than were single-branch banks with the same level of deposits.

Brueckner, Spiller, and Dyer study the impact of network characteristics on airfares. They suggest that any force that increases traffic volume on the spokes of a network will reduce fares in the markets that it serves because of increasing returns on the spokes. Indeed, they find that network characteristics are important determinants of fares in four-segment city-pair markets (markets requiring a connection at the hub). Furthermore, their model predicts that the TWA-Ozark and Northwest-Republic mergers should have reduced fares in the four-segment markets served by the hubs at St. Louis and Minneapolis.

O'Flaherty and Siow use data on separation and promotion times for a sample of newly hired lawyers in large New York law firms to estimate a model of "up and out" rules and firm growth. They estimate that associates leave firms after receiving one bad signal, and that those who are promoted do not receive any bad signals.

Winston and Mannering claim that the American automobile industry is in serious decline and could face a financial crisis during the 1990s. They show that the deterioration in brand loyalty toward American manufacturers, particularly General Motors, has contributed greatly to current and imminent financial problems. Although the authors conclude that reversing the decline in American brand loyalty will not be easy, they identify corporate and government action that could help to stem the tide.

Pashigian and Bowen present a theory that explains why a rise in female earnings will increase consumer demand for brand names, and/or store services, depending on whether store services and brand names are complements or substitutes. They then explain why a rise in wives' earnings will increase the amount of time husbands spend shopping and increase the demand for brand name merchandise by both members of the family. Increased earnings of the wife cause a greater reliance on brand names by the whole family

than a comparable increase in the husband's earnings. Under some circumstances an increase in husband's earnings could even reduce the demand for brand names by the family.

Using annual two-digit U.S. manufacturing data, Morrison finds that markups in most U.S. manufacturing firms have increased over time and tend to be countercyclical. However, procyclical capacity utilization and scale economies tend to offset the short-run profit potential from markup behavior. As a result, economic profits are normal on average, but declining profitability has prevailed in most industries since the early 1970s.

Financial Markets and Monetary Economics

Over 60 members and guests of the NBER's Program in Financial Markets and Monetary Economics met in Cambridge on July 19-20. Their agenda, organized by Program Director Benjamin M. Friedman, Harvard University, was:

Kenneth A. Froot, NBER and MIT, "Short Rates and Expected Asset Returns" (NBER Working Paper No. 3247)

Mark L. Gertler and R. Glenn Hubbard, NBER and Columbia University, and Anil K. Kashyap, Federal Reserve Board, "Interest Rate Spreads, Credit Constraints, and Investment Fluctuations: An Empirical Investigation"

Kenneth D. West, NBER and University of Wisconsin; Hali J. Edison, Federal Reserve Board; and Dongchul Cho, University of Wisconsin, "A Utility-Based Comparison of Some Models of Exchange Rate Volatility"

Martin D. Evans, New York University, and Karen K. Lewis, NBER and New York University, "Market Expectations, Term Premia, and Rejecting the Expectations Theory of the Interest Rate Term Structure"

N. Gregory Mankiw, NBER and Harvard University, and Jeffrey A. Miron, NBER and Boston University, "Should the Fed Smooth Interest Rates? The Case of Seasonal Monetary Policy"

Olivier J. Blanchard, NBER and MIT; Changyong Rhee, Harvard University; and Lawrence H. Summers, NBER and Harvard University, "The Stock Market, Profit, and Investment" (NBER Working Paper No. 3370)

Froot shows that, on average, an increase of one percentage point in short-term interest rates is associated

with 3 percent lower annualized excess returns on long-term assets. Froot finds similar predictability in independent measures of excess returns derived from survey data on expected returns. Since the survey data do not include risk premiums, the predictable component cannot be attributed to risk. Froot suggests that when short rates are high (low) investors are excessively optimistic (pessimistic) about alternative asset returns.

Gertler, Hubbard, and Kashyap attempt to explain why the interest rate spread between safe and risky debt predicts near-term growth in real GNP. If investors and lenders do not have the same information about the investment activities of a firm, then the firm's internal net worth becomes significant in determining the level of investment. Shocks to internal net worth increase the agency cost of external finance and increase the spread between risky and safe debt. The authors predict an inverse relationship between changes in the spread and the level of investment that is supported by data on aggregate investment in equipment.

Using five bilateral weekly exchange rate series for the dollar from 1973-89, West, Edison, and Cho compare the performance of four types of models (nonparametric, GARCH, autoregressive, and naive) for predicting the variations in exchange rates. They do so by estimating the average expected utility produced by different models, for an investor with a mean-variance utility function. The authors find that GARCH models produce the highest average utility, naive models second highest, and nonparametric and autoregressive models the lowest.

Evans and Lewis ask what happens when time-varying term premiums affect returns. Surprisingly, they find that the variance of the term premiums is not stationary for bonds with maturities of one to 11 months. This is consistent with market beliefs that interest rate policy may shift, or with the market learning about past changes in policy.

Mankiw and Miron note that one of the major objectives of the legislators who established the Federal Reserve system in 1914 was to eliminate seasonal fluctuations in interest rates. Examining the data both before and after 1914, they find that the Fed in fact has smoothed interest rates over the seasonal cycle since its inception; simultaneously, there has been a significant increase in the seasonality of real output. Mankiw and Miron suggest that the increased seasonality of output may be a result of the Fed's seasonal monetary policy.

Blanchard, Rhee, and Summers construct a new U.S. time series of data on the q ratio—the ratio of the market value of corporate capital to its replacement cost from 1900-88. They decompose q into the product for two terms, reflecting “fundamentals” and “valuation,” the ratio of market value to fundamentals. The authors conclude that the results point, strongly but not overwhelmingly, to a larger role of “fundamentals” than of “valuation” in investment decisions.

Susanto Basu assisted with the preparation of this report.

Development of the American Economy

NBER Research Associates Robert E. Gallman, University of North Carolina, and John J. Wallis, University of Maryland, organized a conference on “The Standard of Living in Early 19th Century America,” held in Cambridge on July 20-22. The three-day program was:

Thomas J. Weiss, NBER and University of Kansas, “U.S. Labor Source Estimates, 1800 to 1860”

Discussant: Claudia Goldin, NBER and Harvard University

Robert A. Margo, NBER and Colgate University, “Wages and Prices during the Antebellum Period: A Survey and New Evidence”

Discussants: Donald Adams, West Virginia University, and Jeffrey Williamson, Harvard University

Richard H. Steckel, NBER and Ohio State University, “Height as a Measure of Living Standards: A Window to the Past and a Device for the Present”

Discussant: Carole Shammas, University of Wisconsin

Lorena Walsh, Colonial Williamsburg Foundation, “Consumer Behavior, Diet, and the Standard of Living in Late Colonial and Early Antebellum America, 1770-1840”

Discussant: Gloria Main, University of Colorado, Boulder

Winnifred Rothenberg, Tufts University, and Kenneth Sokoloff, NBER and University of California at Los Angeles, “Productivity in Manufacturing and Agriculture”

Discussant: Jeremy Atack, NBER and University of Illinois, Urbana-Champaign

Lee Soltow, Ohio University, Athens, “Shares of Lower-Income Groups: Indicators of Their Magnitudes for the United States, 1798-1875”

Discussant: Clayne L. Pope, NBER and Brigham Young University

Robert E. Gallman, “American Economic Growth before the Civil War: The Testimony of the Capital Stock Estimates”

Discussant: Stanley L. Engerman, NBER and University of Rochester

Weiss updates estimates of the labor force from 1800-60, including breakdowns for states by age and gender. There were dramatic changes in the level and variability of the share of agricultural labor in that period. Using the revised labor force estimates results in a significant change in the growth rate of U.S. income per capita and in the estimated levels of income per capita for various years in the period.

Margo surveys recent research on wages and prices in the United States before the Civil War. Using existing regional data on wholesale prices to construct new regional indexes of real wages for artisans and unskilled

labor from 1821 to 1856, he finds that real wage growth in the 1830s was less than previously thought. By comparison with later periods in American history, growth was very erratic in the short run as a consequence of persistent effects of price and real shocks.

Steckel discusses the evolution of two types of measures of living standards: national income and anthropometric measures (particularly stature). He then presents evidence drawn from a variety of sources on heights and describes the various factors that influence adult heights. For the United States, he finds the early achievement of nearly modern stature in the colonial period. After a plateau for birth cohorts, 1780–1830, heights declined until the late 1890s, before the improvements that have been observed in the twentieth century.

Walsh uses probate inventories, widows' consumption allowances, archaeological studies, cookbooks, and account books to study American diet and consumption standards. She finds a variety of behavioral patterns in different regions.

Rothenberg and Sokoloff analyze productivity growth in manufacturing and agriculture in the northeastern United States during the antebellum period. That growth was the result of modest, incremental changes, at least through the 1840s, and was related to the spread of the market because of improved transport and other changes. In manufacturing, productivity improvements spread broadly across industries. Market expansion and transport growth help to explain the pattern of patent activity and productivity growth.

Soltow draws upon numerous and diverse indicators for the United States, Canada, and the Netherlands, to describe the changing conditions of individuals below the median level of income. His sources included: U.S. Census data on wealth; real estate records for Ohio; dwelling data from the Ontario census; height data from U.S. military records; dwelling data for New York state; federal dwelling tax data for 1798; rental data for various times and places; and marriage data for Amsterdam.

Gallman expands upon some of his earlier capital stock estimates to present details for 1774, 1799, 1805, and 1815 to link with his estimates for 1840 and after. He also discusses the pattern of pre-Civil War growth indicated by the level and structure of the capital stock. These indicate that the rate of growth quickened sometime between 1815 and 1840. While the structure of the capital stock began to change after 1815, sharp changes occurred only after 1840, with a shift to producers' equipment and away from animal inventories.

In addition to the authors and discussants, attending the conference were: Lois Carr, Maryland State Archives; Robert W. Fogel, NBER and University of Chicago; Stanley Lebergott, Wesleyan University; Henry Miller, Historic St. Mary's City; and Samuel H. Williamson, Miami University. Stanley L. Engerman assisted in preparing this article.

It is expected that a volume of conference proceedings will be published by the University of Chicago Press; its availability will be announced in the *NBER Reporter*.

Third Franco-American Seminar

The third Franco-American Seminar was held in Cambridge on July 23–26. This year's meeting, organized by NBER researchers Zvi Griliches, Harvard University, and Jacques Mairesse, Institut National de la Statistique et des Etudes Economiques, focused on empirical analysis of productivity in services at the firm level. The program was:

Henry G. Tulken, Université Catholique de Louvain, Center for Operations Research and Economics (CORE), "Nonparametric Efficiency Analyses in Four Service Activities: Retail Banking, Municipalities, Courts, and Urban Transit"

Discussants: Bronwyn H. Hall, NBER and University of California at Berkeley, and Charles R. Hulten, NBER and University of Maryland

Ernst R. Berndt and Ann F. Friedlaender, NBER and MIT, "The Productivity and Cost Effects of Deregulation and Mergers in U.S. Railway Companies, 1972–86"

Discussant: Pierre Pestieau-Smith, CORE

Elizabeth Kremp, NBER and Harvard University, and Jacques Mairesse, "A Look at Productivity at the Firm Level in Nine French Service Industries, 1984–7"

Discussants: Donald S. Siegel, State University of New York at Stony Brook, and Sarah J. Lane, Boston University

Nancy L. Rose, NBER and MIT, "Airline Investments, Financial Conditions, and Safety Performances"

Discussant: Henry G. Tulken

Lars-Hendrik Roller, European Institute of Business Administration; David H. Good, Indiana University; M. Ishaq Nadiri, NBER and New York University; and Robin Sickles, NBER and Rice University, "Efficiency in the European Air Carrier Industry"

Discussant: Jacques Mairesse

David B. Humphrey, Federal Reserve Bank of Richmond, "Cost and Technical Change: Effects from Bank Deregulation"

Discussant: Denis Kessler, Foundation for Research in Economics and Finance

Michael Dietsch, Université de Strasbourg, "Returns to Scale and Returns to Scope in the French Banking Industry"

Discussants: Melvyn A. Fuss, NBER and University of Toronto, and Jack E. Triplett, Bureau of Economic Analysis

Ugur Muldur and Mohamed Sassenou, Caisse des Dépôts et Consignations, "Economies of Scale and Scope in French Banking and Saving Institutions: A Comparative Analysis"

Discussants: Catherine J. Morrison, NBER and Tufts University, and Frank C. Wyckoff, Pomona College

Denis Kessler and Pierre Pestieau-Smith, "Productive Performance of the French Insurance Industry"
Discussants: Roger R. Betancourt, University of Maryland, and Edward N. Wolff, NBER and New York University

Ann Dryden Witte, NBER and Wellesley College, and Swati Mukerjee, Bentley College, "Provision of Child Care: Cost Functions for Profitmaking and Not-for-Profit Day Care Centers" (NBER Working Paper No. 3345)

Discussant: Elizabeth Kremp

Anne E. Preston, State University of New York at Stony Brook, "Efficiency, Quality, and Social Externalities in the Provision of Day Care: Comparisons of Nonprofit and For-Profit Firms"

Discussant: Pierre Lasserre, University of Quebec, Montreal

Tulkens uses two measures of efficiency to analyze various public sector activities, including: ranking the relative efficiency of the branches of private versus public banks and determining the role of political majorities in explaining excess spending of municipalities. He also estimates how the existing backlog in judicial activities could be reduced by increased efficiency. Finally, Tulkens shows how efficiency estimation, supplemented with a new measure of technical progress, can be used to study an urban transit firm over a 12-year period.

Berndt and Friedlaender find that both deregulation and mergers of railroads contributed significantly to cost saving, particularly to reductions in labor costs. For a national firm merged in 1981, they estimate, about 64 percent of the reduction in costs by 1988 is caused by deregulation, and about 36 percent is caused directly by mergers and acquisitions (which in turn were facilitated by regulatory reforms). They conclude that mergers were not a prerequisite for substantial cost reductions and productivity improvements from 1974-86. Deregulation had an enormous direct impact; indeed, its impact may have been larger than the effect of mergers.

Kremp and Mairesse analyze productivity at the firm level in nine French service industries from 1984-7 using a sample of about 2300 firms with more than 20 employees. Taking into account rented capital, which is estimated at twice the amount of owned capital, the estimated elasticity of output with respect to capital increases significantly to an average value of nearly .20, in line with the corresponding profit share. Introducing average hours of work per employee as an additional explanatory variable reduces the usual discrepancy between returns to scale, as estimated cross-sectionally and over time.

Rose uses data on 39 large scheduled passenger airlines to investigate the impact of lower profitability, mergers, and strikes on airline service quality, as measured by passenger complaints. Her results suggest that service quality may decline with all three of these factors. In particular, a one-week strike raises annual passenger complaint rates by roughly 2 percent, and

passenger complaints are 18 to 35 percent higher on average in the two years following an airline merger.

Roller, Good, Nadiri, and Sickles compare the performance of U.S. airlines with their European counterparts since the onset of the deregulatory transition in America. They focus on French and U.S. carriers because of the strong role that the French government plays in providing both explicit and implicit subsidies. The authors calculate the implicit reduction in the labor force, assuming that relative efficiencies are eliminated in a more deregulated environment. They find that direct subsidies account for only a small portion of the jobs saved.

Banks were deregulated substantially during the 1980s, and interest costs rose faster than operating expenses (capital, labor) were reduced. Humphrey estimates that, as a result, the sum of these costs, which he calls measured technical change, was negative: it averaged -0.8 percent to -1.4 percent a year over 1977-88. He measures technical change three different ways and gets similar results. These results are robust whether measured at the banking firm or branch office level, or on the cost frontier.

Dietsch demonstrates that there are economies of scale in the French banking industry. While these economies are not very large, they are more important for the largest banks than for the smaller ones. He also demonstrates that there are cost complementarities in the banking industry, especially between deposits and loans and between investment in long-term securities and interbank market activities.

Muldur and Sassenou compare economies of scale and scope between banks and savings institutions. They stress differences in the structure, specialization, and regulations prevailing in each of these two industries. They infer from their findings that saving institutions on average are more efficient than banks in terms of operating costs, but that this difference diminishes with size. This seems to result from increasing returns to scale for banks and diminishing returns to scale for saving institutions, combined with some complementarity between different pairs of outputs.

Kessler and Pestieau-Smith assess the relative productive performance of 63 life and 180 nonlife insurance companies in France from 1984-8. They find a wide dispersion in efficiency across companies. Also, scale, institutional form, and distribution mode have significant effects on the average level of efficiency.

Witte and Mukerjee develop measures of output and the quality of care provided by day care centers. They also explore the nature of production in both for-profit (PMO) and not-for-profit (NPO) day care centers. Using a random sample of day care centers in Massachusetts, they find that dollar and physical measures of output are not highly correlated, particularly for NPOs. The authors measure the quality of care as the ratio of the number of paid staff classroom hours to the weighted number of children and find that NPOs have higher input ratios.

Preston compares the costs of NPO and PMO day

care centers after controlling for the difference in services offered by firms in the two sectors. In the unregulated segment of the day care industry in 1977, NPOs were more likely than PMOs to serve a minority, low-income population and to provide family counseling. In the federally regulated segment, NPOs were more likely than PMOs to invest in higher-quality staff and to maintain higher staff-to-child ratios, according to Preston. Controlling for these differences in services, NPOs had similar, and in some cases lower, costs than PMOs.

Also attending the conference were NBER associates: Iain M. Cockburn, University of British Columbia; Ariel Pakes, Yale University; Joshua Rosett; and Manuel Trajtenberg, Tel Aviv University. Joanna Stavins, Harvard University, also attended.

Trade and Competitiveness

The NBER held a workshop on "Trade and Competitiveness" in Cambridge on July 30-31. NBER researcher Linda Goldberg, New York University, organized the following program:

Richard C. Marston, NBER and University of Pennsylvania, "Price Behavior in Japanese and U.S. Manufacturing" (NBER Working Paper No. 3364)
Discussant: Koichi Hamada, NBER and Yale University

Michael Knetter, Dartmouth College, and Joe Gagnon, Federal Reserve Board of Governors, "Pricing to Market in International Trade: Evidence from Disaggregated Panel Data"
Discussant: Karen K. Lewis, NBER and New York University

Philip Brock, Duke University, "Trade Liberalization and the Big Push"
Discussant: Nouriel Roubini, NBER and Yale University

Gordon Bodnar and William Gentry, Princeton University, "Effects of the International Economy on Domestic Industry: Tests Using Financial Data"
Discussant: Linda Goldberg

Joel B. Slemrod, NBER and University of Michigan, and James A. Levinsohn, University of Michigan, "Taxes, Tariffs, and the Global Corporation"
Discussant: James R. Hines, Jr., NBER and Princeton University

Michael Klein, Clark University, and Eric Rosengren, Federal Reserve Bank of Boston, "Determinants of Foreign Direct Investment in the United States"
Discussant: Catherine Mann, Federal Reserve Board
Panel Discussion: "Issues in Trade and International Competitiveness"

Discussants: William H. Branson, NBER and Princeton University; Barry J. Eichengreen, NBER and University of California; Catherine Mann; and Michael L. Mussa, NBER and University of Chicago

Marston examines the margin between Japanese export and domestic prices for a wide range of final goods, including many of the electronic and transport products that have figured so prominently in recent trade discussions. He shows that Japanese firms respond to changes in real exchange rates by "pricing to market," varying their export prices in yen relative to their domestic prices. The degree of pricing to market varies widely across products. However, only five of 17 products in Marston's sample experienced a shift in price behavior in the period since 1985 when the yen began a sustained appreciation.

Knetter and Gagnon find that Japanese automobile exporters adjust markups of price over cost much more than their German and U.S. counterparts in response to exchange rate swings. Point estimates suggest the Japanese exporters offset about 80 percent of the impact that exchange rate changes would have on prices paid in the buyer's currency by destination-specific reductions in the markup. These estimates differ very little across destinations, with European markets receiving roughly the same degree of pricing to market as the United States. One reason that U.S. auto exporters do so little pricing to market is that they operate extensive foreign production facilities. The difference in behavior between German and Japanese exporters is harder to reconcile, though.

Brock uses recent developments in growth theory (especially regarding external economies associated with capital accumulation and the productive effects of government spending) to construct a model in which tax reform, trade reform, and a better provision of government infrastructure services are interrelated building blocks of a growth-oriented policy package. The model is in the tradition of "big push" models, since it is concerned with characterizing the transition path between a low-level economic equilibrium and a high-level equilibrium, rather than with balanced endogenous growth.

Bodnar and Gentry ask whether exchange rate fluctuations affect the stock market valuation of industries in Canada, Japan, and the United States. They find that, as an additional factor in a market model for explaining ex post industry returns, the change in the exchange rate is important only for Japanese industries. Exchange rate fluctuations may affect industry value for a number of reasons, such as exporting, importing, and direct investment. Bodnar and Gentry find that for all three countries the effect of the exchange rate depends systematically upon industry characteristics.

Slemrod and Levinsohn develop some simple models of optimal tax and tariff policy in the presence of global corporations that operate in imperfectly competitive markets. They emphasize two important differences in the practical application of tax and tariff policy: first, domestic tax policy typically is set at the national level, while trade policies are set at the industry level. Trade policy's ability to target particular sectors is valuable, because strategic policy may be justifiable for only certain industries. Second, trade policy typically does not apply to goods produced abroad by domestic-

ally owned firms, while corporate taxes on domestic firms often are applied on a worldwide basis. In a world of outward foreign direct investment (FDI), tax policy's ability to tax foreign-source income may be important.

Klein and Rosengren find that the relative wealth of countries that send capital to the United States significantly affected U.S. inward FDI in 1979-88. Relative wages in those countries appear to have a less significant impact on U.S. FDI. Controlling for changes in tax codes does not alter these basic results.

In the panel discussion, Mussa pointed out that the objective of economic activity is to increase the country's standard of living, so perhaps we should substitute "happiness" for "competitiveness." Branson noted that there should be some consistency among studies of hysteresis and effects on trade, pass-through and effects on prices, effects on stock returns and direct foreign investment, and so on.

Eichengreen emphasized the need to disaggregate in order to study the linkages among trade, growth, and the effects of changes in exchange rates on the economy. Sectors with imperfect competition and, therefore, firms that have market power in product or labor markets may respond very differently than sectors with intense competition. Eichengreen pointed to recent research on Japan and other countries emphasizing the importance of market structure.

Mann observed that competitiveness can be analyzed at the levels of national factors and factor markets, of firms and industrial structures, or in terms of the saving-investment balance of the entire economy. The papers on trade and growth point to the importance of development of human capital and productivity in sectors of comparative advantage. Mann asked whether the image of U.S. firms as short-term maximizers is consistent with the multinational character of many large U.S. firms at the level of firm structure.

Also attending the conference were the following NBER associates: Joshua Aizenman, University of Chicago and Dartmouth College; David E. Bloom, Columbia University; Willem H. Buiter, Yale University; Eliana A. Cardoso, Tufts University; Susan M. Collins and Kathryn M. E. Dominguez, Harvard University; Michael R. Darby, University of California at Los Angeles; Rudiger W. Dornbusch, MIT; Raquel Fernandez, Boston University; Carsten Kowalczyk and Carol L. Osler, Dartmouth College; Rachel McCulloch, Brandeis University; and Maurice Obstfeld, University of California at Berkeley.

Joint Session on Japanese Economic Issues

About 30 American and Japanese economists participated in a conference on "Japanese Economic Is-

ues" in Cambridge on August 2-3. Cosponsors were the NBER and the Foundation for Advanced Information and Research (FAIR), Japan. The program—organized by NBER researchers Takatoshi Ito, University of Minnesota and Hitotsubashi University; James M. Poterba, MIT; Kenneth J. Singleton, Stanford University; and Anil K. Kashyap, Federal Reserve Board—was:

Charles Y. Horioka, NBER and Osaka University, "The Importance of Life-Cycle Saving in Japan: A Novel Estimation Method"

Fumio Hayashi, NBER and University of Pennsylvania, "Japan's Savings Rate: New Data and Reflections"

Kathryn M. E. Dominguez, NBER and Harvard University, "Have Recent Central Bank Foreign Exchange Intervention Operations Influenced the Yen?"

Masako M. Darrough and Trevor Harris, Columbia University, "Do Management Forecasts of Earnings Affect Stock Prices in Japan?"

Tatsuo Hatta, Yale University and Osaka University, and Hideki Nishioka, Osaka University, "Efficiency Gains from Reducing the Average Capital Income Tax Rate in Japan"

Anil K. Kashyap; David Scharfstein, NBER and MIT; and David N. Weil, Brown University, "Japanese Land Prices and the Cost of Capital"

Louis K. C. Chan and Josef Lakonishok, University of Illinois at Urbana-Champaign, and Yasushi Hamao, University of California at San Diego, "Fundamentals and Stock Returns in Japan"

Horioka finds that the life-cycle hypothesis is highly applicable in the case of Japan: saving for living expenses during retirement is by far the most important specific motive for saving. Moreover, a considerable proportion of the aged spend down their savings to finance their living expenses, and bequests motivated by intergenerational altruism are relatively uncommon. For 1963-88 as a whole, Horioka finds that net life-cycle saving amounted to about 20 to 25 percent of household saving and contributed 3-4 percentage points to the household saving rate, which averaged 17.7 during this period. Thus, it appears that life-cycle saving is a large but not dominant component of household saving in Japan. Moreover, as Japan's population ages at an unprecedented rate, the amount of life-cycle saving can be expected to decline sharply.

Hayashi examines time-series evidence over the last 100 years on Japan's accumulation of wealth. He finds that the phenomenon of extraordinarily high Japanese saving is limited to the high-growth era of 1965-75. Micro evidence about consumption and saving by age can be explained more easily by the dynasty model than by the life-cycle hypothesis. He is not able to explain, however, why wealth accumulation in prewar Japan was so low.

Dominguez analyzes daily data on Bank of Japan and Fed interventions from 1985-8 and finds that the central banks had a statistically significant influence on the value of the yen through both portfolio and signaling effects. However, only through signaling was that effect quantitatively significant. The magnitude of the signaling effect can be as large as 5 percent but can vary widely depending on assumptions about the spillover effect of intervention on the behavior of interest rates and exchange rate expectations.

Japanese companies provide forecasts of future earnings simultaneously with their announcement of past annual earnings. The announcements are made separately for parent and consolidated earnings. Darrough and Harris ask whether these management forecasts contain incremental information. They show that "analyst" forecasts provide the most accurate measure of expected parent-only earnings, and that investors react to unexpected parent-only earnings and to the companies' forecasts of the next period's parent-only earnings. Investors also react to unexpected consolidated earnings, and to the company forecasts of consolidated earnings. Darrough and Harris suggest that anyone interested in understanding the relatively high Japanese price/earnings ratios should consider the management forecasts. Further, as the Japanese influence on international capital markets grows, there may be additional pressure on non-Japanese managers to provide forecasts.

Hatta and Nishioka estimate the efficiency impact of a once-and-for-all change in the capital income tax rate. Using a neoclassical growth model in which both consumers and producers have perfect foresight with infinite horizons, they measure the impact along the adjustment path toward the new steady state, rather than at the new steady state itself. Setting the parameter values of the model and the initial tax structure to approximate the Japanese economy in 1985, Hatta and Nishioka estimate that the maximum efficiency gain that this economy can obtain by changing its capital income tax rate is approximately 0.4 percent of the present value of the future consumption stream.

Kashyap, Scharfstein, and Weil explore the theoretical and empirical linkages between land prices and investment. They begin by examining a model in which increases in the price of land raise investment by providing firms with a valuable source of collateral. The price of land in turn is determined by future output, which depends on investment. The model can produce multiple equilibriums, in which expectations about future growth embodied in high land prices are self-fulfilling. Examining data on investment by Japanese firms, the authors find that firms that have a lot of land relative to their capital stock tend to invest more, and that this effect is strongest in years when the price of land has risen. They also find that firms with high land-to-capital ratios tend to borrow more. Again, this effect is strongest in years when the price of land has risen.

Chan, Lakonishok, and Hamao relate cross-sectional differences in returns on Japanese stocks to the un-

derlying behavior of four fundamental variables: earnings yield; size; book-to-market ratio; and cash flow yield. They use a dataset that includes both manufacturing and nonmanufacturing firms, companies from both sections of the Tokyo Stock Exchange, and delisted securities for 1971-88. The authors find a significant relationship between fundamental variables and expected returns in the Japanese market. Of the four fundamental variables considered, the book-to-market ratio and cash flow yield have the most significant positive impact on expected returns.

International Seminar on International Trade

Over 30 economists gathered in Cambridge on August 2-3 for the second biennial International Seminar on International Trade (ISIT). Cosponsored by the NBER and the Centre for Economic Policy Research (CEPR), ISIT's focus this year was "Analytical Issues and Developments in the Uruguay Round." The program, organized by NBER Research Associate Robert E. Baldwin, University of Wisconsin at Madison, and L. Alan Winters, CEPR and University College of North Wales, was:

Bradley J. McDonald, U.S. Department of Agriculture, "Agricultural Negotiations Late in the Uruguay Round: Ten Scenarios for the Eleventh Hour"

Discussant: L. Alan Winters

David Greenaway, University of Nottingham and Claremont Graduate School, "Trade-Related Investment Measures: Political Economy Aspects and Issues for GATT"

Discussant: J. David Richardson, NBER and University of Wisconsin

Keith E. Maskus, University of Colorado, "Background Analytical Issues in the International Protection of Intellectual Property Rights: Implications for the Uruguay Round"

Discussant: Paul Klemperer, St. Catherine's College, Oxford

John Beath, University of Bristol, "Models of Technological Competition for the Analysis of Intellectual Property Rights and the Uruguay Round"

Discussant: Jonathan Eaton, NBER and University of Virginia

Rachel McCulloch, NBER and Brandeis University, "Services and the Uruguay Round"

Discussant: André Sapir, Free University of Brussels

Cillian Ryan, University of Wales, Bangor, "Trade Liberalization and Financial Services"

Discussant: Kenneth A. Froot, NBER and MIT

T. Ademola Oyejide, University of Ibadan, Nigeria,
"The Participation of Developing Countries in the
Uruguay Round: An African Perspective"

Discussant: Dani Rodrik, NBER and Harvard Uni-
versity

Using a nine-sector, four-region computable general equilibrium model, McDonald examines the prospects for agreement during the Uruguay Round on the issue of agricultural reform. He finds that the reform proposals of both the United States and the European Community are well conceived, and that each country should prefer its own proposal over the other country's. McDonald also analyzes various compromise reform plans that address the concerns of these two nations.

Greenaway discusses trade-related investment measures (TRIMs), such as local content and export performance requirements, primarily used by developing countries. Many developing countries oppose placing GATT restrictions on the use of TRIMs. However, Greenaway concludes that such restrictions are likely, because the developed countries at the Uruguay Round will agree to phase them in gradually.

Maskus reviews intellectual property rights in developing countries. He shows that trade in intellectual property-intensive goods has grown rapidly in the 1980s, while comparative advantage in these products lies overwhelmingly with the industrial countries. Also, license fees and royalties for use of intellectual property, while significant and growing, are small relative to other forms of appropriating the returns to innovation internationally. Using a simple two-country model, Maskus finds that the developing country is hurt by extended protection because of losses in the terms of trade and the disappearance of producer surplus in the infringing industries. The developed country may gain or lose welfare, depending on whether monopoly profit gains or consumer surplus losses are larger.

Beath asks how models of technological competition may be used to analyze the implications of proposals on intellectual property rights in the Uruguay Round. Intellectual property creates problems for economic resource allocation: the need to find a satisfactory trade-off between the dynamic benefits from maintaining the incentive to innovate through the existence of rents and the static benefits that come from widespread diffusion and use of new ideas. The protection of intellectual property rights is important for countries because trade flows are significantly influenced by the resources that firms devote to R and D into new processes and products. Although a country may gain in the short run by allowing others to undertake risky R and D, it is likely to lose out in the long run as its technological competence declines.

McCulloch argues that liberalizing trade in services may be necessary for maintaining forward momentum in Uruguay Round negotiations, and to restore domestic support in the United States for open international markets. Moreover, goods and services are inextricably (and increasingly) intertwined in actual interna-

tional transactions. Although the Uruguay Round intentionally has limited explicit trade-offs between concessions on goods and services, future negotiations (and even the final Uruguay Round package) may benefit from such trade-offs. Finally, consideration of services has forced explicit attention on the links between trade and direct investment, and between trade and international movements of labor.

Ryan uses international trade theory to analyze trade in financial services and the possible consequences of the Uruguay Round. He suggests that the principal source of comparative advantage in financial services is know-how acquired over time either through learning-by-doing or through education. Insofar as past domestic regulation has promoted this in the "proposer" countries, they now have an incentive to see trade liberalized and new entrants discouraged. However, there is no guarantee that liberalization will increase world trade, as past trade may have been driven by differing regulation rather than by real factors.

Oyejide notes that, until recently, most African countries maintained only nominal membership in the GATT; now many of them have begun to participate more actively in rulemaking and negotiations. This increased participation is the result of growing awareness that Africa has separate interests from other developing regions. First, African countries enjoy special access to the European Community that they do not want extended to other developing countries. Second, the interests of the most advanced developing countries are quite different from those of the very poor countries in Africa. Finally, many African countries recently have shifted from growth strategies based on import substitution to export-led growth, and have reduced some trade barriers. They hope to gain negotiating credit for this unilateral liberalization.

Conference Calendar

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

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also provide a short (fewer than fifty words) description of

the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Winter 1990/91 issue of the *Reporter* is December 1. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-3900.

October 26, 1990

Economic Fluctuations Research Meeting, NBER

October 26-27, 1990

Conference on Microeconomic History, NBER

October 29-31, 1990

North-South Macroeconomic Interactions, Centre for Economic Policy Research

November 1-2, 1990

Program Meeting: Financial Markets and Monetary Economics, NBER

November 9, 1990

Conference on Research in Income and Wealth Workshop: System of National Accounts Revision, NBER

November 9-10, 1990

Conference on Economic Growth, NBER

November 11-14, 1990

83rd Annual Conference on Taxation, National Tax Association-Tax Institute of America*

November 15-16, 1990

Program Meeting: Taxation, NBER

November 16-17, 1990

Carnegie-Rochester Public Policy Conference, Carnegie-Mellon University—University of Rochester

November 18-20, 1990

Annual Meeting, Southern Economic Association*

November 20, 1990

Tax Policy and the Economy, NBER

November 30, 1990

Program Meeting: Labor Studies, NBER

December 7-8, 1990

Project Meeting: Political Economy, NBER

December 13-14, 1990

Brookings Papers on Economic Activity: Microeconomics, Brookings Institution

December 14-15, 1990

Universities Research Conference: Exchange Rate Regimes, NBER

December 28-30, 1990

Annual Meeting, American Economic Association*

January 3-7, 1991

US/Japan Housing Markets, NBER

January 7-8, 1991

Fiscal Policies in an Open Macro Economy, NBER, Centre for Economic Policy Research, and Tokyo Center for Economic Research

January 23-25, 1991

U.S. and Canadian Labor Markets, NBER

February 1-2, 1991

Transatlantic Public Economics Seminar, NBER

February 9, 1991

Economic Fluctuations Research Meeting, NBER

February 14-17, 1991

Second Annual U.S.-Japan Economic Forum, NBER

February 21-22, 1991

Program Meeting: Financial Markets and Monetary Economics, NBER

February 28-March 1, 1991

Industrial Organization, NBER

March 8-9, 1991

Sixth Annual Macroeconomics Conference, NBER

March 15-16, 1991

Fourth InterAmerican Seminar on Economics, NBER

March 15-16, 1991

Program Meeting: Productivity, NBER

March 22, 1991

Program Meeting: Labor Studies, NBER

April 4-5, 1991

Panel on Economic Activity: Macroeconomics, Brookings Institution

April 4-6, 1991

Annual Meeting, Midwest Economic Association*

April 5-6, 1991

Conference on Tax-Exempt Debt, NBER

April 11-12, 1991

Program Meeting: Taxation, NBER

April 19-20, 1991

Carnegie-Rochester Public Policy Conference, Carnegie-Mellon University—University of Rochester

April 26, 1991

Workshop on Macroeconomic History, NBER

May 3-4, 1991

Conference on Leading Indicators, NBER

May 10-11, 1991

Universities Research Conference on Economic Fluctuations, NBER

May 17-19, 1991

Conference on Higher Education, NBER

May 31-June 1, 1991

State-Federal Tax Interactions, NBER

June 17-18, 1991

International Seminar on Macroeconomics, NBER

June 20-22, 1991

Second Annual Asian Seminar on Economics, NBER

June 27-July 1, 1991

North American Summer Meeting, Econometric Society*

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

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

August 19-22, 1991

Joint Statistical Meetings, American Statistical Association*

August 25-29, 1991

47th Congress: Public Finance in a Changing Political Environment, International Institute of Public Finance*

September 12-13, 1991

Panel on Economic Activity: Macroeconomics, Brookings Institution

September 22-25, 1991

Annual Meeting, National Association of Business Economists*

September 26-28, 1991

International Taxation, NBER

October 2-5, 1991

20th (biannual) Conference, Center for International Research on Economic Tendency Surveys*

October 3-6, 1991

Retrospective on the Bretton Woods System: Lessons for International Monetary Reforms, NBER

October 11-14, 1991

International Atlantic Economic Conference, Atlantic Economic Society*

November 7-8, 1991

Program Meeting: Taxation, NBER

November 24-26, 1991

Annual Meeting, Southern Economic Association*

January 3-5, 1992

Annual Meeting, American Economic Association*

March 26-28, 1992

Annual Meeting, Midwest Economic Association*

May 1, 1992

Conference on Aging, NBER

September 15-18, 1992

Annual Meeting, National Association of Business Economists*

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

Bureau News

1990-1 Olin Fellows

The three Olin Fellows for 1990-1 are: Laurence M. Ball, Robert S. Gibbons, and Dani Rodrik. The Fellows Program is made possible by a grant from the John M. Olin Foundation.

Ball is on leave from Princeton University; his research will examine the costs of inflation and disinflation. Gibbons, of MIT, will study several aspects of wage determination, including arbitration and mediation. Rodrik, who is on the faculty of Harvard's Kennedy School of Government, will investigate international trade policy, and the economic consequences of the changes in Eastern Europe.

1990 Summer Institute

Over 640 economists from 180 universities and organizations around the world attended the NBER's Twelfth Annual Summer Institute. This year's program was funded primarily by a grant from the Lynde and Harry Bradley Foundation, with additional support from the National Science Foundation and FAIR (Japan). There were separate workshops on topics including international taxation, Japanese corporate finance, trade and competitiveness, and price and output measurement. A catalog of all papers and work in progress discussed at the Summer Institute can be obtained by writing to: Summer Institute Catalog, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138.

New Directors Named

The NBER's Board of Directors elected three new members at its September meeting: Ruben C. Buse, representing the American Agricultural Economics Association; Glen Cain, representing the University of Wisconsin; and Dean P. Pypers, representing the Committee for Economic Development.

Buse has been a professor of agricultural economics at the University of Wisconsin since 1969. He holds a B.S. and an M.S. from the University of Minnesota and a Ph.D. from Pennsylvania State University, all in agricultural economics.

Cain has been an economics professor at the University of Wisconsin at Madison, since 1963. He received his B.A. from Lake Forest College, his M.A. from the University of California, and his Ph.D. from the University of Chicago.

Pypers retired as senior vice president and director of the IBM Corporation in 1987 after 32 years with the company. For eight years, he had served as IBM's chief financial officer. A graduate of Harvard College, Pypers attended the University of Michigan's Graduate School of Business Administration, and was in the U.S. Navy from 1952-5.

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Soviet Economists and NBER Researchers Meet at Joint Conference

About a dozen economists from the Soviet Union met with a group of NBER economists on July 18-20 to discuss the following program:

Nonna A. Ranneva, Institute of World Economy and International Relations, "Transition to Market-Oriented Economy and the Growth of Prices"
Discussants: Olivier J. Blanchard and Julio J. Rotemberg, NBER and MIT

Andrei V. Poletayev, USSR Academy of Sciences, "Kondratiev Cycles and NBER Cycle Indicators"
Discussants: James H. Stock, NBER, Harvard University, and Stanford University, and Victor Zarnowitz, NBER and University of Chicago

Sergei Nikilaenko, IMEMO, "Households and the Credit Market"

Discussants: Roger H. Gordon, NBER and University of Michigan, and Jeffrey A. Miron, NBER and MIT

Eugeni Demidenko, IMEMO, "Mysteries and Myths of Econometric Theory"

Discussant: Gary Chamberlain, NBER and Harvard University

Panel Discussion: "Perspectives on Reform in Eastern Europe and the Soviet Union"

Panel Members: Susan M. Collins, President's Council of Economic Advisers; Rudiger Dornbusch, NBER and MIT; and Martin L. Weitzman, Harvard University

Mikhail V. Ershov, IMEMO, "Possible Devaluation of the Ruble and Its Consequences"

Discussants: Rudiger Dornbusch, and Kenneth A. Froot, NBER and Harvard University

Vladimir V. Kutznetsov, Academy of Sciences, Moscow, "Day-of-the-Week Effect on Less-Developed Financial Markets: The Case of St. Petersburg Exchange in 1908-11"

Discussants: J. Bradford De Long, NBER and Harvard University, and Andrei Shleifer, NBER and University of Chicago

Elena Belyanova and Revold Entov, IMEMO, "The Budgetary Statistics: What Do We Know About the Deficit?"

Discussants: James R. Hines, Jr., NBER and Princeton University, and Laurence J. Kotlikoff, NBER and Boston University

Natalia I. Ivanova, IMEMO, "National R and D Systems: A Comparative Economic Analysis"

Discussants: Zvi Griliches and Adam Jaffe, NBER and Harvard University

Robert J. Shiller, NBER and Yale University, and Maxim Boycko and Vladimir Korobov, IMEMO, "Public Perceptions of Market Mechanisms in the United States and USSR" (NBER Working Paper No. 3453)

Discussants: Martin Feldstein and Lawrence H. Summers, NBER and Harvard University

According to Ranneva, the present economic crisis and inflation in the USSR are the result of both long-standing economic problems and recent mistakes in the economic reforms. In the 1950-60s, the growth of money income was in line with the growth of output, alleviating aggregate inflation pressures even if shortages existed for some goods. In the 1970-80s, however, income grew faster than supply, resulting in repressed inflation. Today, out of about 1100 product groups, only 5 percent are not in short supply. This has resulted both from an increase in wage payments caused by economic reform, and from a slowdown in the growth of output caused by misallocation of investment.

Poletayev uses NBER business cycle indicator methods to develop roughly leading, coincident, and lagging indicators of long cycles in the U.S. economy. He

also uses these techniques to compare Kondratiev cycles across countries.

Nikolaenko considers the relationship between personal savings and economic growth—particularly the widely accepted belief that savings induce economic growth—in market and nonmarket economies. He argues that changing the growth of personal savings will have little effect on economic growth in nonmarket economies, since there is no mechanism for translating savings into investment goods. Even in market economies, savings are likely to be balanced by a corresponding change in inventories of the business sector and therefore cannot cause changes in investment or economic growth. Growth can be brought about only by introducing structural and organizational changes into the economy.

The basis for econometric theory is mathematical statistics, which in turn is supported by probability theory. According to Demidenko, economists are not able to fulfill many of the necessary conditions for experimental science that are required to apply mathematical statistics. Particularly in time-series econometrics, this has led to misunderstandings and methodological errors.

In the panel discussion, Collins stressed that U.S. initiatives on Eastern Europe come from various agencies; there is no one government policymaker. However, developing private markets is a unifying priority for all U.S. government agencies. Dornbusch compared the Soviet Union to Latin America. He defined the economic issues for both areas as property rights, macroeconomic stability, trade, and financial structure. To address these issues, Dornbusch believes, the Soviet Union needs privatization, monetary reform, an efficient tax system, a crawling peg exchange rate, and adjustment of relative prices. Weitzman listed the Soviet Union's major problems as: macroeconomic imbalance; the lack of institutions, such as bankruptcy laws, needed in a market economy; the lack of political consensus over goals; and ethnic tensions. Several of the Soviet participants emphasized the enormous political risks involved in economic reform, and the need to introduce the social institutions that are necessary in a market economy. The discussion tended to follow a dual theme: an assessment of the risks and prospects for the Soviet economy needs to proceed with caution, but a *partial* introduction of markets is not a viable approach.

According to Ershov, devaluation undertaken in isolation from other steps will not bring about any substantial changes. However, if devaluation is part of a package of interrelated measures, it will be a step toward a uniform and realistic exchange rate for the ruble, will spur exports, will have positive effects on the trade balance, and will help to optimize the structure of foreign economic relations of the USSR.

Kuznetsov constructs daily stock return indexes for equal-weighted portfolios of bank and industrial stocks that were actively traded on the St. Petersburg Stock Exchange from 1908-11. He finds a strong day-of-the-week effect, but only for the portfolio of industrial stocks.

Returns were particularly large on Saturdays and Mondays. Returns on Tuesday were significantly lower than average.

Belyanova and Entov provide an overview of Soviet budget statistics, and use official data to analyze recent changes in government finance. The huge increase in the Soviet deficit often is considered a "mere result of the perestroika." In reality, though, the state budget position has been affected by a combination of both short and long-term factors, such as a loss of tax revenues from liquor sales and from the machine-building industry.

Ivanova compares American and Russian indicators of R and D and analyzes their trends. Correcting the official statistics, she finds that there are about 1.5 times more scientific workers in the United States than in the USSR. Further, the USSR's expenditures on R and D appear to be only about one-third to one-half as large as American expenditures on R and D.

Shiller, Boycko, and Korobov conducted telephone interviews with random samples of households in Moscow and New York in May 1990. They uncovered surprisingly little difference between the Soviets and the Americans in: their concern with income inequality; their willingness to impose policies of rationing rather than market clearing; their belief in the importance of providing material incentives for hard work; their willingness to provide venture capital; their reasons for saving; or their fears of potential government interference with their saving.

Also attending the meeting were: Zvi Bodie, NBER and Boston University; S. Lael Brainard, President's Council of Economic Advisers; Geoffrey Carliner, NBER; Douglas W. Elmendorf, Harvard University; Benjamin M. Friedman, NBER and Harvard University; Marshall Goldman, Wellesley College; Charles Kindleberger, MIT; A. Mojaiskov, IMEMO; and Peter Temin, NBER and MIT.

David M. Cutler assisted in the preparation of this article.

Economic Fluctuations Meeting

Over 125 members and guests of the NBER's Program in Economic Fluctuations met in Cambridge on July 16. NBER researchers Russell Cooper, Boston University, and Steven N. Durlauf, Stanford University, organized the following program:

Marianne Baxter and Robert King, University of Rochester, "Productive Externalities and Cyclical Volatility"

Discussant: Satyajit Chatterjee, University of Iowa

Russell Cooper, and John C. Haltiwanger, Jr., University of Maryland, "The Macroeconomic Implications of Machine Replacement: Theory and Evidence"

Discussant: Andrei Shleifer, NBER and University of Chicago

Steven N. Durlauf, "Nonergodic Economic Growth"

Discussant: Rodolfo Manuelli, Stanford University

Robert E. Hall, NBER and Stanford University, "High and Low Unemployment Equilibria, Self-Selection, and Screening in the Labor Market"

Discussant: Charles Kahn, University of Illinois

Peter Howitt, University of Western Ontario, "Determinate Outcomes with Multiple Equilibria"

Discussant: Roger E. A. Farmer, University of California at Los Angeles

Walter P. Heller, University of California at San Diego, "Coordination Failure with Savings and Investments"

Discussant: Olivier J. Blanchard, NBER and MIT

Nobuhiro Kiyotaki, University of Wisconsin and London School of Economics, and Randall Wright, Stanford University and University of Pennsylvania, "Search for Theory of Money"

Discussant: Peter Diamond, MIT

Baxter and King explore the possibility that aggregate production functions exhibit increasing returns to scale. They introduce increasing returns that are external to the firm. By evaluating the implications of demand shocks, they are able to replicate certain important features of business cycles, such as procyclical productivity. Finally, Baxter and King find that there are additional sources of fluctuations beyond demand in the aggregate economy.

Cooper and Haltiwanger investigate the implications of the fact that firms must replace older depreciated machines with new, more productive ones. Because this process is costly, machines are not replaced in every period. As a consequence, machine replacement leads to cycles in output and employment, and to procyclical productivity.

Durlauf explores the role of complementaries and coordination failure in economic growth. He analyzes the evolution of an economy with a set of heterogeneous industries. Individual industries exhibit nonconvexities in production and are linked across time through localized technological complementarities. When these complementarities are strong enough, they interact with incompleteness of markets to produce multiple equilibria in long-run economic activity. Coordination problems become the source of aggregate volatility.

Hall discusses fluctuations in employment when screening costs are an increasing function of the unemployment rate. As a consequence of this relationship, Hall finds, multiple equilibria may occur; in one equilibrium, applicants contact only firms with whom they have a good match. Firms, knowing this, take all workers who apply. This leads to an efficient allocation of workers to jobs. Inefficient equilibria also may arise when

workers apply to all firms, even those with imperfect matches. Knowing that workers are applying for all jobs, firms use imprecise screening methods in making hiring decisions. The fact that employment probabilities at a given firm are lower provides workers with an incentive to make multiple applications.

Howitt studies the properties of an economy with multiple steady-state equilibriums. He proposes a particular learning scheme that private agents use to evaluate the marginal gains from changing their activity level.

Heller presents a model of multiple equilibriums in imperfect competition. There are a number of agents owning shares of firms. Firms use capital and labor to produce and have market power as sellers of goods.

Kiyotaki and Wright characterize the exchange process for economies in which fiat money can arise as a medium of exchange. In their economy, a natural "double coincidence of wants" creates a transactions role for money. They find that multiple equilibriums may arise, indexed by the acceptability of fiat money for exchange purposes. Increases in the real stock of money facilitate specialization in production. Kiyotaki and Wright also consider an economy with multiple currencies and find that there is a unique equilibrium in which one currency is accepted universally while the other is accepted only partially. Finally, they find that if the double coincidence of wants problem is sufficiently important, then the introduction of fiat money improves welfare.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-1401 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 \$3.00 (\$4.00 outside of the U.S.) per reprint requested. Advance payment is required on all orders. Please do not send cash.** Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

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1440. "The Lender of Last Resort: Alternative Views and Historical Experience," by Michael D. Bordo, 1990 (NBER Working Paper No. 3011)

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The following study in the NBER Technical Working Papers series is now available (see previous issues of the *NBER Reporter* for other titles). **There is a charge of \$3.00 (\$4.00 outside of the U.S.) per paper requested. Advance payment is required on all orders. Please do not send cash.** Send orders to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

90. "Spectral-Based Testing of the Martingale Hypothesis," by Steven N. Durlauf. September 1990

Bureau Books

NBER Macroeconomics Annual 1990

The *NBER Macroeconomics Annual 1990*, edited by Olivier J. Blanchard and Stanley Fischer, is now available from the MIT Press. The hardcover edition is \$32.50; the paperback costs \$15.95.

This is the fifth volume in a series from the NBER that

links theoretical and empirical developments in macroeconomics with specific current issues facing the United States and other economies. This edition contains six articles initially presented at a conference held in Cambridge last March.

In the first article, Robert J. Barro and Xavier Sala-i-Martin investigate world interest rates. Next, Francesco Giavazzi and Marco Pagano ask whether severe fiscal contractions can be expansionary. Steven J. Davis and John C. Haltiwanger, Jr. look at the microeconomic evidence for, and the macroeconomic implications of, gross job creation and destruction. Mark Bilal describes wage and employment patterns in long-term contracts. Giuseppe Bertola and Ricardo J. Caballero analyze the effect of investment decisions of individual consumers and firms on economic fluctuations. In the last paper, Gur Ofer discusses the macroeconomic issues surrounding Soviet reforms.

Olivier J. Blanchard and Stanley Fischer are members of the NBER's Programs in Research in Economic Fluctuations and Financial Markets and Monetary Economics. They are professors of economics at MIT.

Order this volume, either hardcover or paperback, 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. 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.

International Policy Coordination

International Policy Coordination and Exchange Rate Fluctuations, edited by William H. Branson, Jacob A. Frenkel, and Morris Goldstein, is available from the University of Chicago Press for \$45.00. In this NBER conference volume, the scope, methods, and effects of coordination are discussed by a group of prominent international economists.

Branson is director of the NBER's Program in International Studies and a professor of economics and international affairs at Princeton University. Frenkel is economic counselor and director of research at the International Monetary Fund (IMF). Goldstein is deputy director of the research department at the IMF.

Finance Book Published

Asymmetric Information, Corporate Finance, and Investment, edited by R. Glenn Hubbard, is available from the University of Chicago Press for \$45.00. All the contributors to this volume are specialists in economics and finance. They show that borrowers often have more information than lenders about the risks associated with a loan. In this situation, the firm's investment decisions are affected by the type of financing it obtains. This research should interest students of financial markets, industrial organization, and public policy.

Hubbard is a research associate in the NBER's Program in Financial Markets and Monetary Economics and a professor of economics and finance at Columbia University's Graduate School of Business.

New Book on Aging

Issues in the Economics of Aging, edited by David A. Wise, is available from the University of Chicago Press for \$52.00. This NBER project report focuses on living arrangements among the elderly and labor market issues, including the decision to retire.

Wise is director of the NBER's Project on the Economics of Aging and the John M. Stambaugh Professor of Political Economy at the JFK School of Government, Harvard University.

Current Working Papers

Individual copies of NBER Working Papers and Historical Factors in Long-Run Growth Working Papers are available free of charge to corporate associates. **For all others, there is a charge of \$3.00 (\$4.00 outside of the U.S.) per paper requested. Advance payment is required on all orders. Please do not send cash.** For further information or to order, please write: Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

Journal of Economic Literature (JEL) subject codes, when available, are listed after the date of the Working Paper. Abstracts of all Working Papers issued since June 1990 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.

Historical Factors in Long-Run Growth

The Competitive Dynamics of Racial Exclusion: Employment Segregation in the South, 1900-50

Robert A. Margo
Historical Working Paper No. 14
August 1990
JEL Nos. 042, 917

Using data from the 1900, 1910, 1940, and 1950 Census public use samples, this paper examines the determinants of racial differences in employment (occupation and industry) in the South from 1900-50. Had racial differences in the quantity and quality of schooling been smaller, more blacks would have entered nonfarm occupations and industries in the South. This would have reduced the extent of racial segregation in employment and would have resulted in higher black-to-white earnings ratios. I find that black men were underrepresented in the growth of nonfarm employment in the South before World War II, and that this increase in employment segregation cannot be explained by racial differences in schooling. Increases in the demand for nonfarm labor caused an outflow of black labor from southern agriculture during the 1940s, and this outflow was associated with a rise in the earnings ratio. Despite the effects of World War II, employment segregation in the South was higher in 1950 than at the turn of the century.

How Long Was the Workday in 1880?

Jeremy Atack and Fred Bateman
Historical Working Paper No. 15
August 1990
JEL Nos. 042, 824

Remarkably little is known about the length of the working day before the 1880s. In this paper, we sum-

marize information on the trend in the length of the workday in U.S. manufacturing from 1830 to 1890. Then we develop estimates of the daily hours of work, to underlie our ongoing research into the performance and operation of the industrial labor market in the United States in the late nineteenth century.

On the basis of our firm-level sample data, we conclude that the average workday in U.S. manufacturing in 1880 was almost ten hours long. Thus the attainment of the ten-hour workday came almost a decade earlier than has been supposed. Despite the decline in working hours up to 1880, however, daily hours of work still were long enough that they would have required the use of artificial light in most factories during the winter.

Our statistical analysis also reveals and documents small but statistically significant variations in hours between firms and industries, and between regions and by location.

The Conquest of High Mortality and Hunger in Europe and America: Timing and Mechanisms

Robert W. Fogel
Historical Working Paper No. 16
September 1990
JEL No. 040

The modern secular decline in mortality in Western Europe did not begin until the 1780s and the first wave of improvement was over by 1840. The elimination of famines and of crisis mortality played only a secondary role during the first wave of the decline and virtually none thereafter. Reductions in chronic malnutrition were much more important and may have accounted for most of the improvement in life expectation before 1875. Chronic malnutrition could not have been eliminated merely by more humane national policies; major advances in productive technology also were required. Although there were some improvements in the health, nutritional status, and longevity of the lower classes in England and France between 1830 and the end of the nineteenth century, these advances were modest and unstable, and included some reversals.

An even larger reversal occurred among the lower classes in the United States. Although the technological progress, industrialization, and urbanization of the nineteenth century laid the basis for a remarkable advance in health and nutritional status during the first half of the twentieth century, their effects on the conditions of life of the lower classes were mixed at least until the 1870s or 1880s. The great gains of the lower classes were concentrated in the 65 years between 1890 and 1955. Improvements in nutrition and health may account for as much as 30 percent of the growth in conventionally measured per capita income between 1790 and 1980 in Western Europe, but for a much smaller proportion in the United States.

NBER Working Papers

An Alternative View of Tax Incidence Analysis for Developing Countries

Anwar Shah and John Whalley

Working Paper No. 3375

June 1990

This paper revisits the long-standing issue of the incidence of taxes in developing countries. Its central theme is that, after many decades of studies, tax incidence analyses for developing countries continue to be based upon the same shifting assumptions used in studies of developed countries, despite some obvious pitfalls. We assume taxes to be shifted forward to consumers, or backward onto factor incomes, as has been the case for developed country tax incidence work from Bowley and Stamp to Pechman and Okner.

Developing countries typically have a much different nontax policy and regulatory environment from developed countries, with higher protection, rationed foreign exchange, price controls, black markets, credit rationing, and many other features. We argue that all of these features can complicate greatly and even obscure the incidence effects of taxes in developing countries. For several taxes, taking such features into account can reverse signs and/or substantially revise estimates of incidence effects from conventional thinking and by substantial orders of magnitude.

Our final section sets out some implications for country lending programs, both by type of country and by level of development. We also comment on how the significance of the points raised here has affected the extent to which nontax policy reform has been implemented already.

Business Cycle Properties of Selected U.S. Economic Time Series, 1959-88

James H. Stock and Mark W. Watson

Working Paper No. 3376

June 1990

JEL No. 131

This paper catalogs the business cycle properties of 163 monthly U.S. economic time series over the three decades from 1959-88. We report two general sets of summary statistics. The first set measures the comovement of each individual time series with a reference series representing real economic activity. These statistics focus on comovements at business cycle horizons. The second set of statistics examines the predictive content of each of the series for aggregate activity, relative to different sets of conditioning (or predictive) variables. We construct and present these statistics in a way that facilitates comparisons across conditioning sets. The statistics also provide new lists of leading indicators based on predictive content for overall economic activity. Some of the results confirm previously recognized empirical regularities, while others provide new or different insights into the business cycle properties of various series.

Taxes, Outward Orientation, and Growth Performance in Korea

Irene Trela and John Whalley

Working Paper No. 3377

June 1990

This paper discusses and evaluates the role of tax policy in the Korean growth process from the early 1960s to the late 1980s. It begins by reviewing the evolution of Korean policy over this developmental sequence, emphasizing three distinct switches in regime and the tax policies that were part of them. Then it presents an analytical framework for quantitative assessment of the contribution of tax policies to this growth through induced intersectoral resource transfers and impacts on effort and labor supply in agriculture and manufacturing sectors. The calculations show that tax policy has played a relatively modest role in Korean growth and that one should look to other factors to explain the strong Korean growth.

Price Indexes for Microcomputers: An Exploratory Study

Ernst R. Berndt and Zvi Griliches

Working Paper No. 3378

June 1990

JEL Nos. 227, 620

In this paper we focus on alternative procedures for calculating and interpreting quality-adjusted price indexes for microcomputers, based on a variety of estimated hedonic price equations. Our dataset comprises an unbalanced panel for 1265 model observations from 1982-8 and includes both list and discount prices. We develop and implement empirically a specification test for selecting preferable hedonic price equations and consider in detail the alternative interpretations of dummy variable coefficients having time and age, vintage and age, and all of the time, age, and vintage dummy variables as regressors.

Then we calculate a variety of quality-adjusted price indexes; for the Divisia indexes we employ estimated hedonic price equations to predict prices of unobserved models (pre-entry and post-exit). Although our indexes show a modest amount of variation, we find that on average over 1982-8 in the United States, quality-adjusted real prices for microcomputers decline at about 28 percent per year.

Tax Policy Toward Art Museums

Don Fullerton

Working Paper No. 3379

June 1990

JEL No. 323

Although art museums do not pay any substantial taxes, they are greatly affected by various U.S. tax rules.

The individual receives a deduction for donation of art to museums; the estate gets a deduction for bequests; and the corporation gets a deduction for charitable gifts. Art museums also are not taxed on investment income or on some "related" business activities. This paper reviews the logic for these rules and discusses their economic effects.

In combination, this set of tax provisions yields a tax expenditure that is larger than direct federal expenditures on art museums in the United States. The amount of this tax expenditure, or implicit subsidy, has been falling in recent years because of reductions in the marginal personal income tax rates at which individuals deduct gifts.

High-income taxpayers are the most responsive to marginal tax rates, and they also tend to give the largest amounts to the arts. Therefore, the level of the top personal marginal tax rate is particularly important to art museums. My simulations suggest that the personal marginal rate reduction in the Tax Reform Act of 1986 ultimately could reduce gifts to the arts by as much as 24 percent.

Before the Accord: U.S. Monetary-Financial Policy, 1945-51

Barry J. Eichengreen and Peter M. Garber

Working Paper No. 3380

June 1990

This paper analyzes U.S. monetary-financial policy in the period leading up to the Treasury-Fed Accord. We model policy as an implicit target zone for the price level and an explicit zone for interest rates, and view the difficulties on the eve of the Accord as an incipient run on a collapsing target-zone regime. The regime was implemented to maintain the stability of the financial system in a period when there was a serious mismatch in maturity between the assets and liabilities of the banking system.

Banks in the Market for Liquidity

Peter M. Garber and Steven Weisbrod

Working Paper No. 3381

June 1990

Banks are unique among financial institutions because they are the cheapest source of liquidity in the economy. Banks choose to hold reserves to facilitate settlement and end-of-day net due to positions arising from payments operations. Money market substitutes for bank liabilities do not escape from the cost of reserves since their issuers lean on banks to provide liquidity. Since the cost of reserves falls on all issuers of less liquid liabilities that seek access to payment services, including nonbank intermediaries, reserves cannot represent a tax on the banking system alone.

Rules versus Discretion in Trade Policy: An Empirical Analysis

Robert W. Staiger and Guido Tabellini

Working Paper No. 3382

June 1990

JEL Nos. 411, 422

We test empirically for evidence that government tariff-setting behavior depends on the degree of discretion with which policymakers are endowed. We do this by studying government tariff choices under two distinct environments. One environment is that of tariffs set under the Escape Clause (Section 201 of the U.S. Trade Act of 1974). We argue that these decisions afford the government ample opportunity to reoptimize, and correspondingly little ability to commit. The other environment is the Tokyo Round of GATT negotiations and the determination of the set of exclusions from the general formula cuts. We argue that these decisions provided the government with a much diminished opportunity to reoptimize and with a correspondingly greater ability to commit. Comparing decisions made in these two environments allows us to ask whether the degree of policy discretion has a measurable impact on trade policy decisions. Our findings suggest that it does.

Money and Prices in Colonial Times: A New Test of Competing Theories

Bennett T. McCallum

Working Paper No. 3383

June 1990

JEL Nos. 300, 042

A long-standing but unsettled controversy concerning monetary experiences in colonial America recently has been reopened with considerable vigor. Ignoring doctrinal aspects, the main substantive issue concerns the relationship between money holdings and price levels during episodes in which various colonial governments issued paper currency (bills of credit) in large amounts. In several instances, large and rapid increases in the stock of outstanding paper currency led to negligible changes in price levels. But alternative interpretations are possible, since colonial money included specie as well as paper currency. According to the "quantity theory" or *classical* hypothesis, total money stock magnitudes did not rise sharply during the disputed episodes; instead, the sharp paper currency increases led to corresponding losses of specie—as suggested by standard commodity-money analysis. According to the "backing theory" or *anticlassical* hypothesis, by contrast, there was little specie present, so money stock magnitudes could and did rise sharply (in percentage terms). This fundamental factual disagreement has eluded resolution because data on both stocks and flows of specie are almost nonexistent.

This paper develops and applies a strategy for circumventing the unavailability of specie data by exploiting conflicting implications of the two hypotheses regarding magnitudes of real per capita holdings of

paper currency, relative to normal real money balances, at dates of maximum paper issue. A major feature of the analysis is a new method for the estimation of normal real money holdings, one that relies on paper currency data for a few inflationary episodes.

International Costs and Benefits from EMU

George Alogoskoufis and Richard Portes

Working Paper No. 3384

June 1990

JEL Nos. 431, 432

In this paper we examine the international implications of monetary union (EMU) in the European Community and the associated international costs and benefits. We consider prospective changes in international institutions, the potential role of the ECU as an international currency, and the implications of EMU for the international coordination of monetary and fiscal policies.

Waiting for Work

George A. Akerlof, Andrew K. Rose,

and **Janet L. Yellen**

Working Paper No. 3385

June 1990

This paper explains upward job mobility and observed patterns of unemployment by skill as an economy recovers from a recession. Skilled unemployment is attributable to rational waiting by workers looking for long-term jobs when there is a "lock-in" effect. Lock-in occurs if the conditions in the labor market when a worker first accepts a job have a persistent effect on wages. Using longitudinal data, we provide empirical evidence of the cyclical pattern of wages predicted by the theory and also of lock-in.

Revenue and Welfare Implications of a Capital Gains Tax Cut When Gains Realizations and Dividend Payouts Are Endogenous

Patric H. Hendershott, Eric Toder, and Yunhi Won

Working Paper No. 3386

June 1990

JEL No. 323

This paper uses a general equilibrium model to simulate both the effects of a preferential capital gains tax rate on total income tax revenues, and the effects of a revenue-neutral substitution between a capital gains preference and marginal income tax rates on economic efficiency and the distribution of income. In the simulations, a capital gains preference increases efficiency by reducing tax distortions between untaxed assets (household and state and local capital) and taxable assets of the business sector, and between realized and unrealized capital gains (the "lock-in" effect); it reduces

efficiency by increasing tax distortions between corporate dividends and retained earnings, and between financial assets that produce capital gains and those that produce ordinary income. Because the model treats aggregate factor supplies as fixed, however, the simulations do not capture the efficiency gain from reducing the tax distortion between current and future consumption, or the loss from increasing the tax distortion between current consumption and leisure (or untaxed labor).

The net estimated welfare effects depend on two parameters: the elasticity of capital gains realizations with respect to a change in the capital gains tax rate; and the elasticity of the dividend-payout ratio with respect to a change in the tax cost of dividends relative to retentions. With no payout response, the net welfare effect from a 15 percent maximum rate on capital gains is positive for a wide range of realizations elasticities. With a high payout elasticity, the net welfare effect is slightly positive for high estimates of the realizations elasticity and slightly negative for low estimates of the realizations elasticity. The welfare changes, both positive and negative, mainly affect taxpayers with incomes of \$50,000 and over.

Ranking, Unemployment Duration, and Wages

Olivier Jean Blanchard and Peter Diamond

Working Paper No. 3387

June 1990

JEL Nos. 130, 800

Firms often receive multiple acceptable applications for vacancies, requiring a choice among candidates. This paper contrasts equilibriums when firms select workers at random and when firms select the worker with the shortest spell of unemployment, called ranking. With the filling of vacancies unaffected by the selection rule, both equilibriums have the same aggregate dynamics, but different distributions of unemployment durations. With the threat point for the Nash-bargained wage being a worker with zero unemployment duration, the wage with ranking is much more sensitive to changes in the tightness of the labor market. The same holds for efficiency wages.

Should the Fed Smooth Interest Rates? The Case of Seasonal Monetary Policy

N. Gregory Mankiw and Jeffrey A. Miron

Working Paper No. 3388

June 1990

JEL Nos. 131, 311

This paper examines the choice of monetary policy in response to seasonal fluctuations in the economy. It discusses the costs and benefits of smoothing interest rates over the seasons, which has been the Fed's policy since its founding in 1914, and presents simulations suggesting how the economy would behave under the alternative policy of stabilizing the money stock. Finally, it presents evidence that the smoothing of interest rates in 1914 changed the seasonal business cycle.

Hot Hands in Mutual Funds: The Persistence of Performance, 1974-87

**Darryll Hendricks, Jayendu Patel,
and Richard J. Zeckhauser**

Working Paper No. 3389
June 1990

The net returns of no-load mutual growth funds exhibited a "hot-hands" phenomenon during 1974-87. When performance is measured by Jensen's alpha, mutual funds that performed well in a one-year evaluation period continued to generate superior performance in the following year. Underperformers also displayed short-run persistence. Hot hands persisted in 1988 and 1989.

The success of the hot-hands strategy does not derive from selecting superior funds over the sample period. The timing component—knowing when to pick which fund—is significant. These results are robust to alternative equity portfolio benchmarks, such as those that account for firm-size effects and mean reversion in returns. Capitalizing on the hot-hands phenomenon, an investor could have generated a significant, risk-adjusted excess return of 10 percent per year.

How Risky Is the Debt in Highly Leveraged Transactions? Evidence from Public Recapitalizations

Steven N. Kaplan and Jeremy C. Stein

Working Paper No. 3390
June 1990

This paper presents estimates of the systematic risk of the debt in public leveraged recapitalizations. We calculate the systematic risk of the debt as a function of the difference between the systematic equity risk before and after the recapitalization. The increase in equity risk is surprisingly small after a recapitalization, ranging from 28 percent to 52 percent, depending on the estimation method. Under the assumption that total company risk is unchanged, the implied systematic risk of post-recapitalization debt in 12 transactions averages 0.67. Under the alternative assumption that the entire market-adjusted premium in the leveraged recapitalization represents a reduction in fixed costs, the implied systematic risk of this debt averages 0.42.

The Impact of Permanent and Temporary Import Surcharges on the U.S. Trade Deficit

Barry J. Eichengreen and Lawrence H. Goulder

Working Paper No. 3391
June 1990
JEL Nos. 422, 430

This paper uses analytical and simulation models to study the impact of temporary and permanent import surcharges on the U.S. balance of trade. The analytical model of a two-country, two-commodity, two-period endowment economy brings out the intersectoral and

intertemporal substitution effects generated by import surcharges. This model shows that the trade balance impact of these initiatives is ambiguous in sign even under restrictive assumptions. Therefore, we apply a simulation model to gauge the effects under realistic values for parameters. The simulation model differs from others that have analyzed import surcharges in combining sectoral disaggregation with an integrated treatment of current and capital account transactions. The combination is made possible by the model's attention to both intra- and intertemporal aspects of household and producer decisions.

Under different assumptions about the sources of the U.S. trade deficits and the timing of the surcharge, we find that surcharges strengthen the trade balance in the short run but worsen it subsequently. The results highlight the usefulness of analyzing the trade balance effects of commercial policies with a dynamic framework that incorporates intertemporal balance-of-payments constraints.

An Empirical Model of Labor Supply in the Underground Economy

**Bernard Fortin, Pierre Frechette,
and Thomas Lemieux**

Working Paper No. 3392
June 1990

This paper uses microdata from a random survey carried out in the region of Quebec City to estimate a model of labor supply in the underground economy. The model assumes that the individual's gross wage rate in the regular sector is parametric, while his/her gross labor earnings in the underground sector are a concave function of hours of work. This distinction between the two sectors generates a simple separation result between preferences and the magnitude of underground labor market activities. This result implies that the individual's labor supply in the underground economy is generally a negative function of his/her net wage rate in the regular sector. The separation result also implies a set of restrictions on the parameters of the reduced form of the model, which are imposed using minimum distance methods of estimation. Various generalized method-of-moments specification tests allow us to verify the validity of these restrictions.

According to our results, the marginal tax rates embodied in the Quebec tax transfer system are an important determinant of the decision to participate in the underground sector.

The Phillips Curve Now and Then

Robert J. Gordon

Working Paper No. 3393
June 1990
JEL Nos. 134, 310

This paper describes the development of the "triangle" model of inflation, which holds that the rate of in-

flation depends on inertia, demand, and supply. This model differs from most other versions of the Phillips curve by relating inflation directly to the level and rate of change of detrended real output, by excluding wages, the unemployment rate, and any mention of "expectations." The model identifies the ultimate source of inflation as nominal GNP growth in excess of potential real output growth, and implies that a policy rule that targets excess nominal GNP growth is an essential precondition to avoiding an acceleration of inflation. Any residual instability of inflation then depends on the severity of supply shocks.

The textbook and econometric versions of the triangle model were developed simultaneously in the mid-1970s. Since then there have been two empirical validations for the United States of the model as estimated a decade ago. First, the "sacrifice" ratio of cumulative output loss relative to the decline in inflation during the business slump of the early 1980s was predicted accurately in advance. Second, the natural unemployment rate implied by the model's estimates predicted in advance the slow acceleration of inflation that began in 1987, when the unemployment rate fell below 6 percent.

The Simplest Test of Target Zone Credibility

Lars E. O. Svensson

Working Paper No. 3394

June 1990

JEL Nos. 431, 432

A credible target zone exchange rate regime with a given exchange rate band implies bounds on the amount of depreciation and appreciation of the domestic currency. For given foreign interest rates, this implies bounds on the domestic currency rate of return on foreign investment: there is a rate-of-return band for each time to maturity. Asking whether domestic interest rates are outside of these rate-of-return bands is a simple test of exchange rate credibility, assuming sufficient international mobility of capital. I apply this test to the Swedish target zone from February 1986–February 1990.

Under the additional assumption of uncovered interest rate parity, an equivalent test is whether expected future exchange rates are outside of the exchange rate band. In addition, expected future exchange rates give an estimate of the probability of future devaluations.

Externalities, Incentives, and Economic Reforms

Joshua Aizenman and Peter Isard

Working Paper No. 3395

June 1990

This paper emphasizes the role of institutions and incentives in the presence of externalities. An economy with multiple public decisionmakers is likely to experience overspending, undertaxing, overborrowing, and overinflation unless effective institutions exist

for overcoming failure to coordinate policies. External financing may weaken incentives for adjustment over the longer run unless assistance is made conditional on fundamental institutional reforms.

The paper also analyzes reforms that strengthen incentives to provide effort. Uncertainty regarding future taxes reduces present effort and the responsiveness of output to market signals. In addition, the paper addresses the adverse effects of bank insurance and soft budget constraints.

Interdependent Pricing and Markup Behavior: An Empirical Analysis of GM, Ford, and Chrysler

Ernst R. Berndt, Judy Shaw-Er Wang Chiang,

and **Ann F. Friedlaender**

Working Paper No. 3396

June 1990

JEL Nos. 611, 631

This paper develops and estimates a model of the U.S. automobile industry that can be used to analyze the secular and cyclical strategic markup behavior and market structure of its three major domestic producers—GM, Ford, and Chrysler. The principal novelty in this paper is not so much in the underlying theory (we build on what Timothy Bresnahan has called the "new empirical industrial organization" literature), but rather in the actual empirical implementation of a multi-equation model sufficiently general to permit the testing of a variety of specific behavioral postulates associated with the interdependent strategic profit-maximizing behavior of GM, Ford, and Chrysler.

Using firm-specific annual data from 1959–83, we find that at usual levels of statistical significance, we cannot reject Cournot quantity-setting behavior, nor can we reject leader-follower quantity-setting behavior with GM as leader and Ford and Chrysler as followers. The parameter restrictions associated with leader-follower behavior are slightly more binding than those with Cournot, although the difference is not decisive. In terms of the cyclical analysis of market behavior, our most striking result is the great diversity we find among GM, Ford, and Chrysler. Depending on which firm is being analyzed, there is support for the procyclical "conventional wisdom" of markups (GM and Ford), as well as for the countercyclical "revisionist" literature (Chrysler). Diversity, rather than constancy and homogeneity, best characterizes firms in this industry.

Why Doesn't Society Minimize Central Bank Secrecy?

Karen K. Lewis

Working Paper No. 3397

June 1990

JEL Nos. 310, 432

Societies have incentives to design institutions that allow central bank secrecy. This paper illustrates these

incentives in two ways. First, if society tries to constrain secrecy in one way, central bankers will try to regain lost effectiveness by building up secrecy in other ways. Therefore, we may wind up accepting types of secrecy that appear preventable because reducing them would lead to higher costs. Second, if the social trade-offs between policy objectives change over time, the public may directly prefer greater central bank secrecy so that it will be surprised with expansionary policies when it desires them most.

Occasional Interventions to Target Rates with a Foreign Exchange Application

Karen K. Lewis

Working Paper No. 3398

June 1990

JEL Nos. 400, 430

This paper develops a framework for analyzing the effects on rates when occasional central bank interventions try to keep rates near target levels. Interestingly, the threat of capital gains or losses induced by this stochastic intervention policy helps contain rates within implicit boundaries around the target level. More importantly, this intervention policy concentrates observations of the exchange rate around the target level and away from the implicit bands. In Monte Carlo simulations, sufficiently tight distributions for intervention around the target level imply that the bands are never reached in practice. As an application, the model is evaluated empirically using exchange rate and intervention observations following the 1987 Louvre Accord. In these estimates, the probability of intervention never exceeds about 0.5. The range of observed exchange rates remains far from the implicit bands where the probability of intervention is one.

Sanctions

Jonathan Eaton and Maxim Engers

Working Paper No. 3399

June 1990

Sanctions are measures that one party (the sender) takes to influence the actions of another (the target). For example, sanctions, or the threat of sanctions, have been used by creditors to get a foreign sovereign to repay debt; or they have been used by one government to influence the human rights, trade, or foreign policies of another government. Sanctions can harm the sender as well as the target. Thus, the credibility of such sanctions is at issue.

In a game-theoretic framework, we examine whether sanctions that harm both parties enable the sender to extract concessions. We find that they can, and that their threat alone can suffice when they are contingent on the target's subsequent behavior. Even when sanctions are not used in equilibrium, however, the amount of compliance they can extract typically depends on the costs that they would impose on each party.

Asymmetric Information and Financial Crises: A Historical Perspective

Frederic S. Mishkin

Working Paper No. 3400

July 1990

JEL Nos. 310, 130

This paper examines the nature of financial crises from a historical perspective using the new and burgeoning literature on asymmetric information and financial structure. After describing how this literature helps to promote an understanding of the nature of financial crises, the paper focuses on a historical examination of a series of financial crises in the United States, beginning with the panic of 1857 and ending with the stock market crash of October 19, 1987. The asymmetric information approach explains the patterns in the data and many features of these crises that are hard to explain otherwise. It also suggests why financial crises have had such important consequences for the aggregate economy over the past 150 years.

Capital Positions of Japanese Banks

Asli Demirguc-Kunt, Edward J. Kane,

and Haluk B. Unal

Working Paper No. 3401

July 1990

JEL No. 314

This paper measures and analyzes two types of hidden capital at Japanese banks: 1) the net undervaluation present in accounting measures of on-balance-sheet assets and liabilities; and 2) the net economic value of off-balance-sheet items. We construct a model that explains changes in both types of capital as functions of holding-period returns earned in Japan on stocks, bonds, yen, and real estate. We apply the model to annual data covering 1975-89 and to a four-class size/charter partition of the Japanese banking system. For each type of hidden capital and each class of bank, the model estimates the stock market, interest rate, foreign exchange, and real estate sensitivities of returns to bank stockholders.

Only the stock market sensitivities prove significant at the 5 percent level. This leads us to investigate Japanese bank stock returns using stationary and split-sample market models. Time-series regressions show that very large Japanese banks have developed stock market betas in excess of two, and that the value of a bank's beta increases with measures of its size and accounting leverage.

Our future research will investigate the sensitivity of our results to different ways of pooling data from individual banks and to more sophisticated methods for estimating various parameters. We also plan to extend the analysis by embedding it in a model of how variations in bank-customer contracting arrangements in Japan affect the returns that can be earned by bank stockholders.

The Consumption of Stockholders and Nonstockholders

N. Gregory Mankiw and **Stephen P. Zeldes**

Working Paper No. 3402

July 1990

Only one-fourth of U.S. families own stock. This paper asks whether the consumption of stockholders differs from the consumption of nonstockholders, and whether these differences can help to explain the empirical failures of the consumption-based Capital Asset Pricing Model. We use household panel data to construct a time series on the consumption of each group. The results indicate that the consumption of stockholders is more volatile than that of nonstockholders and is correlated more highly with the excess return on the stock market. These differences help to explain the size of the equity premium, although they do not resolve the equity premium puzzle fully.

Precautionary Saving and the Marginal Propensity to Consume

Miles S. Kimball

Working Paper No. 3403

July 1990

JEL Nos. 023, 026, 311

The marginal propensity to consume out of wealth is important for evaluating the effects of taxation on consumption, assessing the possibility of multiple equilibria caused by aggregate demand spillovers, and explaining observed variations in consumption. It also affects the interest elasticity of consumption, as well as individual risk aversion.

This paper analyzes the effect of uncertainty on the marginal propensity to consume, within the context of the Permanent Income Hypothesis. Given plausible conditions on the utility function, income risk raises the marginal propensity to consume out of wealth in a multiperiod model with many risky securities. I also characterize the marginal investment portfolio for additions to wealth.

U.S. Demographics and Saving: Predictions of Three Saving Models

Alan J. Auerbach, **Jinyong Cai**,
and **Laurence J. Kotlikoff**

Working Paper No. 3404

July 1990

JEL No. 840

This paper compares the predictions of three different saving models—the life-cycle model, the infinite-horizon altruism model, and a reduced-form economic model—concerning the impact of projected U.S. demographic change on future U.S. saving rates. Our findings indicate a large range of possible paths

for future U.S. saving. However, the three models concur in predicting a peak in the national saving rate in the near future (within 15 years), followed by a significant decline in the saving rate thereafter. In fact, the findings suggest the strong possibility of negative U.S. saving rates beginning after 2030.

Tax Aspects of Policy Toward Aging Populations: Canada and the United States

Alan J. Auerbach and **Laurence J. Kotlikoff**

Working Paper No. 3405

July 1990

JEL No. 320

This paper uses the Auerbach-Kotlikoff Dynamic Simulation Model to compare the projected demographic transitions in Canada and the United States. The model determines the perfect-foresight transition path of an economy in which individuals live to age 75. Its preferences are life cycle, augmented to include utility from bequests. In addition to handling changes in demographics and fiscal policies, the model can be run for closed or open economies.

In comparing Canada with the United States, we first simulate the U.S. demographic transition, treating the United States as a closed economy. Then, the time path of interest rates obtained from the U.S. simulations is used in the Canadian simulations that assume an open economy and the U.S. interest rate as given.

We find that demographics are likely to have significant effects on rates of saving and taxation both in the United States and Canada. However, the more abrupt demographic transition in Canada, combined with the projected maturation of Canada's social security system, leads to a more severe predicted long-term decline in Canadian saving rates. Despite the predicted lower saving rates, however, there is likely to be capital deepening in both countries. The associated increase in real wages likely will more than offset the projected higher tax rates, leaving the growth-adjusted welfare of future generations higher than that of current generations.

P^* Type Models: Evaluation and Forecasts

R. A. Pecchenino and **Robert H. Rasche**

Working Paper No. 3406

August 1990

JEL No. 311

This paper critically evaluates the Federal Reserve's p^* model of inflation and develops a model of national income determination implicit in the p^* formulation. We use this model to forecast the future paths of key macroeconomic variables and to investigate their behavior under a variety of deterministic monetary policy rules. These forecasts and policy simulations suggest a dynamic economic behavior that is inconsistent with stylized facts and lead us to question the underlying structure of the p^* formulation.

Views on the Likelihood of Financial Crisis

Benjamin M. Friedman

Working Paper No. 3407

August 1990

JEL No. 311

A review of major lines of thinking about developments in the 1980s bearing on the likelihood of a financial crisis in the United States supports four principal conclusions:

First, financial crises historically have played a major role in large fluctuations in business activity. A financial crisis has occurred either just prior to, or at the inception of, each of the half dozen or so most severe recorded declines in U.S. economic activity.

Second, the proclivity of private borrowers to take on debt since 1980 has been extraordinary by postwar standards. Among business corporations, much of the proceeds of this surge in debt issuance has gone to pay down equity (either the borrower's or another company's) rather than to put in place new earning assets.

Third, the rate at which U.S. businesses have gone bankrupt and defaulted on their liabilities has also been far out of line with any prior experience since the 1930s. The business failure rate not only rose to a postwar record level during the 1981-2 recession but—in contradiction to prior cyclical patterns—continued to rise through the first four years of the ensuing recovery.

Fourth, the largest U.S. banks' exposure to debt issued in the course of leveraged buyouts or other transactions substituting debt for equity capitalization now exceeds their risk-adjusted capital, even with all bank assets (including loans to developing countries) counted at book value. Although this exposure is not (yet) as large as that caused by banks' LDC loans, the two sets of risks are not independent.

If these combined trends of the 1980s comprise an increase in the economy's financial fragility, then they increase the likelihood that the government—including, but not limited to, the Federal Reserve System—will have to act in its capacity as lender of last resort, and they also increase the likely magnitude of lender-of-last-resort action if necessary. If the exercise of this responsibility does become necessary, doing so in a fashion consistent with other Federal Reserve objectives, such as maintaining price stability, will be problematic to say the least.

The Resurgence of Inventory Research: What Have We Learned?

Alan S. Blinder and Louis J. Maccini

Working Paper No. 3408

August 1990

JEL No. 023

This paper surveys and critically evaluates recent empirical and theoretical research on business inventories. While most inventory research has had macroeconomic motivations, we focus on its microtheoretic basis and on potential conflicts between theory and evidence.

The paper asks two principal questions. First, how can inventories, which are allegedly used by firms to stabilize production, nonetheless be a destabilizing factor at the macroeconomic level? Second, if firms are following the production-smoothing model, why is production more variable than sales in many industries? We suggest that the so-called (S,s) model may help answer both questions.

Jobfinding and Wages When Long-Run Unemployment Is Really Long: The Case of Spain

Alfonso Alba-Ramirez and Richard B. Freeman

Working Paper No. 3409

August 1990

This paper uses the "Encuesta de Condiciones de Vida y Trabajo"—a survey of the labor force activity of over 61,000 persons in Spain in 1985, when unemployment exceeded 20 percent—to examine the effect of unemployment insurance (UI) and family status on long-run joblessness. We find that the duration of joblessness is about 30 percent longer for those eligible for UI benefits than for those ineligible for UI. Also, the long-term unemployed are disproportionately secondary workers for whom the family serves as a form of welfare. Third, hazard rates linking the chances of jobfinding to duration of unemployment in the 1981-5 period of massive joblessness did not decline with duration. Further, the length of unemployment spells reduces wages moderately but has a huge effect on the probability that reemployed workers will take secondary sector jobs. Finally, those eligible for UI earn more and are more likely to gain regular full-time jobs than those ineligible for UI, congruent with the additional months of job search associated with UI.

The estimated effects of duration on the hazard and on earnings are consistent with the implications of labor supply and search analysis, but not with the view that long unemployment spells create a class of unemployables. Our results imply a sizable reduction in long-term unemployment with economic recovery.

Relaxing the External Constraint: Europe in the 1930s

Barry J. Eichengreen

Working Paper No. 3410

August 1990

JEL Nos. 400, 044

This paper documents the effects of exchange rates and the external constraint during the interwar years. In the absence of international policy coordination, exchange rate depreciation has been a necessary precondition for the adoption of policies promoting recovery from the Great Depression. But currency depreciation was not without costs. It increased the variability

of nominal exchange rates and rendered them increasingly difficult to predict. Increased variability and uncertainty about nominal exchange rates carried over to short-term changes in real exchange rates as well. Thus, exchange rate variability appears to have introduced additional noise into the operation of the price mechanism.

Trends and Cycles in Foreign Lending

Barry J. Eichengreen

Working Paper No. 3411

August 1990

JEL Nos. 040, 400

Over the past century, the world economy has passed through a succession of phases characterized by very different levels of international capital flows. This paper asks what accounts for these dramatic shifts in capital movements across national borders. I consider three types of explanation. The first emphasizes the policy regime, attributing the unusual extent of capital flows prior to 1914 to the operation of the international gold standard. The second focuses on the stages of indebtedness sometimes thought to characterize the process of economic development. The third considers boom-and-bust cycles through which international capital markets are thought to pass. Although each approach contributes something to our understanding of the phenomenon, none is totally satisfactory. Therefore, I suggest an alternative explanation, which stresses the increase in the magnitude of variability in real interest rates and real exchange rates that has occurred over the last 100 years.

Foreign Firms and Export Performance in Developing Countries: Lessons from the Debt Crisis

Magnus Blomström and Robert E. Lipsey

Working Paper No. 3412

August 1990

JEL Nos. 420, 440

This paper compares U.S.-owned affiliates with other firms in developing countries in terms of shifts in sales from home to export markets because of the debt crisis of the early 1980s. The U.S. affiliates in heavily indebted countries increased their exports, and the share of their production exported, more rapidly than the other firms did after 1982. Affiliates in less indebted countries did neither. However, a large part of the shift in sales by affiliates in the heavily indebted countries involved sharp reductions in local sales, often larger than the growth in exports.

Human Capital, Product Quality, and Growth

Nancy L. Stokey

Working Paper No. 3413

August 1990

JEL Nos. 110, 850

This paper develops a growth model in which finite-lived individuals invest in human capital, and these investments have a positive external effect on the human capital of later cohorts. Heterogeneous labor is the only factor of production, and higher-quality labor produces higher-quality goods. I study stationary growth paths, along which human capital and the quality of consumption goods grow at a common, constant rate. I also show that if a small economy is very advanced or very backward relative to the rest of the world, then its rate of investment in human capital is lower under free trade than under autarky.

Human Capital, Fertility, and Economic Growth

Gary S. Becker, Kevin M. Murphy,

and Robert F. Tamura

Working Paper No. 3414

August 1990

JEL Nos. 850, 840, 110

Our model of growth departs from the Malthusian and the neoclassical approaches by including investments in human capital. We assume, crucially, that rates of return on human capital investments rise rather than decline, as the stock of human capital increases, until the stock becomes large. This is because the education sector uses human capital more intensively than either the capital-producing sector or the goods-producing sector. The result is multiple steady states: an undeveloped steady state with little human capital, low rates of return on human capital investments, and high fertility; and a developed steady state with higher rates of return, a large and perhaps growing stock of human capital, and low fertility. Multiple steady states mean that history and luck are critical determinants of a country's growth experience.

The Continued Interest Rate Vulnerability of Thrifts

Patric H. Hendershott and James D. Shilling

Working Paper No. 3415

August 1990

JEL No. 314

The 1980s' S&L debacle generally is viewed as the result of: 1) sharply rising interest rates eliminating the net worth of thrifts that funded fixed-rate loans with short-term deposits; and 2) thrifts responding by taking even greater interest rate and credit risks. This paper asks how vulnerable thrifts remain to an interest rate experience like the one that triggered the 1980s S&L debacle.

The short answer is that thrifts are even more vulnerable in 1989 than they were in 1977. The \$400 billion volume of fixed-rate mortgages funded by short-term deposits in 1989 is slightly greater than the 1977 level, and thrifts have put over \$325 billion of adjustable-rate loans with rate caps on their balance sheets. A sharp rise in interest rates (the one-year Treasury rate rose by 9 percentage points between 1977 and 1981) would cause significant losses on these capped loans, as well as on the fixed-rate loans.

Can Capital Income Taxes Survive in Open Economies?

Roger H. Gordon

Working Paper No. 3416

August 1990

JEL Nos. 325, 441

Recent theoretical work has argued that a small open economy should use residence-based, but not source-based, taxes on capital income. Given the ease with which residents can evade domestic taxes on foreign earnings from capital, however, a residence-based tax may not be administratively feasible, leaving no tax on capital income.

This paper explores possible reasons why capital income taxes have survived in the past. Any bilateral approach, such as sharing of information among governments or direct coordination of tax rates, suffers because the coalition of countries itself is a small open economy. Capital controls that prevent outflows of capital may well be a sensible policy response and in fact were used by a number of countries. Such controls have many drawbacks, however, and some countries are abandoning them now.

Finally, the tax-crediting conventions used to prevent the double taxation of international capital flows also may have served to coordinate tax rates. I show that while no Nash equilibrium exists in tax rates because of these tax-crediting conventions a Stackelberg equilibrium exists if there is either a dominant capital exporter or a dominant capital importer, in spite of the ease of tax evasion. The United States, as the dominant capital exporter during much of the postwar period, may well have served as this Stackelberg leader. However, world capital markets are more complicated now. Tax-crediting conventions may no longer be sufficient to sustain capital income taxation.

An Experimental Comparison of Dispute Rates in Alternative Arbitration Systems

Orley C. Ashenfelter, Janet Currie, Henry S. Farber, and Matthew Spiegel

Working Paper No. 3417

August 1990

This paper reports the results of a systematic, experimental comparison of the effect of alternative arbitra-

tion systems on dispute rates. As the key to our experimental design, we use a common underlying distribution of arbitrator "fair" awards in the different systems. This allows us to compare dispute rates across different arbitration procedures in which we hold the amount of objective, underlying uncertainty about the arbitration awards as fixed.

We find first that dispute rates are related inversely to the monetary costs of disputes. Dispute rates are much lower when arbitration is not available, so that the "entire pie" is lost when a dispute occurs.

Second, contrary to conventional wisdom, the dispute rate in a final-offer arbitration system is at least as high as the dispute rate in a comparable conventional arbitration system. Third, dispute rates are related inversely to the uncertainty costs of disputes. Dispute rates are lower in conventional arbitration treatments in which the variance of the arbitration award is higher and imposes greater costs on risk-averse negotiators. Our results suggest that negotiators on average may be risk averse.

Target Zones with Limited Reserves

Paul R. Krugman and Julio J. Rotemberg

Working Paper No. 3418

August 1990

JEL No. 431

Like a fixed exchange rate, a target zone system may be subjected to speculative attacks when the reserves of the central bank are limited. This paper analyzes such speculative attacks and their implications. It shows that the recently developed "smooth pasting" model of target zones should be viewed as a special case that emerges only when reserves are sufficiently large. The paper then uses the target zone framework to resolve a seeming paradox in predicting speculative attacks on a gold standard, arguing that such a standard may be viewed best as the boundary between one-sided target zones.

Economic Growth and Convergence Across the United States

Robert J. Barro and Xavier Sala-i-Martin

Working Paper No. 3419

August 1990

Do poor countries or regions tend to grow faster than rich ones? That is, are there automatic forces that lead to convergence over time in levels of per capita income and product? We consider predictions of closed- and open-economy neoclassical growth theories and then examine data since 1840 from the United States. We find clear evidence of convergence, but we can reconcile the findings quantitatively with neoclassical models only if diminishing returns to capital converge very slowly.

The results from a broad sample of countries are similar if we hold constant a set of variables that proxy for differences in steady-state characteristics. Two

types of existing theories seem to fit the facts: the neo-classical growth model with broadly defined capital and a limited role for diminishing returns, and endogenous growth models with constant returns and gradual diffusion of technology across economies.

Aging and Labor Force Participation: A Review of Trends and Explanations

Robin L. Lumsdaine and **David A. Wise**

Working Paper No. 3420

August 1990

JEL Nos. 813, 918

The American population is aging rapidly. Persons 65 and over now constitute about one-fifth of the population and will comprise about two-fifths of the population by 2040. In addition, individuals are living longer. Yet the labor force participation of older Americans has fallen dramatically in recent years.

This paper discusses this trend and the principal arguments behind it. In the first part, we review trends in labor force participation and Social Security coverage, firm pension plan coverage, and other factors, including demographics. The second part of the paper discusses the incentive effects of Social Security and retirement plans, with an emphasis on firm pension plans.

Ex-Day Behavior of Japanese Stock Prices: New Insights from New Methodology

Fumio Hayashi and **Ravi Jagannathan**

Working Paper No. 3421

August 1990

JEL Nos. 210, 520

We study the ex-dividend day behavior of Japanese stock prices from 1983-7. Contrary to previous findings, our results show that prices of ex-day stocks drop by nearly the *full amount* of the dividend. However, ex-day stocks show an abnormal return. Also, for the many ex-dividend day stocks that also go ex-rights on the same ex-day, we find that the return is higher on average than for stocks without rights issues. Thus we conclude that the ex-day behavior of Japanese stocks is qualitatively similar to that of U.S. stocks.

Fertility, Timing, Wages, and Human Capital

McKinley L. Blackburn, David E. Bloom,
and **David Neumark**

Working Paper No. 3422

August 1990

JEL Nos. 821, 841, 851

Women who have their first child relatively late in life earn higher wages than other women. We explain this

fact with a simple life-cycle model of human capital investment and timing of first birth. The model yields conditions (which are satisfied plausibly) under which late childbearers tend to invest more heavily in human capital than early childbearers do. Our results confirm that higher wages of late childbearers arise primarily through greater measurable investment in human capital.

Immigrant Participation in the Welfare System

George J. Borjas and **Stephen J. Trejo**

Working Paper No. 3423

August 1990

JEL No. 800

Using the 1970 and 1980 U.S. Censuses, this paper presents an empirical analysis of immigrant participation in the welfare system. The availability of two cross sections allows for identification of cohort and assimilation effects. The data indicate that recent immigrant cohorts use the welfare system more intensively than earlier cohorts did. In addition, the longer an immigrant household has been in the United States, the more likely it is to receive welfare. Our analysis also suggests that a single factor, the changing national origin mix of the immigrant flow, accounts for much of the increase in welfare participation rates across successive immigrant waves.

Sovereign Debt, Reputation, and Credit Terms

Jonathan Eaton

Working Paper No. 3424

August 1990

JEL No. 433

I develop a model in which sovereign debtors repay their debt in order to maintain a creditworthy reputation. Repayment gives creditors a reason to think that the debtor will suffer adverse consequences if it defaults, so they continue to lend. I compare a situation in which competitive lenders earn a zero profit on each loan with one in which the zero-profit condition applies only in the long run, because they can make long-term commitments to individual borrowers. In many circumstances a borrower benefits, ex ante, if lenders deny credit to a borrower in default even if a subsequent loan is profitable at that point. Furthermore, a "debt overhang," while possibly altering credit terms, does not cause profitable investment opportunities to go unexploited.

Modeling American Marriage Patterns

David E. Bloom and Neil G. Bennett

Working Paper No. 3425

August 1990

This paper investigates the application of the three-parameter, Coale-McNeil marriage model and some related hyper-parameterized specifications to date on the first marriage patterns of American women. Because the model is parametric, it can be used to estimate the parameters of the marriage process, free of censoring bias, for cohorts who have yet to complete their first marriage experience. We report empirical evidence from three surveys on the ability of the model to replicate and project observed marriage behavior. Our results indicate that the model can be useful for analyzing cohort data on marriage and that recent cohorts are showing relatively strong proclivities to both delay and forgo marriage. Consistent with earlier work, our results also indicate that education is a powerful covariate of the timing of first marriage, and that race is a powerful covariate of its incidence.

Did J. P. Morgan's Men Add Value?

A Historical Perspective on Financial Capitalism

J. Bradford De Long

Working Paper No. 3426

August 1990

JEL No. 042

The pre-World War I period in the United States was the heyday of "financial capitalism": the securities issues were concentrated in the hands of a few investment bankers with substantial representation on corporate boards of directors. This form of organization had costs: it created a conflict of interest that allowed investment bankers to tax operating corporations heavily. It also had benefits: representation of investment bankers on boards allowed those bankers to monitor the performance of firm managers, quickly replace managers whose performance was unsatisfactory, and signal to ultimate investors that a company was well managed and fundamentally sound. The presence of a partner in J. P. Morgan and Co. on a firm's board of directors was associated with a rise of perhaps 30 percent in common stock equity value. Some share of the increase in value almost surely arose because investment banker representation on the boards of competing companies aided the formation of oligopoly. But the development of similar institutions in other countries that, like the Gilded Age United States, experienced exceptionally rapid economic growth—Germany and Japan are the most prominent examples—suggests that a substantial share of value added may have arisen because "financial capitalism" improved the functioning of financial markets as social capital allocation mechanisms.

Univariate versus Multivariate Forecasts of GNP Growth and Stock Returns: Evidence and Implications for the Persistence of Shocks, Detrending Methods, and Tests of the Permanent Income Hypothesis

John H. Cochrane

Working Paper No. 3427

September 1990

Lagged GNP growth rates are poor forecasts of future GNP growth rates in the postwar United States, leading to the impression that GNP is nearly a random walk. However, other variables, and especially the lagged consumption/GNP ratio, do forecast long-horizon growth and show that GNP has temporary components. Labor income and stock prices (using the dividend/price ratio) display the same behavior. This paper documents these facts and examines their implications for the persistence of shocks to GNP and time variation in expected stock returns.

I find that GNP has an almost entirely transitory response to a GNP shock that holds consumption constant. This is intuitive: if consumption does not change, permanent income does not change, so any change in GNP should be transitory. Similarly, a shock to stock prices that holds dividends constant suggests a change in the income rate, and prices display a large transitory movement in response to this shock. I also examine the implications of transitory variations in GNP and labor income for methods of extracting stochastic trends or "cyclically adjusting" GNP, and for explaining violations of "excess smoothness" to the permanent income hypothesis.

Medical Malpractice: An Empirical Examination of the Litigation Process

Henry S. Farber and Michelle J. White

Working Paper No. 3428

September 1990

We use new data on medical malpractice claims against a single hospital, where a direct measure of the quality of medical care is available, to address: 1) the specific question of the role of the negligence rule in the dispute settlement process in medical malpractice; and 2) the general question of how the process of negotiation and dispute resolution in medical malpractice operates with regard to both the behavior of the parties and the outcome of the process. We find that the quality of medical care is an extremely important determinant of defendants' medical malpractice liability. More generally, we find that the plaintiff is not well informed ex ante about the likelihood of negligence; and 2) the ex ante expected value to the plaintiff of a suit is high relative to the costs of filing a suit and getting more information. Thus, suits are filed even where there is no concrete reason to believe that there has been negligence, and virtually all suits are either dropped or settled based on the information gained after filing. We conclude that the filing of suits that appear, ex post, to be nuisance suits can be rational equilibrium behavior, ex ante, where there is incomplete information about quality of care.

Enforcement Costs and the Optimal Magnitude and Probability of Fines

A. Mitchell Polinsky and Steven Shavell

Working Paper No. 3429

September 1990

JEL Nos. 022, 916

Some of the costs of enforcing laws are "fixed": they do not depend on the number of individuals who commit harmful acts. Other costs are "variable": they rise with the number of such individuals. We analyze the effects of fixed and variable enforcement costs on the optimal fine and on the optimal probability of detection. We show that the optimal fine rises to reflect variable enforcement costs. The optimal fine is not affected directly by fixed enforcement costs, and the optimal probability of detection depends on both types of enforcement costs.

Measuring Ignorance in the Market: A New Method with an Application to Physician Services

Martin Gaynor and Solomon Polachek

Working Paper No. 3430

September 1990

JEL Nos. 026, 913, 211

Ever since Stigler's seminal piece on the economics of information, a great deal of research has investigated equilibrium in markets with imperfect information. In this paper, we propose a method for measuring ignorance about price in a market, building on Stigler's original suggestion of using dispersion as the measure of ignorance. Our innovation is to use a new frontier estimation technique containing a three-component error term to separate observed price dispersion into variation that is purely random, as the result of buyer ignorance, and because of seller ignorance.

We apply the technique to the market for physicians' services. This supplies us with quantitative indexes of price ignorance for different services and shows how the level of ignorance varies by buyer, seller, and market area characteristics. Our results are striking. Buyer ignorance exceeds seller ignorance by roughly a factor of two in this market, and this gap is greater for services that are purchased less frequently, insured more heavily, or accompanied by greater severity of illness, as predicted by search theory.

A Theory of Corporate Financial Structure Based on the Seniority of Claims

Oliver Hart and John Moore

Working Paper No. 3431

September 1990

JEL Nos. 022, 521

We develop a theory of optimal capital structure based on the idea that debt and equity have different priorities

relative to future corporate cash payments. A company with high (dispersed) debt will find it hard to raise new capital since new holders of securities will have low priority relative to existing senior creditors. The converse is true for a company with low debt.

We show that there is an optimal debt-equity ratio and mix of senior and junior debt for a corporation whose management may undertake unprofitable as well as profitable investments. Among other things, our theory can explain the observation that profitable firms have low debt. In addition, it predicts that (long-term) debt will be high if new investment is risky and profitable on average, or if assets in place are risky and new investment is unprofitable on average.

Real Business Theory: Wisdom or Whimsy?

Martin S. Eichenbaum

Working Paper No. 3432

September 1990

JEL Nos. 022, 211, 212

This paper assesses the empirical plausibility of the view that aggregate productivity shocks account for most of the variability in post-World War II U.S. output. I argue that the type of evidence put forth by proponents of this proposition is too fragile to be believable. First, any confidence in the evidence is affected fundamentally once we abandon the fiction that we actually know the true values of the structural parameters of standard Real Business Cycle (RBC) models. What the data tell us is that, while productivity shocks play some role in generating the business cycle, there is simply an enormous amount of uncertainty about just what percentage of aggregate fluctuations they actually account for. The answer could be 70 percent as Kydland and Prescott (1989) claim, but the data contain almost no evidence against either the view that the answer is really 5 percent or that the answer is really 200 percent.

Second, I show that point estimates of the importance of technology shocks are extremely sensitive to small perturbations in the theory. Allowing for labor hoarding in an otherwise standard RBC model reduces by 50 percent the ability of technology shocks to account for aggregate fluctuations. This finding provides some support for the view that many of the movements in the Solow residual that are labeled as productivity shocks may be an artifact of labor hoarding phenomena.

Technological Change and the Careers of Older Workers

Ann P. Bartel and Nachum Sicherman

Working Paper No. 3433

September 1990

JEL No. 820

Recent research has shown that technological change has important labor market implications. In this paper,

we demonstrate one of the avenues through which this occurs. According to the theory of human capital, technological change will influence the retirement decisions of older workers in two ways. First, workers in industries that are characterized by high rates of technological change will have later retirement ages because these industries require larger amounts of on-the-job training. Second, an unexpected change in the industry's rate of technological change will induce older workers to retire sooner because the required amount of retraining will be an unattractive investment. We matched time-series data on rates of technological change and required amounts of training in 35 industrial sectors with data from the NLS Older Men Survey to test these hypotheses. Our results strongly support both hypotheses.

Tax Policy and the Dividend Puzzle

B. Douglas Bernheim

Working Paper No. 3434

September 1990

JEL Nos. 311, 321, 323

This paper offers a new explanation of the dividend puzzle, based on a model in which firms attempt to signal profitability by distributing cash to shareholders. I assume that dividends and repurchases are identical, except that dividends are taxed more heavily. Nevertheless, I demonstrate that, under certain plausible conditions, corporations will pay dividends. Indeed, some firms actually will pay dividends and then retrieve a portion of these payments by issuing new equity (perhaps through a dividend reinvestment plan), despite the fact that this appears to create gratuitous tax liabilities. In addition to providing an explanation for the dividend puzzle, I also derive a number of strong results concerning corporate payout decisions and government tax policy. Some of these results are surprising. For example, the relationship between repurchases and firm quality is hump-shaped. Moreover, despite the fact that a higher dividend tax rate depresses dividend payments, it does not affect either government revenue or welfare.

The Role of Banks in Reducing the Costs of Financial Distress in Japan

Takeo Hoshi, Anil K. Kashyap, and David Scharfstein

Working Paper No. 3435

September 1990

This paper explores the idea that financial distress is costly because free-rider problems and information asymmetries make it difficult for firms to renegotiate with their creditors in times of distress. We present evidence consistent with this view by showing that Japanese firms with financial structures in which free-rider and information problems are small perform better than other firms in industrial groups (those with

close financial relationships to their banks, suppliers, and customers), invest more, and sell more after the onset of distress than nongroup firms do. Moreover, firms that are not group members, but nevertheless have strong ties to a main bank, also invest and sell more than firms without strong bank ties.

Patterns of Aging in Thailand and the Ivory Coast

Angus Deaton and Christina H. Paxson

Working Paper No. 3436

September 1990

JEL Nos. 918, 921, 112

This paper is concerned broadly with the living standards of older people in two contrasting developing countries: Ivory Coast and Thailand. We use a series of household surveys from these two countries to present evidence on factors affecting the living standards of the elderly: living arrangements; labor force participation; illness; urbanization; income; and consumption. One of the issues we examine is whether life-cycle patterns of income and consumption can be detected in the data. The fact that few of the elderly live alone makes it difficult to measure the welfare levels of the elderly accurately, or to make statements about the life-cycle patterns of income and consumption of individuals. We find that labor force participation and individual income patterns follow the standard life-cycle hump shapes in both countries, but that average living standards within households are quite flat over the life cycle. The data suggest that changes in family composition and living arrangements of the elderly are likely to be more important sources of old-age insurance than asset accumulation.

Disability Transfers and the Labor Force Attachment of Older Men: Evidence from the Historical Record

John Bound and Timothy Waidmann

Working Paper No. 3437

September 1990

JEL Nos. 813, 910, 913, 915, 918

We use trends in self-reported disability from the late 1940s through the late 1980s to gauge the impact of the growth of income maintenance for the disabled on the labor force attachment of older working-aged men. Under the assumption that the actual health of these men has not changed, we can use the trends in self-reported disability to make inferences about the disincentive effects of disability transfers. Our tabulations suggest that, for the post-World War II period, earlier accommodation of health problems accounts for between two- and three-fifths of the 4.9 percentage point drop in the labor force participation of men aged 45-54, and between one-quarter and one-third of the

19.9 percentage point drop among men aged 55–64. Since not all of this earlier accommodation can be attributed causally to the expansion of disability programs, these figures should be interpreted as upper bounds on the impact of such programs on the work force attachment of older men.

Participation Dynamics: Sunspots and Cycles

Satyajit Chatterjee, Russell Cooper, and B. Ravikumar
Working Paper No. 3438
September 1990
JEL Nos. 023, 131

This paper investigates the possibility of sunspot equilibria and endogenous cycles in an overlapping-generations model with strategic interactions. We consider an economy with imperfectly competitive product markets. There is a participation decision on the part of prospective firms, and a strategic complementarity emerges from the interaction of firms in their entry decisions both over time and across sectors.

When these complementarities are sufficiently strong, multiple steady-state equilibria will exist. Sunspot equilibria then can be constructed as randomizations in the neighborhood of those steady states. We relate the properties of our sunspot equilibria to aggregate fluctuations, with particular emphasis on the dynamics of entry and exit.

We also show that if *intra-temporal* strategic interactions are sufficiently strong, cycles may exist. Additional sunspot equilibria can be found in the neighborhood of these cycles. Finally, we show that if *inter-temporal* linkages are sufficiently strong, cycles will not exist.

On the Behavior of Commodity Prices

Angus Deaton and Guy Laroque
Working Paper No. 3439
September 1990
JEL No. 131

The classical theory of commodity price determination integrates myopic supply and demand on the one hand with competitive storage (speculation) under rational expectations on the other. Taking into account that inventories must be nonnegative, this paper derives testable implications on the behavior of prices and makes a first attempt at confronting these implications with the empirical evidence. The nonlinearities turn out to be a crucial ingredient in matching the stylized facts, particularly the asymmetries and the sharp upward flares that characterize many commodity prices. The model, simple as it is, goes a long way in reproducing the main features of the data for a range of commodities.

Monetary Contracting Between Central Banks and the Design of Sustainable Exchange Rate Zones

Francisco Delgado and Bernard Dumas
Working Paper No. 3440
September 1990

An exchange rate system is a set of contracts that commits central banks to intervene in the foreign exchange market. The design features of the system include: the rules of intervention; the limits placed on exchange rates; and the "crisis scenario," which describes possible transitions to new regimes in case one central bank runs out of reserves or borrowing capacity. This paper considers the various trade-offs faced in designing an exchange rate system. Svensson (1989) already has analyzed the degree of variability in the exchange rate, the interest rate, and the fundamentals. But the trade-off also pertains to the amount of reserves that the central banks must have on hand in order to forestall a speculative attack and make the system sustainable. The amount of reserves needed depends crucially on the assumed crisis scenario.

Does Competition Between Currencies Lead to Price Level and Exchange Rate Stability?

Michael Woodford
Working Paper No. 3441
September 1990

This paper challenges the view that a system of sufficiently substitutable "competing currencies" would lead to stable exchange rates, and hence to stable price levels, in terms of the various currencies. I propose a theoretical framework for analyzing the consequences of increasing substitutability of currencies in a multiple-currency, "cash-in-advance" model. High (although imperfect) substitutability makes indeterminacy of equilibrium exchange rates more likely and causes the failure of learning dynamics to converge to rational expectations. High substitutability also makes the management of a fixed exchange rate system considerably more difficult.

Measures of Prices and Price Competitiveness in International Trade in Manufactured Goods

Irving B. Kravis, Robert E. Lipsey, and Linda Molinari
Working Paper No. 3442
September 1990
JEL Nos. 227, 420

This paper presents and explains the construction of a set of price indexes relating to international trade in manufactured goods. These include indexes: 1) of export prices for the United States, Germany, and Japan,

based on their own weights, and of competitors' prices for those three countries based on the same set of weights; 2) of domestic prices for the United States, Germany, and Japan based on export weights; and 3) for developed country exports of manufactures based on weights of those exports to *developing* countries, and of total developed country exports of manufactures, and indexes for exports of the United States, Germany, and Japan on the same sets of weights.

The indexes for developed country exports estimate missing prices by taking account not only of contemporaneous price changes in the same country within the same commodity groups, but also of price changes for the particular commodity in other countries.

We compare movements of domestic and export prices, and price indexes based on weights of early and late base years. In addition, we attempt to correct the price indexes for changes in the quality of some manufactured goods that usually are not considered in measures of export or import prices.

Capital Controls, Collection Costs, and Domestic Public Debt

Joshua Aizenman and Pablo E. Guidotti

Working Paper No. 3443

September 1990

JEL No. 400

This paper examines the implications of a large public debt for the implementation of capital controls in an economy in which the collection of tax revenue is costly. We analyze conditions under which policymakers will resort to capital controls to reduce the cost of recycling domestic public debt. The linkages among a costly tax collection mechanism, capital controls, and domestic government debt are explored in a two-period model of optimal taxation. Numerical simulations illustrate how capital controls are linked to different domestic public debt levels and to different degrees of efficiency in the collection of tax revenues.

Employment and Earnings of Disadvantaged Young Men in a Labor Shortage Economy

Richard B. Freeman

Working Paper No. 3444

September 1990

This study contrasts the economic position of youths in local labor markets with different rates of unemployment. Using the annual merged files of the Current Population Survey and the National Longitudinal Survey of Youth, it finds that local labor market shortages raise the employment-to-population ratio and reduce the unemployment rate of disadvantaged youths by substantial amounts. Shortages also raise the hourly earnings of disadvantaged youths. In the 1980s, the

earnings gains for youths in tight labor markets offset the deterioration that marked this decade in the real and relative earnings of the less skilled. Third, youths in areas with labor shortages had greater increases in earnings as they aged than youths in other areas. This implies that improved labor market conditions raise earnings profiles over time as well as the starting prospects of youths.

This study suggests that, despite the social pathologies that plague disadvantaged youths and the 1980s' twist in the American labor market against the less skilled, tight labor markets still operated to substantially improve the economic position of these workers.

Career Plans and Expectations of Young Women and Men: The Earnings Gap and Labor Force Participation

Francine D. Blau and Marianne A. Ferber

Working Paper No. 3445

September 1990

Using detailed information on the career plans and earnings expectations of seniors in college business schools, we test the hypothesis that women who plan to work intermittently choose jobs with lower rewards to work experience in return for lower penalties for labor force interruptions. We find that while men and women expect similar starting salaries, women anticipate considerably lower earnings in subsequent years, even assuming continuous employment after leaving school. While it is also true that women in this sample plan to work fewer years than men, that does not explain the observed differences by gender in profiles of expected earnings. We also find no evidence that gender differences in expected earnings have any effect on the number of years that these women plan to be in the labor market.

Assuming the Can Opener: Hedonic Wage Estimates and the Value of Life

William T. Dickens

Working Paper No. 3446

September 1990

JEL No. 851

Although intuitively appealing, hedonic wage estimates are fraught with problems when used to determine the willingness of people to pay to avoid the risk of fatal hazards. Theoretically, such estimates are flawed in a number of important ways: the underlying behavioral model is wrong; there is imperfect information about job hazards; and labor markets do not look like the perfectly competitive model on which the theory depends for its conclusions. Further, there are many serious problems, described in this paper, with the techniques used to estimate hedonic wage equations.

Not surprisingly, these problems result in a wide

range of outcomes on willingness to pay to avoid fatal hazards. This range of outcomes is not fully apparent in the literature because publication is biased toward positive, rather than negative, findings. I conclude that it is unlikely that economics has much to contribute to the public policy debate over the value of a life.

Women's Work, Women's Lives: A Comparative Economic Perspective

Francine D. Blau and Marianne A. Ferber

Working Paper No. 3447

September 1990

JEL Nos. 826

This paper provides a broad overview of women's economic status all over the world, especially their position relative to men. There are large differences among countries and regions in the gender gap with respect to labor force participation, occupational segregation, earnings, education, and, to a somewhat lesser degree, the amount of time spent on housework. However, two generalizations hold. Women have not achieved full equality anywhere; but, particularly in the advanced industrialized countries for which data on the relevant variables are available more readily, gender differences in economic roles and outcomes have been reduced.

A Sorting Model of Labor Contracts: Implications for Layoffs and Wage-Tenure Profiles

Ruqu Wang and Andrew Weiss

Working Paper No. 3448

September 1990

JEL Nos. 824, 022

This paper analyzes a model of labor contracts when workers have private information about their own productivity, and firms can test workers. We show that considerations of sorting alone will generate steep wage-tenure profiles, high turnover rates of newly hired workers, and mandatory retirement rules.

If test results are informative only to the testing firm and hiring is costless, then all workers who fail the test are fired. When hiring is costly, the firm may retain some (or all) workers who fail its test. Also, the firm may test some, but not all, of its workers.

This paper also considers what happens when there are no hiring costs and many identical firms are competing for good workers. We show that competition for workers can lower total output because it can induce firms to increase the proportion of their workers that they test; if the test is costly, this lowers output. Finally, we show that because a mandated minimum wage affects the probability of a firm testing its workers, an increase in the minimum wage can increase (or decrease) aggregate output.

Human Resource Management Systems and the Performance of U.S. Manufacturing Businesses

Casey Ichniowski

Working Paper No. 3449

September 1990

This paper estimates the effects on the performance of U.S. manufacturing businesses of systems of human resource management policies. I find that nonunion businesses that have human resource management systems with flexible job design, formal training, and mechanisms for workplace communication have the highest levels of economic performance. Nonunion businesses with "union-style" human resource management systems that involve grievance procedures, seniority-based promotions, and no flexible job design exhibit significantly lower levels of performance. I am unable to determine statistically whether the more "progressive" human resource management system stimulates economic performance or whether this system is the appropriate choice for businesses that perform better. Still, the positive relationship between performance and this human resource management system suggests that it will be more common in the future. In contrast, the "union-style" system appears to be a thing of the past. It is confined to unionized businesses in declining industries and very old nonunion businesses with low levels of economic performance.

The Seasonal Cycle in U.S. Manufacturing

J. Joseph Beaulieu and Jeffrey A. Miron

Working Paper No. 3450

September 1990

JEL Nos. 131, 631

This paper examines the seasonal cycle in the manufacturing sector of the U.S. economy. We estimate the seasonal patterns in monthly data for two-digit industries and demonstrate the similarity of the seasonal cycle and the business cycle in manufacturing with respect to several key stylized facts about business cycles. The results are an important addition to Barsky and Miron (1989), because the monthly data for manufacturing display interesting seasonal fluctuations that are hidden in the quarterly data that Barsky and Miron examined. Most significant is a sharp slowdown in July followed by a significant rebound in August. We argue that this event is not easily explained by technology or preference shifts, but instead results from synergies across economic agents.

Do Risk Premia Explain It All? Evidence from the Term Structure

Martin D. D. Evans and Karen K. Lewis

Working Paper No. 3451

September 1990

JEL No. 310

Most studies of the expectations theory of the term structure reject the model. However, the significance

of the rejections depends strongly on the form of the test. In this paper, we use the pattern of rejection across maturities to back out the implied behavior of time-varying risk premiums and/or market forecasts. We then use a new technique to test whether stationary risk premiums alone can be responsible for these rejections. Surprisingly, this test is rejected for short maturities up to six months, suggesting that time-varying risk premiums do not explain it all. We also describe how this method can be used to test other asset pricing relationships.

Fundamental Value and Market Value

**William C. Brainard, Matthew D. Shapiro,
and John B. Shoven**

Working Paper No. 3452
September 1990
JEL No. 313

Much of James Tobin's professional life has been devoted to studying the interrelationship between the goods and financial markets. His general equilibrium approach stresses the interaction between the demand for financial assets and the decision to accumulate productive capital. His emphasis on q , the ratio of assets' market value to their replacement cost, has shaped economists' understanding of the link between the stock market and fixed investment.

In this paper we examine the empirical link between fundamental returns on physical corporate assets and the market return to financial claims on those assets. We define the fundamental return as real cash flow divided by replacement cost. We ask whether the market return on individual firms responds more to aggregate shocks to the fundamental return or to the market return itself. We then examine whether the market prices aggregate market risk or aggregate fundamental risk. Although market risk is priced, we find that fundamental risk is important in explaining risk premiums.

Popular Attitudes Toward Free Markets: The Soviet Union and the United States Compared

**Maxim Boycko, Vladimir Korobov,
and Robert J. Shiller**

Working Paper No. 3453
September 1990

We compared random samples of the populations of Moscow and New York in terms of their attitudes toward free markets by conducting similar telephone interviews in the two countries in May 1990. Although the Soviet respondents were somewhat less likely to accept exchange of money as a solution to personal problems, and while their attitudes toward business were less warm than those of the Americans, we found that the Soviet and American respondents were basically similar in most dimensions. The Soviets did not

differ from the Americans in feeling that price increases may be unfair. Also, there appears to be little difference between the Soviets and Americans in their concern with income inequality, their belief in the importance of providing material incentives for hard work, and their understanding of the workings of markets.

The Dynamic Efficiency Cost of Not Taxing Housing

Jonathan S. Skinner

Working Paper No. 3454
September 1990
JEL No. 320

Housing assets comprise nearly one-third of household wealth but effectively escape income taxation. When housing is included in the life-cycle model, the capital income tax is far more distortionary than previously thought, because capital income taxation stimulates the price of (untaxed) housing capital, thereby crowding out nonhousing wealth in the long run. Even when aggregate saving is unaffected by the aftertax rate of return, the crowding out of nonhousing wealth erodes the tax base and generates very high measures of marginal excess burden.

Movements in U.S. aggregate wealth are consistent with the predictions of the model. Overall household wealth as a ratio of national income in 1989 is nearly identical to the ratio in 1955, but the ratio of housing assets to nonhousing wealth has grown by 30 percent since 1970. In short, capital income taxation may attenuate capital accumulation through its impact on housing prices rather than through traditional incentive effects.

Taxes, Fringe Benefits, and Faculty

Daniel E. Hamermesh and Stephen A. Woodbury

Working Paper No. 3455
September 1990
JEL No. 824

The growth of employee benefits in academe has closely paralleled their growth economywide. This study estimates a complete system describing the demand for benefits and wages using panel data on nearly 1500 institutions of higher learning. The demand for benefits is quite responsive both to changes in real income and to variations in the tax price of benefits. These conclusions are robust with respect to varying definitions of the sample and of the tax price. They are not altered by estimates that account for unmeasured individual effects on demand. Simulations using the estimates suggest that the Tax Reform Act of 1986 sharply reduced the demand for benefits. Extrapolating the impact to the entire economy suggests that the annual flow of compensation shifted away from benefits by at least \$9 billion.

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