

# NBER Reporter

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## Program Report

### Productivity and Industrial Change in the World Economy

With the financial support of the Alfred P. Sloan Foundation, the Andrew Mellon Foundation, and the National Science Foundation, NBER recently launched an extensive, four-year project on "Productivity and Industrial Change in the World Economy."

During the past decade, advances in European and Asian economies have drastically altered the uniquely dominant position of U.S. industries in both domestic and world markets; the experience of the American automobile and steel industries has been particularly painful. Learning to function effectively in this new economic environment is probably the most important challenge facing the U.S. economy for the decades ahead. For this reason, the Bureau's project seeks to understand the nature and likely evolution of the changing pattern of comparative advantage and to study the response of both U.S. and foreign economies to that change.

The basic research in this project will focus on international and interindustry patterns of productivity growth, technological change, and trade. Specifically, the work will fall into six areas:

1. Relative changes in productivity (between countries and industries);
2. trade response to changing patterns of comparative advantage;
3. domestic responses to changing patterns of comparative advantage;
4. the role of exchange rates;
5. trade barriers; and
6. international capital flows.

The productivity component of the project will include an examination of the reasons for the international and interindustry differences in productivity growth, including the contributions of capital accumulation, labor relations, and spending on research and

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This issue of the *Reporter* highlights the Bureau's Program in Productivity and Change in the World Economy. Next, Maurice Obstfeld discusses his work on exchange rates, intervention, and sterilization. Then, Edward P. Lazear describes his studies of institutions in the labor market. After the quarterly Economic Outlook Survey are a section of biographical sketches and news of NBER conferences, the Conference Calendar, and other NBER news and reports. The *Reporter* concludes with short summaries of recent NBER Working Papers.

development. Special attention will be given to the problem of measuring productivity improvement when changes in the product itself are an important part of the improvement process. Also, project researchers will consider the extent to which competition and government regulation affect product change and productivity improvement. In addition to general studies of the issues, several case studies of specific industries will be developed (for example, automobiles and consumer electronics).

The second topic in the project, trade responses, will encompass two types of question: (1) How closely are

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productivity differences reflected in differences in comparative advantage? (2) How has the pattern of world trade developed (and will it develop) in response to the changing patterns of technology and comparative advantage?

In the third section, researchers will look closely at the different experiences of countries in an attempt to understand which policies, designed to accommodate shifts in competitive advantage, work and why. They will also try to understand the natural market responses by which firms seek to protect themselves in a changing environment, and to what extent government policies prevent natural responses in the private sector. As part of this topic, an international comparison of the steel industry will be done. The steel industry was selected because of its size and because so many domestic steel industries have lost their ability to compete with steel imports.

The fourth section of the project will consider what causes major shifts in real exchange rates, how such shifts affect the pattern of world trade, and why changes in the exchange rate appear to affect the domestic price level in Europe but the level of exports and imports in the United States. The experience with floating rates in the past decade has made it clear that rates among countries do not automatically adjust to achieve a balance of trade or current account. Like other financial assets, currencies fluctuate in response to expectations and shifts in investors' preferences. Changes in exchange rates not offset by changes in relative domestic price levels (that is, changes in real rates) can have a major impact on international competitiveness.

The Japanese appear to have been particularly effective in using trade barriers—in their case, a combination of domestic protection and export promotion—to develop industries in which they have a strong comparative advantage. The fifth section's research on the subject will ask: What is the effect of trade barriers on the U.S. economy? In the years ahead, trade barriers may be used increasingly in response to import pressures or in an attempt to imitate the Japanese. Further research will thus ask: How should the magnitude of nontariff barriers be measured and what lessons should be learned from the Japanese export promotion experience?

The final area of research in the project is "International Capital Flows." International capital flows, including direct investments as well as portfolio investments, are the necessary counterparts to trade imbalances. Research in this area will ask, What determines the extent and direction of these international capital flows? How do they affect the patterns of trade? For example, how have OPEC surpluses permitted the newly industrialized countries to borrow more readily than they otherwise could, thereby increasing their demand for U.S. capital goods? What would happen if the United States became a net capital importer in the next several decades? How do the different structures of financial markets among countries facilitate or impede international capital flows?

Among the NBER researchers who will be involved

in this project are: Zvi Griliches, director of NBER's Program in Productivity and Technical Change and chairman of Harvard University's Economics Department; William H. Branson, director of NBER's Program in International Studies and professor of economics at Princeton University; J. David Richardson, University of Wisconsin; Jeffrey Sachs, Harvard University; Richard C. Marston, University of Pennsylvania; Jacob A. Frenkel, University of Chicago; and Robert E. Lipsey, Queens College, all research associates in NBER's Program in International Studies; and David G. Hartman, NBER Executive Director. As with other NBER programs, the research results will be disseminated in Bureau Working Papers, summary publications, research monographs, and through a series of conferences.

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## Research Summaries

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### Exchange Rates, Intervention, and Sterilization

Maurice Obstfeld

After nearly a decade of exchange-rate flexibility, many central banks remain active participants in the foreign exchange market. As under the Bretton Woods system of fixed (but adjustable) parities, foreign central banks hold substantial U.S. dollar reserves; and official foreign exchange intervention has at times been massive. During 1980, for example, the German Bundesbank's international reserves fell by DM 28 billion as a result of intervention operations to support the Deutschmark. That sum was equal to nearly 20 percent of Germany's monetary base at the end of 1980.

Under a regime of fixed exchange rates, reserve movements of this sort impose a severe external constraint on the conduct of monetary policy. Countries pursuing expansionary policies induce capital outflows that must be financed by official reserve sales if the exchange rate is to be held constant. These reduce the monetary base, offsetting the initial expansion, and can eventually undermine the credibility of the central bank's commitment to peg. Monetary contraction, similarly, induces offsetting capital inflows. Proponents of floating exchange rates, writing in the late 1960s, argued that the external constraint would disappear if central banks refrained from intervention in the foreign exchange market. In this manner, domestic monetary policies could be unshackled from the monetary policy of the United States, which, as the reserve-currency country, faced no immediate external constraint itself and more or less unilaterally determined the growth rate of world liquidity.

Central bank intervention has continued in the post-Bretton Woods era because the external policy constraint, rather than disappearing, has assumed a different form. The experience of OECD partners of the United States during the past two years of economic stagnation illustrates the type of policy dilemma that may arise under flexible exchange rates. Faced with a stringent U.S. monetary policy and a strong dollar, those countries have been reluctant to undertake stimulative monetary measures for fear that further exchange-rate depreciation would encourage money-wage growth and worsen inflation. Some governments have complained that the fundamental asymmetry of the Bretton Woods system has not been eliminated by exchange-rate flexibility: through its neglect of exchange market developments, the United States has been exporting its monetary policies to the other industrialized economies.

What is the role of central bank intervention in such circumstances? To answer this question, it is useful to distinguish between the two types of foreign exchange market intervention. "Pure" or "sterilized" intervention is accompanied by an offsetting central bank transaction in domestic bonds and thus is allowed to have no effect on the monetary base. Unsterilized intervention, in contrast, is reflected point for point in the base. A sterilized sale of foreign reserves increases the stock of foreign-currency bonds that must be held in private portfolios and decreases the outstanding stock of domestic-currency bonds.<sup>1</sup> The key issue in an analysis of sterilized intervention is whether changes in relative bond supplies necessitate equilibrating exchange-rate adjustments. Adjustments are required if foreign and domestic bonds are viewed as imperfect substitutes by private investors. In this case, sterilized intervention can exert some influence on the exchange rate while leaving the basic monetary conditions of the economy unchanged.<sup>2</sup>

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<sup>1</sup>*Sterilized intervention may take a number of forms. One form is intervention in the forward exchange market. Another is intervention by an exchange stabilization fund, which borrows domestic (foreign) currency in order to purchase foreign (domestic) assets.*

<sup>2</sup>*Several authors discuss the effects of financial policies in open-economy portfolio-balance models. See, for example, W. H. Branson, "Exchange-Rate Policy after a Decade of 'Floating,'" NBER Working Paper No. 909, June 1982; D. W. Henderson, "Financial Policies in Open Economies," American Economic Review, 69, May 1979; and M. Obstfeld, "Imperfect Asset Substitutability and Monetary Policy under Fixed Exchange Rates," Journal of International Economics, 10, May 1980, and NBER Reprint No. 118, 1980. Even when foreign and domestic bonds are imperfect substitutes, sterilized intervention will have no effect on asset markets if individuals are sufficiently forward-looking to discount the future tax liabilities implied by the government's debt and the future transfer payments associated with the central bank's interest-earning foreign reserves. The reason for this is that when the public internalizes the authorities' budget constraints, sterilized intervention brings about no change in relative outside bond supplies. See M. Obstfeld, "The Capitalization of Income Streams and the Effects of Open-Market Policy under Fixed Exchange Rates," Journal of Monetary Economics, 9, 1, January 1982, and NBER Reprint No. 266, January 1982. The empirical papers summarized below leave aside the possibility of Ricardian equivalence.*

If effective, therefore, sterilized intervention is an independent policy instrument that may be used in concert with monetary policy to respond to temporary policy dilemmas in which there is conflict between the goals of internal and external balance.<sup>3</sup> Monetary policy can be geared to domestic requirements, while sterilized intervention counteracts any undesired repercussions on the exchange rate. The feasibility of this policy mix depends on a number of factors, including the degree of substitutability between domestic and foreign bonds. In the limiting case of perfect substitution, sterilized interventions leave the exchange rate unchanged.

In a number of recent papers I have explored the role of sterilized foreign exchange intervention and the extent to which it has succeeded in practice. These studies address two distinct questions. First, have central banks indeed sterilized the money flows arising from their intervention operations? And second, have sterilization policies enabled central banks to attain independent exchange-rate and monetary targets in the short run?

### Germany's Recent Experience

The empirical studies span two centuries and two exchange-rate regimes. In one paper on the German situation from 1975–81, I examine Germany's currency experience in the years following the first oil shock.<sup>4</sup> The paper encompasses both the 1976–79 period of sharp Deutschmark appreciation against the dollar and the recent period in which the precipitous currency depreciation has discouraged a sustained Bundesbank response to domestic stagnation.

To assess the extent to which sterilized intervention was practiced by the German authorities in recent years, I estimate a reaction function for Bundesbank domestic credit policy relating changes in central bank domestic assets to the balance of payments and other macroeconomic variables. The econometric estimates indicate that over the years 1975–81, the German central bank allowed only a small fraction of its foreign asset transactions to be reflected in the monetary base. When estimated over subperiods of the sample, the reaction function exhibits some instability: its behavior suggests that sterilization has become more systematic—indeed complete—since the emergence of Germany's external deficits in early 1979. While the postulated

reaction function is certainly an oversimplified representation of Bundesbank behavior, the implications concerning sterilization are not widely at variance with the Bundesbank's own published accounts of intervention activities.

Were the Bundesbank's pure foreign exchange market interventions effective? This question is more difficult to answer, because to do so, one must disentangle the pure asset market effects of a change in relative bond supplies from the information about future monetary growth that agents might infer from such a change.<sup>5</sup> The approach I adopt is to estimate an aggregative structural portfolio-balance model of German asset markets and prices. Within such a model, the exchange-rate impacts of both unsterilized and pure foreign exchange intervention can be evaluated through simulation and compared. The modeling of expectations is crucial to the simulation experiments, and the assumption made is that agents have perfect foresight concerning future exchange-rate movements. The iterative perfect-foresight simulation procedure employed yields unrealistic exchange-rate levels; but it ensures that the estimated effects of alternative policies are consequences of the empirical model's internal logic rather than of arbitrary expectational assumptions.

Two policy actions are compared. The first is an unsterilized sale of foreign exchange causing a 10 percent decline in the monetary base. The second is a sterilized foreign exchange sale of equal magnitude. Both interventions are explicitly temporary and are reversed after three quarters. The simulations show that while unsterilized intervention has a pronounced effect on the exchange rate (the impact appreciation is 3 percent), pure intervention has virtually no effect (the impact appreciation is only 0.04 percent). These results suggest that the Bundesbank has little if any power to influence the exchange rate over the span of a month without altering current or expected future monetary conditions. In the German case, the external constraint has been a binding one in recent years.

### Mexico and Germany under Fixed Rates

As noted above, the external constraint on monetary expansion under a pegged exchange-rate regime takes the form of foreign reserve loss rather than currency depreciation. A paper with Robert Cumby studies the practice of sterilization by the Banco de Mexico and the extent to which capital flows offset domestic credit measures.<sup>6</sup> In another paper, I apply similar methods to

<sup>3</sup>Central banks often profess to intervene for a reason not touched upon in this article, namely, to smooth "erratic" short-run movements of the exchange rate around its long-run trend path without altering the trend path itself. There is an inherent difficulty in distinguishing between an "erratic" movement around a given trend (caused, perhaps, by transitory market frictions) and a sharp jump of the exchange rate to a new trend justified by market fundamentals. If this difficulty is left aside, there is a possibility that sterilized intervention has useful but short-lived effects on a day-to-day basis. Empirical testing of that hypothesis would require daily data not readily available.

<sup>4</sup>M. Obstfeld, "Exchange Rates, Inflation, and the Sterilization Problem: Germany, 1975–81," *European Economic Review*, 20, May/June 1983, and NBER Working Paper No. 963, August 1982.

<sup>5</sup>The possibility that sterilized intervention can have significant effects by signaling a change in monetary policies is emphasized in M. Mussa, *The Role of Official Intervention*, Group of Thirty Occasional Papers No. 6, New York, 1981.

<sup>6</sup>R. Cumby and M. Obstfeld, "Capital Mobility and the Scope for Sterilization: Mexico in the 1970s," in P. A. Armella, R. Dornbusch, and M. Obstfeld, editors, *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, University of Chicago Press for the NBER, Chicago, forthcoming, 1983, and NBER Working Paper No. 770, September 1981.

the historically important experience of Germany under the Bretton Woods arrangements.<sup>7</sup> The papers find that monetary flows connected with the balance of payments were sterilized by both the Banco de Mexico in the 1970s and the Bundesbank in the 1960s. Both countries attempted to divorce their domestic monetary policies from the balance of payments to some extent.

The purpose of sterilized intervention under a pegged exchange rate is the same as its purpose under a flexible rate: to enable the central bank to attain independent exchange-rate and monetary targets simultaneously. Accordingly, the same set of factors determines the efficacy of sterilized intervention under either type of exchange-rate regime. When the exchange rate is fixed and domestic and foreign bonds are perfect substitutes in private portfolios, any change in the domestic source component of the monetary base induces an offsetting foreign reserve movement of equal magnitude. In these circumstances, the central bank's commitment to peg removes its ability to control the nominal base without recourse to administrative restrictions on capital movements.

The feasibility of sterilization as a response to transitory macroeconomic fluctuations is conveniently measured by the *offset coefficient*, which equals the fraction of any monetary expansion reversed by capital outflow over a fixed time period. In the abovementioned papers on Mexico and West Germany, which use quarterly data, a distinction is made between the short-run or one-quarter offset coefficient and the long-run offset coefficient reflecting the full adjustment of asset stocks to their long-run desired levels. The papers estimate partial equilibrium asset-market models of those two countries and use the structural parameter estimates to compute the implied short-run and long-run offsets. These estimates capture the capital-account offset only; they do not include the current-account response to monetary disturbances.

Cumby and I conclude that the capital-account offset to monetary policy, while substantial, was less than complete in the Mexican case. The estimated offset is roughly 40 percent in the short run and roughly 75 percent in the long run, with the numbers varying according to the estimation technique used and the means through which the monetary base is assumed to be increased. In the case of Bretton Woods Germany, the capital-account offset is estimated to be between 10 and 15 percent in the short run and between 50 and 65 percent in the long run.

The short-run offsets for Germany are substantially smaller than some earlier "reduced-form" estimates, obtained through an ordinary least squares (OLS) regression of the capital account surplus on the change in domestic credit and other determinants of capital movements. In the presence of a sterilization policy,

however, OLS reduced-form estimates capture the effects of central bank activities as well as the true offset and thus may seriously overestimate the size of the latter. In "Sterilization and Offsetting Capital Movements" and in another paper, I show through formal statistical tests that OLS estimates of the German offset coefficient are indeed plagued by a simultaneous-equations bias that exaggerates the measured impact of monetary policy on the capital account.<sup>8</sup>

The findings that the Mexican and German offsets were less than complete under fixed rates do not imply that these countries possessed any true monetary autonomy: what is suggested is merely that there was room for maneuver in the short run. Even if a central bank can successfully neutralize *temporary* balance-of-payments fluctuations, there is no implication that it can avoid either the macroeconomic adjustments required by *permanent* shocks or the crises eventually caused by secular differences between home and foreign monetary growth. Germany's abandonment of fixed exchange rates in February 1973 and the collapse of the Mexican peso in August 1982 are vivid illustrations of this point.

<sup>8</sup>M. Obstfeld, "Can We Sterilize? Theory and Evidence," *American Economic Review*, 72, May 1982, and NBER Reprint No. 271, July 1982.

## Analytic Approaches to the Understanding of Institutions in the Labor Market

Edward P. Lazear

There are a large number of actual institutions and personnel practices that are embarrassments to labor economists because their simple competitive models do not easily explain these phenomena. Examples that have received a great deal of attention in recent years in the so-called "contract" literature are wage rigidity and the existence of less-than-full employment.<sup>1</sup> Some economists have extended the traditional models to examine the relationship between compensation in the form of wage payment and nonpecuniary compensation.<sup>2</sup>

The lesson to be learned from this literature is that labor market institutions that seem somewhat capricious often serve a useful purpose when analyzed in a

<sup>7</sup>M. Obstfeld, "Sterilization and Offsetting Capital Movements: Evidence from West Germany, 1960-70," NBER Working Paper No. 494, June 1980.

<sup>1</sup>The number of papers is far too numerous to list. Among those most often cited are Baily (1974), Azariadis (1975), Hall and Lilien (1979), and Mortensen (1978).

<sup>2</sup>Most of the work stems from Rosen (1974).

more general context. This report is a summary of work that I have undertaken in this vein during the past few years. In a series of papers, I have attempted to examine personnel practices and other labor market phenomena with the goal of understanding why a particular feature is a prevalent aspect of labor relations. Much of the work has focused on the relationship between compensation and worker productivity, both over the life cycle and across workers. In particular, I have argued that it is useful from the points of view of both the worker and the firm to pay young workers less than they are worth and old workers more than they are worth. This has led to an investigation of constraints that are often imposed on workers in the form of mandatory retirement, restrictions on hours, and selective hiring. Compensation practices and choice of payment structure are an integral part of the analysis as is the understanding of pensions as a large component in employee compensation. Additionally, promotion practices, which sometimes reward promoted workers to a much greater extent than is seemingly warranted, can be understood as the "prize" associated with winning the labor market contest. This induces efficient behavior on the part of both workers and firms.

Finally, sometimes firms and workers lock themselves into agreements that, *ex post*, they would both prefer to ignore. This seemingly inconsistent behavior is merely an optimal adaptation to a world where information about the worker and the situation of the firm evolve slowly and imperfectly over time. Most of the theoretical work has found empirical support, and a number of those findings are discussed below.

### **Age-Earnings and Age-Productivity Profiles**

Often, young workers appear to be the heart of the enterprise, producing far more than their older counterparts, while at the same time receiving smaller compensation than the older workers.<sup>3</sup> Does this apparent deviation from marginal productivity theory imply that the labor market is inefficient, subject to the arbitrary whim of the employer? Not if one recognizes that the motivations of workers, whose effort levels cannot be observed perfectly, are an important function of a well-chosen compensation plan.

As workers age and approach retirement, their incentives to perform on the job diminish. The worker's desire to retain a job is directly related to the difference between what he earns at this job and what he could receive elsewhere. By steepening the age-earnings profile, paying young workers less than they are worth and old workers more than they are worth, incentives are maintained until the end of the work life. Both workers and employers prefer such an arrangement because it results in higher lifetime productivity for workers and as the result, higher lifetime earnings.

Stated otherwise, older workers are paid high salaries not merely because they may be more productive than young workers; paying the older workers more increases their productivity and that of the young workers who will tend to put forth the efficient amount of effort so that they will be retained and will receive high wages when they are older.

### **Mandatory Retirement and Other Hours Constraints**

Although using an upward sloping age-earnings profile produces desirable incentives as far as the effort margin is concerned, it distorts the labor supply decision. The most obvious manifestation of this distortion is that older workers, who are being paid more than they are worth, will not choose to retire at the appropriate age (when the value of leisure equals their productivity at the firm). As a consequence, mandatory retirement is a necessary part of such an employee arrangement. But this mandatory retirement is neither capricious nor harmful. It is implicitly agreed to by the worker because a tilted age-earnings profile with mandatory retirement produces higher lifetime utility than a flat profile with voluntary retirement.

Similarly, hours restrictions are necessary at all points of the life cycle because wages do not equal marginal product, and workers respond to the former whereas efficiency requires that they respond to the latter. Thus, strict requirements on the number of hours worked per week, and not allowing workers to choose their preferred number of hours after having taken the job, make both sides better off. I show that such restrictive arrangements actually work to the worker's advantage.<sup>4</sup>

There are a number of testable, empirical implications that the theory produces. First, it suggests that, other things equal, mandatory retirement should be associated with more highly paid workers who have long tenure and especially steep age-earnings profiles. These predictions are verified using the Retirement History Survey for 1969 and 1971. It is the high-wage, highly educated, white, male workers who are most likely to have mandatory retirement as part of their employment arrangement. This is hardly consistent with the view that mandatory retirement is used to discriminate against workers in some malevolent fashion. If that were the case, those groups that suffer most in other respects (wages, unemployment, hiring practices) would be expected to be those most affected by mandatory retirement.

Another implication relates to the difference between self-employed and wage-and-salary workers. Incentives are not an issue for individuals who work for themselves so that age-earnings profiles should not be unnecessarily steepened for the self-employed. Robert Moore and I construct an empirical model that allows the separation of human capital effects from incentive effects on the age-earnings profile. By exploiting the

<sup>3</sup>The groundwork for much of the subsequent work was laid in E. P. Lazear, "Why Is There Mandatory Retirement?" *Journal of Political Economy*, 87, 6, December 1979, and NBER Reprint No. 160, April 1982.

<sup>4</sup>E. P. Lazear, "Agency, Earnings Profiles, Productivity, and Hours Restrictions," *American Economic Review*, 1981.

relationship between the self-employed and wage-and-salary workers' earnings profiles, and by arguing that incentives are not an issue for the self-employed, we conclude that approximately 50 percent of the increase in worker wealth associated with steeper profiles is the result of incentive rather than on-the-job training effects. The conclusion depends upon some rather strong assumptions, some of which may not be valid, but these initial estimates provide a strong hint that the generation of incentives, rather than on-the-job training, may account for the majority of the slope in the age-earnings profile.<sup>5</sup>

## Pensions

The empirical findings in "Why Is There Mandatory Retirement?" revealed that the correlation between the existence of a mandatory retirement clause and of a pension is very high. Virtually all workers who face mandatory retirement also have pensions and vice-versa. This suggests a link between pensions and incentives.<sup>6</sup>

The major difficulty associated with the use of compensation as an incentive device is that it causes a distortion in the labor supply decision. One way to eliminate that distortion is to use explicit work time constraints, but another is to use a pension plan. It turns out that including pensions as one component of compensation provides an additional degree of freedom that is necessary to bring about efficiency on both effort and hours margins.

Stated intuitively, if workers are overpaid when they are old, then firms should be willing to buy them out, that is, to induce them to retire early with a sweetened pension payment. This carries with it the implication that the expected present value of pension payments should decline beyond a certain point with age of retirement. Since firms would rather that workers retire at 60 than at 65 if those workers are being overpaid, the pension (present value, not the annual payment) should be higher for those who retire at 60 than for those who retire at 65.

Using a data set that I constructed from verbal descriptions of approximately 250 of the largest pension plans in the country in the Bankers Trust Study of Corporate Pension Plans, 1975, I calculated the present value of retiring at different ages for a sample of hypothetical workers. The most important finding was that, for virtually all defined-benefit plans, the expected present value of pension payments declines with retirement between ages 55 and 65. "Pensions and Severance Pay" performs the same analysis on another similar data set from 1980 and very similar results are obtained.

<sup>5</sup>E. P. Lazear and R. Moore, "Incentives, Productivity, and Labor Contracts," *Quarterly Journal of Economics*, 1983.

<sup>6</sup>That link is explored in two papers: E. P. Lazear, "Severance Pay, Pensions, and Efficient Mobility," NBER Working Paper No. 854, February 1982, and "Pensions as Severance Pay," NBER Working Paper No. 944, July 1982, and forthcoming in an NBER conference volume, *Financial Aspects of the U.S. Pension System*.

I take this as lending strong support to the hypothesis that young workers are underpaid and old workers are overpaid relative to their productivity, presumably for incentive reasons. These findings are inconsistent with the traditional view that pensions are merely tax-free savings accounts, because under that view the pension value would be monotonically and positively related to years of service and age of retirement.

Additionally, by examining the way in which pensions decline with the age of retirement, one can infer the amount by which workers are overpaid. Intuitively, the more rapid the decline, the higher the offered buy-out premium, and the greater the deviation between wage and marginal product. For the average hypothetical worker in the sample, the overpayment amounted to approximately one-third of the total wage. Again, old workers appear to be overpaid to a significant extent, presumably because of the beneficial incentive effects generated.

## Prizes and Promotions

How do firms set up the wage hierarchy within a firm? How is the wage differential selected between manager level 2 and manager level 3? Do these differences always reflect differences in the supply price to those jobs?

In many situations, it is difficult to argue that the increase in earnings associated with a particular promotion reflects true differences in supply price associated with that move. For example, four vice presidents may each earn \$100,000 per year. After lengthy discussion in the board room, one is promoted to president and his salary triples. But if the individuals were so close in quality that the decision required lengthy discussion, why doesn't the second-best candidate offer his services as president at \$100,001 per year, bidding the price down?

Sherwin Rosen and I suggest that the answer lies in the recognition that the spread between the salary of the president and that of the vice presidents affects the effort levels of all vice presidents who are attempting to win the managerial contest.<sup>7</sup> In the extreme case, where the spread between winner and loser is zero, none of the "contestants" has any incentive to win the race. Thus, lower-level management does not strive particularly hard to become upper-level management; as a result, productivity suffers. With very extreme differences among salary levels for different jobs, incentives are created to put forth a great deal of effort. The limitation on this is that too large a spread induces too much effort at the firm, and the cost of additional effort to the worker is too large to cover his expected gain. This makes recruitment of workers difficult. (In Classical Rome, the spread between the prizes to the winning and losing gladiators was extremely large, yet few Romans queued for the position.)

<sup>7</sup>E. P. Lazear and S. Rosen, "Rank-Order Tournaments as Optimum Labor Contracts," *Journal of Political Economy*, 89, 5, October 1981, and NBER Reprint No. 230, December 1981.



We show that the competitive labor market will often organize itself so that the firm's salary structure resembles the prizes of a contest. This allows workers to behave efficiently and thereby to maximize lifetime utility. A somewhat negative consequence of a prizelike salary structure is that it instigates antiproductive behavior as well. Since a worker's salary depends not only upon his own performance but also on the performance of his peers, he may undertake action to sabotage the efforts of other workers. This implies that contests should be run among workers for whom cooperation is not important.

Finally, since worker ability cannot be judged perfectly when the worker first applies for a job, it is important to know how differences in ability are dealt with in this contestlike setting. "Handicapping" (giving some workers an inside track to the promotion) can be efficient if workers differ, but those differences must be observed. The problem, as it turns out, is that the low-quality workers want to contaminate the high-quality contest. Everyone wants to be in the major league, as it were. Even the worst law student prefers to be at the best firm because the reduced probability of being retained by that firm is more than offset by the additional income that results if he is fortunate enough to sneak by. As the result, firms must engage in preemployment screening. This is important only when firms pay via contests. If workers are paid on the basis of their individual output levels, contamination is not an issue and preemployment screening is therefore less likely for workers whose pay somewhat resembles a piece rate.

### Ex Ante and Ex Post Optimality

Sometimes firms and workers will lock themselves into positions that seem senseless. For example, a firm may announce a policy of "no offer matching." After the worker receives an outside offer that exceeds his current wage, the firm loses the worker even though the original firm might be willing to pay enough to retain him. Offer matching is not undertaken because of the undesirable incentives that it creates for workers to search out insincere offers that are not easily recognized as such.<sup>8</sup> Robert Hall and I show that because information about worker alternatives and the worker's value to the firm evolves imperfectly and only over time, it is often useful to agree to trade at a prearranged wage or on prearranged terms. Unilateral separation decisions (where the worker can quit without the firm's consent, or the firm can lay off the worker without the worker's consent) are often efficient.

The major empirical consequence of this is that employment movements appear to be too sensitive to changes in demand. In good times, workers quit too often because they do not take into account appropriately the losses imposed on the firm. Similarly, workers who are revealed to be of a quality that is higher than

expected also quit too often because the wage is not sufficiently flexible to take these pieces of information into account. On the other side, firms lay off workers too often during downturns, because they do not take into account appropriately that worker alternatives have declined as well. Similarly, workers with quality that is poorer than expected are fired too often because wages are not sufficiently flexible to make it profitable to retain these workers.

These apparently suboptimal arrangements are actually best when it is remembered that information is imperfect and more flexible forms of contracts often result in undesirable strategic behavior. Thus, insensitivity of wages to differences in worker quality within a given job are explained by the fact that making wages more flexible would exacerbate the inefficiencies brought about by the bilateral monopoly nature of worker-firm relationships.

The same kind of logic has been used to model the interaction between workers and firms in a union setting.<sup>9</sup> Currently, my work is proceeding on how firms select different methods of compensation and on the nature of stigmas and fads in the labor market.

<sup>8</sup>E. P. Lazear, "A Competitive Theory of Monopoly Unionism," *NBER Working Paper No. 672*, May 1981, models union formation as the rational search by workers for monopoly rent and the active opposition, at a cost, by firms, of those efforts.

## Economic Outlook Survey

### Addendum

In "The Economic Outlook Survey: Improvements and New Studies" (*NBER Reporter*, Summer 1982, p. 12), the names of the advisory committee members were omitted. They are: Rosanne Cole, IBM; Ray C. Fair, Yale University and NBER; Edgar R. Fiedler, The Conference Board; Albert A. Hirsch, U.S. Department of Commerce; F. Thomas Juster, University of Michigan; Geoffrey H. Moore, Rutgers University; George L. Perry, Brookings Institution; W. Allen Spivey, University of Michigan; and Victor Zarnowitz, University of Chicago and NBER.

<sup>9</sup>Behavior of this sort is analyzed in E. P. Lazear and R. E. Hall, "The Excess Sensitivity of Layoffs and Quits to Demand," *NBER Working Paper No. 864*, February 1982.



## Projections of GNP and Other Economic Indicators, 1982-83

	Annual						Percent Change	
	1981	1982	1983				1981	1982
	Actual	Forecast	Forecast				to 1982	to 1983
1. Gross National Product (\$ billions)	2937.7	3081.0	3363.0				4.9	8.4
2. GNP Implicit Price Deflator (1972 = 100)	195.5	208.0	220.3				6.4	5.9
3. GNP in Constant Dollars (billions of 1972 dollars)	1502.6	1481.0	1525.0				-1.4	3.0
4. Unemployment Rate (percent)	7.6	9.4	9.1				1.8 <sup>1</sup>	-0.3 <sup>1</sup>
5. Corporate Profits After Taxes (\$ billions)	150.9	119.0	133.0				-21.1	11.8
6. Nonresidential Fixed Investment (billions of 1972 dollars)	172.0	165.0	161.0				-4.1	-2.4
7. New Private Housing Units Started (annual rate million)	1.087	1.020	1.300				-6.2	27.5
8. Change in Business Inventories (billions of 1972 dollars)	9.0	-6.4	5.1				-15.4 <sup>2</sup>	11.5 <sup>2</sup>
9. Treasury Bill Rate (3-month, percent)	14.1	11.2	10.2				-2.9 <sup>1</sup>	-1.0 <sup>1</sup>
10. Consumer Price Index (annual rate)	10.4	6.4	6.2				-4.0 <sup>1</sup>	-0.2 <sup>1</sup>

	Quarterly						Percent Change	
	1982	Q3	Q4	1983	Q2	Q3		
	Q2 Actual	Forecast					Q2 82 to Q2 83	Q3 82 to Q3 83
1. Gross National Product (\$ billions)	3047.4	3107.5	3175.5	3245.0	3317.5	3395.0	8.9	9.3
2. GNP Implicit Price Deflator (1972 = 100)	206.4	209.5	212.6	215.7	218.7	221.9	6.0	5.9
3. GNP in Constant Dollars (billions of 1972 dollars)	1476.8	1483.0	1495.0	1506.0	1517.0	1532.0	2.7	3.3
4. Unemployment Rate (percent)	9.5	9.8	9.6	9.3	9.2	9.0	-0.3 <sup>1</sup>	-0.8 <sup>1</sup>
5. Corporate Profits After Taxes (\$ billions)	115.0	119.5	127.4	127.0	128.5	133.5	11.7	11.7
6. Nonresidential Fixed Investment (billions of 1972 dollars)	168.2	162.0	158.0	158.0	159.1	162.0	-5.4	0.0
7. New Private Housing Units Started (annual rate million)	0.956	1.054	1.120	1.190	1.300	1.300	36.0	23.3
8. Change in Business Inventories (billions of 1972 dollars)	-6.9	-4.0	1.0	3.0	4.0	6.0	10.9 <sup>2</sup>	10.0 <sup>2</sup>
9. Treasury Bill Rate (3-month, percent)	12.4	10.5	9.5	10.3	10.5	10.3	-1.9 <sup>1</sup>	-0.2 <sup>1</sup>
10. Consumer Price Index (annual rate)	6.1	7.4	6.0	6.2	6.0	6.0	-0.1 <sup>1</sup>	-1.4 <sup>1</sup>

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, September 1982. The figures on each line are medians of twenty-five to thirty-eight individual forecasts.

<sup>1</sup>Change in rate, in percentage points.

<sup>2</sup>Change in billions of dollars.

## Third Quarter 1982

Victor Zarnowitz

According to the median forecast from the August survey of professional economic forecasters taken by NBER and the American Statistical Association, there will be a below-par recovery in the second half of 1982 and the year 1983, although expectations have been revised moderately in the downward direction during the past quarter. Only very gradual reductions in the unemployment rate are projected. Inflation would hold steady near 6 percent levels but the declines in the interest rates are still seen as generally limited and not extending into the single-digit range.

## Rise in Output Insufficient to Slash Unemployment

Real GNP is to increase at annual rates between 3 and 4 percent in each of the next quarters, and 3.3 percent between 1982:3 and 1983:3. This would be less than half the average rate of growth in output during the first year of the U.S. business expansions of 1949-79, and similar to the pace of the single-year recovery in 1980-81, but the majority prediction is that the slow growth will continue without faltering at any time within the horizon of the survey, that is, through 1983.

The median forecasts for the year-to-year changes in constant-dollar GNP are -1.4 percent in 1981-82 and +3.0 percent in 1982-83. By the end of 1983, output would reach \$1,545 billion (in 1972 dollars), which is 5

percent above the last trough figure (for 1982:1) and 2.3 percent above the previous peak figure (for 1981:3).

Such a weak recovery would not be sufficient to lower the level of joblessness substantially. The forecasters anticipate a slow decline in the unemployment rate, from 9.8 percent in 1982:3 to 9.0 percent in 1983:3. The predicted averages for 1982 and 1983 are 9.4 percent and 9.1 percent, respectively (the actual figure for 1981 was 7.6 percent).

### **Limited Changes in Inflation and Interest Rates**

The GNP implicit price deflator (1972 = 100) will rise 6.4 percent in 1981-82 and 5.9 percent in 1982-83. The IPD inflation rate between 1982:3 and 1983:4 is likewise 5.9 percent according to the median forecast from the survey. The consumer price index will show similar increases, of 6.4 percent in 1981-82 and 6.2 percent in 1982-83 (in comparison, its rise in 1980-81 was 10.4 percent). Most forecasters project the quarter-to-quarter changes in both IPD and CPI as fairly steady at similar rates.

The three-month Treasury bill rate is expected to move slightly above 10 percent next winter and stay there through the year, fluctuating narrowly and averaging 10.2 percent in 1983, as against an estimated 11.2 percent and an actual 14.1 percent in 1981. The yield on new high-grade corporate bonds will decline gradually in each quarter from 14.8 percent in 1982:3 to 13.5 percent in 1983:3. Its average for 1983 is put at 13.5 percent as well, down from 15.2 percent in 1982 (15.5 percent in 1981). The present forecasts tend to be about 100 basis points lower than those made three months ago for the short-term rates, while the differences for the bond yields are much smaller and less regular. Once again, it is the long-term rates for which more significant declines are expected over the survey horizon.

### **Moderate Gains in Industrial Production and Corporate Profits**

The index of industrial production (relating to manufacturing, mining, and utilities) will show little improvement in 1982:3 but its rise in the next four quarters, at annual rates ranging from 5.7 percent to 8.7 percent, will add up to 6.7 percent, twice the corresponding figure for real GNP. However, the index is expected to drop 6.8 percent in 1981:2 and gain only 4.5 percent in 1982:3. Its peak value of 154 (1967 = 100) in July 1981 will not be regained in 1983 (when the index will reach 149 if the survey averages are correct).

Corporate profits after taxes will rise from \$120 billion to \$134 billion during the year ending in 1983:3, a gain of nearly 12 percent. The annual increase in 1982-83 is put at a very similar figure, following an estimated drop of 21 percent in 1981-82. In the previous survey, the profit forecasts were generally considerably more optimistic.

### **The Weakest Sectors: Business Investment and Net Exports**

The contraction in nonresidential fixed investment, which began in 1981:4, will continue through 1983:1 and will total about 9 percent. The subsequent gain of over 4 percent, as implied by the composite forecast, will leave that aggregate, at \$165 billion (1972 dollars, annual rate) in 1983:4, still some 5 percent below its previous peak value. The annual comparisons show declines exceeding 4 and 2 percent for 1981-82 and 1982-83, respectively. These figures portray business gross (and, a fortiori, net) investment as anemic, consistent with such other elements of the prevailing forecast as low profits, high real interest rates, and low capacity utilization (high unemployment).

The median predictions show net exports as moving along a low plateau, with average annual rates between 33 and 36 billions of 1972 dollars; the annual changes in both 1982 and 1983 have negative signs. But these figures mask the diversity of individual forecasts based on different assumptions about foreign exchange rates: some forecasters expect the dollar to remain strong; others expect it to weaken.

### **More Strength in Consumption, Housing, and Inventory Investment**

Total consumption expenditures in constant dollars will grow at annual rates of 2-4 percent in the four quarters through 1983:3, gaining about 3 percent over the period as a whole. The increases projected for 1981-82 and 1982-83 average 1.3 percent and 2.9 percent.

New private housing starts will rise from slightly less than 1 million units in 1982:2 to 1.4 million units in 1982:4, at seasonally adjusted annual rates. The yearly totals are put at 1.0 and 1.3 million units in 1982 and 1983, respectively. Real outlays on residential fixed investment will increase approximately 12 percent in the year ahead. The gains in housing indicated by these forecasts are markedly smaller than those observed in the past in early recoveries from trough levels; they also would signify a slowdown from the most recently recorded rates of increase in starts and permits.

The massive inventory liquidation in the first half of 1982 will taper off in the summer and will be followed by an initially small buildup that will increase gradually through 1983.

### **Government Purchases and Policy Adjustments**

State and local government purchases will remain essentially flat during the period covered in the survey, declining but slightly from 175 to 173 billions of 1972 dollars between 1982 and 1983. Federal government purchases of goods and services are expected to rise at the same time by less than 2 percent, from 112 to 114 billions of 1972 dollars, in spite of a substantial buildup of defense outlays. The forecasters are divided about

the prospective size of that buildup: about as many estimate it at 4-6 percent as at 7-10 percent.

Large majorities of the respondents state that they assumed the implementation of the recently enacted tax legislation and also that the growth of monetary aggregates will be fairly moderate. The most frequently quoted ranges are 4-6 percent for M1 (assumed by 25 forecasters) and 8-10 percent for M2. Many respondents expect energy demand and prices to be stable or declining; fewer expect increases.

### Uncertainty, Probabilities, and Dispersion of Forecasts

The future course of the economy is always uncertain, and the hazards of forecasting seem particularly large in the vicinity of prospective turning points. According to the subjective probability distributions reported by the forecasters, the chances that the recession will continue or come back in the year ahead (specifically, that real GNP will decline) still average about as much as 20 percent in the four quarters through 1983:3. The probabilities of subnormal (less than 4 percent) growth average 70 percent for 1982-83, while those of higher growth average 10 percent.

The dispersion of the respondents' point forecasts for real GNP also indicates some skewness to the left, that is, in the direction of lower values. Thus, the means of these predictions are this time somewhat predominantly lower than the medians.

The distributions of the mean probabilities attached to the different possible percentage changes in IPD are concentrated in the range of 6-7 percent for both 1981-82 (62 percent) and 1982-83 (44 percent). Higher inflation outcomes (of 8 percent or more) are given only 10 and 13 percent chances, low outcomes (of less than 6 percent) 27 and 42 percent chances. Thus the expectations are distinctly skewed toward lower inflation rates in both years.

In general, the more volatile the target variable and the more distant the target quarter, the greater tends to be the dispersion of the forecasts across the respondents. It is important to keep this in mind while interpreting the survey results: although the averages tend to represent well the views of the majority, the uncertainty and dispersion of the forecasts should not be underestimated.

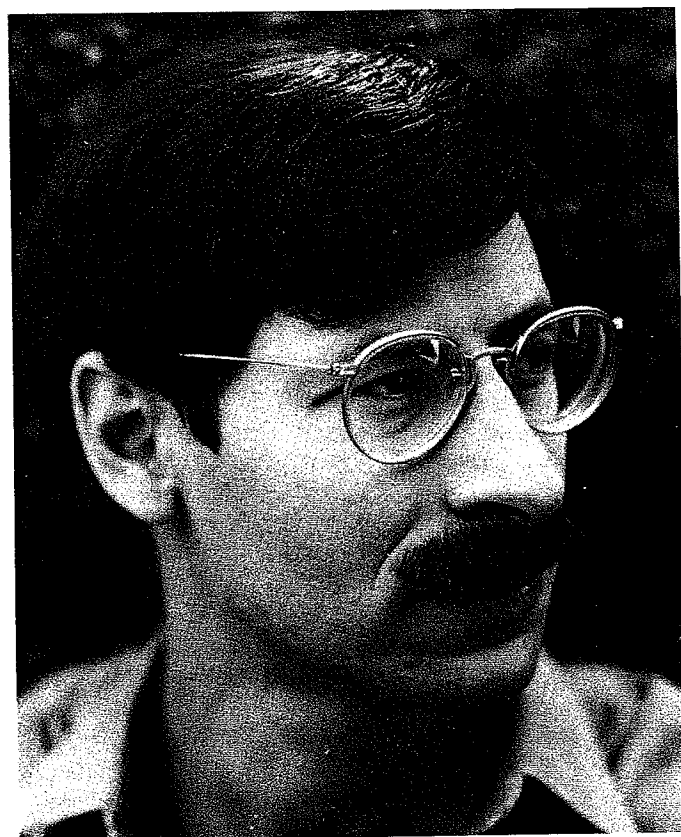
*This report summarizes a quarterly survey of predictions by about fifty business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate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

## NBER Profiles

### Maurice Obstfeld

Maurice Obstfeld, recently named an NBER research associate, has been a member of NBER's Program in International Studies since 1979. Obstfeld received a B.A. in mathematics from the University of Pennsylvania in 1973, an M.A. in mathematics from King's College (Cambridge University) in 1975, and a Ph.D. in economics from MIT in 1979.

Obstfeld joined the economics faculty of Columbia University in 1979 as an assistant professor and was promoted to associate professor in 1981. He was also a visiting scholar in the Federal Reserve Board's International Finance Division during the summer of 1981 and a visiting scholar at MIT during the summer of 1982.

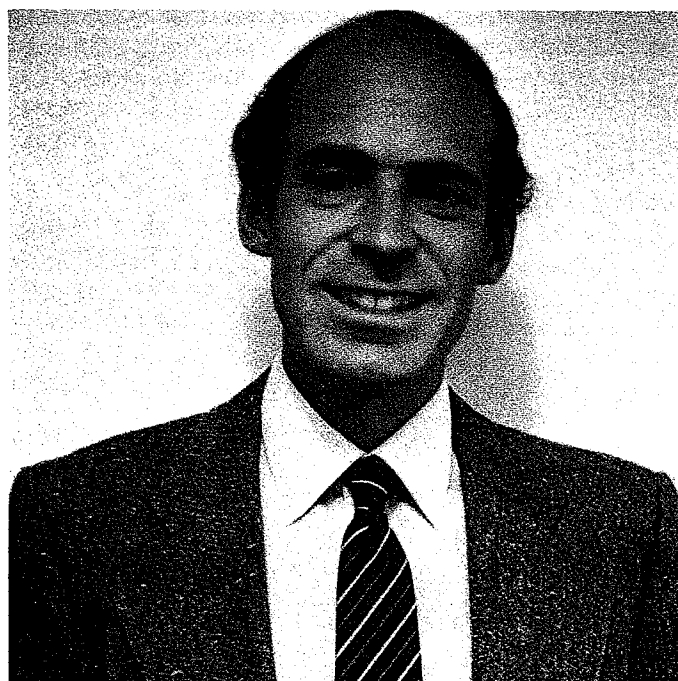


Obstfeld's papers have appeared in a number of journals and, with Pedro Aspe Armella and Rudiger Dornbusch, he currently is editing an NBER conference volume entitled *Financial Policies and the World Capital Market: The Problem of Latin American Countries*.

A New York City native and resident, Obstfeld's hobbies include "old movies, jogging, and wine."

## Edward P. Lazear

NBER Research Associate Edward P. Lazear has been a member of the Bureau's labor studies program since 1974. Lazear received his A.B. and A.M. in economics from the University of California at Los Angeles in 1971 and his Ph.D. from Harvard University in 1974.



Having joined the University of Chicago's economics faculty as an assistant professor in 1974, Lazear was promoted to associate professor of industrial relations in 1977 and to professor of industrial relations in 1980. His teaching experience has included labor economics, industrial relations, microeconomic theory, and econometrics.

In addition to having written numerous articles and papers, primarily in the fields of labor and pension studies, Lazear currently serves as editor of the *Journal of Labor Economics*. He recently lectured in Singapore on compensation and productivity and has been appointed fellow of a number of institutes of advanced study, including the Vienna institute, where he will lecture in January 1983.

Lazear and his wife Victoria, who is an economist with Illinois Bell Telephone, reside in Chicago. His hobbies include travel; playing piano; and sports, especially skiing, windsurfing, tennis, and running.

## Conferences

### International Macroeconomic Seminar

The International Seminar on Macroeconomics (ISOM), a joint project of the NBER and the Maison des Sciences de l'Homme in Paris, had its fifth meeting on June 21-22 in Mannheim. The conference brought together twenty-five economists from Belgium, France, Germany, Israel, Italy, Japan, the United Kingdom, and the United States. Organizers of this continuing annual conference are Robert J. Gordon of NBER and Northwestern University, and Georges de Menil, director of the Center for Quantitative and Comparative Economics at the École des Hautes Études en Sciences Sociales in Paris.

The 1982 conference included seven papers covering a diverse group of topics in macroeconomics, with three of the papers analyzing data from two or more countries on a given topic. These papers with a comparative theme were:

Martin Feldstein, NBER and Harvard University, "Domestic Saving and International Capital Movements in the Long Run and Short Run"

Discussants: James Tobin, NBER and Yale University, and Uwe Westphal, Hamburg University

Zvi Griliches, NBER and Harvard University, and Jacques Mairesse, École des Hautes Études en Sciences Sociales, "Comparing Productivity Growth: An Exploration of French and U.S. Industrial and Firm Data"

Discussants: Martin Baily, Brookings Institution, and Michael Bruno, NBER and Hebrew University

Dennis Grubb, Richard Jackman, and Richard Layard, Center for Labour Economics, London School of Economics, "Wage Rigidity and Unemployment in OECD Countries"

Discussants: Claude Bismut, École des Hautes Études en Sciences Sociales, and John B. Taylor, NBER and Princeton University

Although each of these three papers has in common a comparative methodology, their topics are quite different. The Feldstein paper argues that sustained increases in domestic saving rates induce approximately equal increases in domestic rates of investment. This conclusion is based on the analysis of pooled cross-section time-series regression equations for seventeen OECD countries over the twenty-year period between 1960 and 1979. The paper contains an extensive discussion of econometric identification and simultaneous equations problems and develops a portfolio model of international capital allocation.

Griliches and Mairesse compare the post-1973 slowdown in the growth of productivity in the manufacturing sector in France and the United States, based on

newly assembled comparable data sets in both countries. The authors carefully examine three explanations of the recent productivity slowdown—that the basic cause was a shortfall in physical investment, a sharp increase in the relative prices of raw materials, and a decline in the intensity or fecundity of investment in research and development. Each of these explanations is rejected. For instance, industries with above-average growth in physical capital did not have an above-average growth rate of total factor productivity, nor did industries suffering from an above-average growth rate of raw materials prices experience a differential productivity slowdown.

Grubb, Jackman, and Layard attempt to discover links between the sharp increases in unemployment experienced over the past few years in most OECD countries and the extent of rigidity in real wages. They argue that higher relative import prices and a falling rate of productivity growth after 1973 reduced the “feasible” growth in real wages, yet in many countries the actual behavior of real wages was not sufficiently flexible to prevent a marked increase in the unemployment rate. A novel contribution of the paper is an attempt to explain why countries differ in the responsiveness of wages. Based on a sample of nineteen countries, there appears to be little support for the hypothesis that the degree of responsiveness depends on the variance of nominal and real shocks experienced in the past.

In contrast to these three papers with a comparative theme, two papers concentrated on data for Germany, the host country for the 1982 conference:

Maurice Obstfeld, NBER and Columbia University, “Exchange Rates, Inflation, and the Sterilization Problem: Germany, 1975–81”

Discussants: Horst Bockelman, Bundesbank, and Jacob A. Frenkel, NBER and University of Chicago

Wolfgang Franz, Mannheim University, “The Past Decade’s Natural Rate and the Dynamics of German Unemployment: A Case Against Demand Policy?”

Discussants: Harald Gerfin, University of Constance, and Martin Feldstein

Obstfeld is concerned with the potential dilemma for policymakers that may arise under flexible exchange rates when the attainment of a given quantity of domestic credit necessary for attaining a domestic policy target (for example, inflation or unemployment) moves the economy away from an important external target. The paper develops a structural model of portfolio balance in German asset markets that yields the verdict that the Bundesbank lacks the power to influence the exchange rate in the short run of roughly one month’s duration without altering current or expected future money-market conditions. It does not appear that the Bundesbank is able to conduct “pure” or “sterilized” foreign exchange intervention that leaves the domestic money supply unchanged, and hence an additional policy tool is required when the Bundesbank faces a situation of, for instance, domestic demand together with a depreciating exchange rate.

For more than a decade economists have found it useful to distinguish between the actual unemployment rate in an economy and a hypothetical “natural rate” defined as being compatible with a constant rate of inflation. When the actual unemployment rate is above the natural rate, there is a tendency for inflation to decelerate, and policymakers can consider the option of stimulating aggregate demand without reigniting inflation. In Franz’s study the estimated natural rate of unemployment in Germany shifted upward from about 1 percent during 1965–73 to about 4 percent during 1974–81. Franz attributes this marked increase in the underlying unemployment rate to the post-1973 slowdown in productivity growth, the same phenomenon that motivates the Griliches-Mairesse and Grubb-Jackman-Layard papers summarized above.

The two final papers presented at the conference were more theoretical in orientation. The first considers the relative advantages of alternative monetary aggregates as target variables within the context of a theoretical macro model, and the second investigates the interrelations between inflation and fiscal policy within the Italian context, using a mixture of theoretical and empirical constraints:

Lucas Papademos, Columbia University, and Franco Modigliani, MIT, “Inflation, Financial Markets, Fiscal Structure, and the Monetary Mechanism”

Discussants: Charles Goodhart, Bank of England, and Jacques Melitz, INSEE, Paris

Fiorella Padoa Schioppa, University of Trieste and CORE, Louvain la Neuve, “Public Expenditures and Inflation: The Italian Case”

Discussants: Giorgio Basevi, Istituto di Scienze Economiche, Bologna, and William H. Branson, NBER and Princeton University

In addition to the presentation and discussion of the seven papers summarized above, the 1982 conference included an evaluation of monetary policies in Germany by Norbert Kloten of the Bundesbank and in the United States by James Tobin.

## Microdata and Public Economics

NBER and the Social Science Research Council (SSRC) cosponsored a Conference on Microdata and Public Economics at Oxford University on June 27–30. The three-day conference brought together forty economists from the United States and abroad for a discussion of ten papers:

Anthony B. Atkinson, Joanne Gomulka, John Micklewright, The London School of Economics (LSE), and Nicholas J. Rau, University College (London), “Unemployment Duration, Social Security, and Incentives”

Discussants: Ian C. R. Byatt, HM Treasury; Tony Lancaster, University of Hull

Martin Feldstein, Harvard University and NBER, and James M. Poterba, Oxford University and NBER, "Unemployment Insurance and Reservation Wages"  
Discussants: Nicholas J. Rau, and Richard Layard, LSE

David A. Wise, Harvard University and NBER, and Steven F. Venti, Harvard University, "Moving and Housing Expenditure: Transaction Costs and Equilibrium"

Discussants: Francois Bourguignon, École Normale Supérieure, and Harvey S. Rosen, Princeton University and NBER

John A. Kay, Michael J. Keen, and Nick Morris, The Institute of Fiscal Studies, "Consumption, Income, and the Interpretation of Household Expenditure Data"

Discussants: Nick Stern, University of Warwick, and Douglas Todd, HM Treasury and European Economic Commission

Peter A. Diamond, MIT, and Jerry A. Hausman, MIT and NBER, "Individual Retirement and Savings Behavior Decisions"

Discussants: John Muellbauer, Oxford University, and David Ulph, University College

Mervyn A. King, University of Birmingham and NBER, and Louis Dicks-Mireaux, Harvard University, "Pension Wealth and Household Savings: Tests of Robustness"

Discussants: Richard W. Blundell, University of Manchester, and Ravi Kanbur, University of Cambridge  
Barry McCormick and Gordon A. Hughes, University of Cambridge, "The Influence of Pensions on Job Mobility"

Discussants: David F. Bradford, Princeton University and NBER, and Kevin Roberts, Oxford University

Alan J. Auerbach, Harvard University and NBER, "Taxes, Firm Financial Policy, and the Cost of Capital: An Empirical Analysis"

Discussants: Gordon Anderson, University of Southampton, and James M. Poterba

Daniel R. Feenberg, NBER, "Identification of the Tax-Price Term in a Model of the Demand for Charitable Giving"

Discussants: Toni Zabalza and Frank A. Cowell, LSE  
Angus S. Deaton and Margaret Irish, University of Bristol, "A Statistical Model for Zero Expenditures in Household Budgets"

Discussants: Andrew D. Chesher, University of Birmingham, and Malcolm Pemberton, University College

The first paper tackles the problem of modeling individual decisions made by the unemployed. Using a sample of 845 unemployed men drawn from the Family Expenditure Survey in the United Kingdom over the period 1972-77, it extends the previous literature on econometric estimation of search behavior by unemployed individuals by modeling the probability that an unemployed individual will be reemployed in a given period. The evidence suggests that labor market vari-

ables (such as the ratio of unemployment to vacancies) are a significant determinant of both regional and intertemporal differences in reemployment probabilities.

The authors also discuss the effects of unemployment benefits on reemployment probabilities, demonstrating that it can be highly misleading to model the incentives offered by unemployment compensation in terms of a small number of parameters that describe the system (such as the entitlement of a married man with a nonworking wife and two children). Instead, the paper constructs detailed estimates of the receipt of unemployment benefits and relates these to past working histories of the individuals in the sample. The authors find a significant effect of unemployment benefits on the probability of accepting a job offer.

One of the main ways in which unemployment insurance can raise the rate of unemployment is by encouraging the unemployed to spend more time searching for new jobs. Formally, unemployment benefits lead to a higher reservation wage at which the unemployed individual is prepared to accept a job. The Feldstein/Poterba study uses evidence from the May 1976 Department of Labor Survey and concludes that reservation wages are surprisingly high. Only 24 percent of the survey respondents indicated that they were prepared to accept a job that paid less than 90 percent of their previous wage, while no less than 28 percent said that they would require a 10 percent increase in pay to accept a job. If individuals who required an increase in pay to accept a job were no longer classified as unemployed, then in 1976 the U.S. unemployment rate would have been 20 percent lower.

The study also analyzes econometrically the effect of unemployment benefits on the individual's reservation wage. A 10 percent increase in the unemployment insurance replacement ratio was found to increase the reservation wage by about 4 percent. The paper suggests that a reduction in unemployment benefits might lead to a significant reduction in the average duration of unemployment and, in particular, the number of long-term unemployed. A significant impact, for example, could be expected from the introduction of taxation of unemployment benefits.

Changes in the consumption of housing services are largely the result of household moves rather than investment in existing homes. Because the transactions costs associated with moving are large, estimates of income and price elasticities of demand may be biased; many of the observed individuals in a survey are not consuming their desired quantities of housing services. Using data for 655 households from Phoenix and Pittsburgh, Wise and Venti estimate a model both for moving and for consumption of housing services. The model allows for a number of features ignored in previous studies of housing and finds that on average the value of transactions costs (both financial and subjective) is approximately \$60 per month. The estimated effects of transactions costs and disequilibrium are then used to analyze the potential effects of government rent subsidy programs. High transactions costs and the estimat-



ed low income elasticities make lump sum transfers an ineffective method of increasing housing expenditures among low-income renters. Minimum rent plans have a larger effect on consumption but benefit least those families who consume low levels of housing services. In order to benefit under these plans, families must overcome the transactions costs associated with moving into housing above the minimum rent level.

The use of household budget studies to draw inferences about the extent of poverty presents two problems: (1) The estimation of Engel curves to simulate the effects of policies is biased by the fact that recorded expenditures do not correctly measure underlying consumption. (2) Welfare depends upon consumption, not expenditure. The paper by Kay, Keen, and Morris analyzes both problems. It presents estimates of Engel curves that correct for the differences between consumption and recorded expenditure, and, in particular, for the fact that in sample surveys many households have recorded no expenditure for items that they purchase only infrequently. Second, an estimator of underlying consumption is constructed and used to compute distributions of consumption that may be compared with distributions of income and expenditure. These results are then used to make comparisons with existing studies of poverty based primarily on distribution of income. The results suggest that adjustments of this type make a significant difference in estimates of the proportions of households whose consumption or income falls below some critical subsistence level.

When planning decisions about saving, individuals must determine an optimal life-cycle plan that includes both consumption and a retirement date. In the paper by Diamond and Hausman, panel data are used to examine both individual retirement decisions and savings behavior after retirement. The data cover 1335 observations from the National Longitudinal Survey of mature men in the United States. First, a model of retirement behavior is estimated that demonstrates the importance of pension provision in retirement decisions. Second, a model of wealth accumulation is estimated that shows the importance of the endogenous retirement date in the determination of savings and the impact of pension provision on wealth accumulation. The effect of pensions is to displace private savings by a significant amount but one that is very much less than dollar for dollar.

A substantial literature exists on the impact of pension schemes, both public and private, on the level of household saving. Yet there is no clear consensus on the impact of pensions on *private* saving. The paper by King and Dicks-Mireaux examines empirical evidence and shows how beliefs about the displacement effect of pensions are modified by prior beliefs both about variables that might be relevant in an equation for private savings and about the magnitude of the displacement effect. They estimate a model using data for 8279 Canadian households. Estimates of pension wealth (both private and social security) are constructed for each household in the sample. The estimates suggest that the displacement effects are of the order of 20-30

cents for each dollar increment in pension wealth, and that these estimates are relatively robust to different specifications of the functional form of household accumulation equations.

One of the problems that has arisen with private (occupational) pensions has been their disincentive to labor mobility because of the partial transferability of pension rights. In their paper, McCormick and Hughes provide the first examination of the influence of pensions on job mobility that uses calculations of the value of job-specific pension capital. They study this for a sample of 6338 employed heads of households from the 1973 General Household Survey in Britain. The paper constructs and estimates models for the probabilities both of searching for a new job and of actually changing jobs and explores the dependence of these on whether or not an employee has an occupational pension. The paper finds substantial evidence for the effects of pensions on labor immobility. For example, the probability of searching for a new job is reduced by anywhere between 20 and 60 percent by an occupational pension; the magnitude depends on individual characteristics such as age and housing tenure.

Certain aspects of corporate financial behavior remain a puzzle. For example, the issue of new shares at the same time as dividends are paid is difficult to reconcile with a model of rational corporate behavior. Auerbach's paper analyzes a theoretical model of corporate behavior and tests a number of hypotheses empirically. The essence of the model is a distribution of tax rates across investors; this yields predictions about the cost of capital for firms that vary between sources of finance and clientele of stockholders. The model is tested using panel data for 349 firms for a fifteen-year period. The results suggest that firms require higher rates of return on investments financed by new share issues and that these higher rates of return vary across firms according to their clientele of stockholders.

A number of recent econometric studies have used tax-price as an explanatory variable. In such models, the tax rate is the major determinant of some relevant price and its estimated coefficient has significance for policy design. But in many of these models, the other explanatory variables include personal characteristics that are themselves highly correlated with marginal tax rates. This would not matter if theory provided a clear specification of the functional forms to be estimated. In practice, the inclusion of higher-order or interaction terms is a matter for empirical testing. But if such terms are omitted, then the coefficient on the tax price term will be biased. Feenberg proposes an instrument for the tax rate based on state tax rates that vary among the sample in a way that is not correlated with personal characteristics. This is applied to a model of charitable giving in the United States. Provided that the state in which an individual lives is not a relevant explanatory variable in his charitable behavior, this instrument provides consistent estimates for the effect of tax deductions on charitable giving. With this technique, Feenberg finds a point estimate of the elasticity of gifts with re-

spect to the tax-price of 1.24, which is not significantly different from previous studies but is significantly different from zero.

For particular commodities in household budget surveys, a large number of zero expenditures are recorded. The standard model for estimating such distributions of expenditure is the Tobit specification. The paper by Deaton and Irish analyzes a number of possibilities by adding to the Tobit model a second censor that allows for false reporting. The empirical analysis uses data from the Family Expenditure Survey for the fiscal year 1973-74 for 6837 households. The results suggest that the distribution of expenditures is non-normal. The evidence implies, therefore, that the Tobit model is an incorrect representation of underlying desired expenditures.

In addition to the authors and discussants, the following individuals attended the conference: Brian M. Hayes and Holly Sutherland, LSE; Clive Smee, DHSS; Geoffrey P. Smith, HM Treasury; and Wendy A. Thompson, SSRC.

## Current Problems of Public Finance in the United States and Japan

On July 19 and 20, NBER Research Associates Martin Feldstein, Alan Auerbach, Herschel Grossman, and Laurence Kotlikoff participated in the first of a series of joint symposiums between the NBER and the Japanese Ministry of Finance. Japanese participants included prominent members of the finance ministry and the academic community. This initial conference focused on current problems of public finance in the United States and Japan. The central concern voiced by participants from both countries was the increasing reliance on deficit funding of federal expenditures.

Mr. Mastaka Ohkura, President of the People's Finance Corporation and former Vice Minister of Finance, delivered the keynote address reviewing Japanese fiscal experience since 1975. Prior to 1975, Japanese economic growth generated increasing ratios of taxes to GNP, despite periodic reductions in progressive tax rates. In the pre-1975 period, Japanese issue of government debt was restricted almost exclusively to the financing of government fixed investment. Since 1975, the Japanese government has relied heavily on the use of debt finance to meet expenditures on current consumption and transfer payments. Official Japanese government deficits are currently close to 7 percent of GNP.

Professor Noguchi of Hitotsubashi University described the growth of implicit debt associated with the expansion of the Japanese government's partially funded retirement programs. One striking estimate in his work is that fully funding these programs would require more than a doubling of current contributions.

The NBER delegation discussed current U.S. fiscal policy from the perspective of the recession and the economy's disappointing performance over the past decade. Professor Feldstein emphasized the long time required for investment and saving incentives to produce tangible results. Professor Auerbach described the magnitude of recent structural changes in the U.S. tax code, pointing out that the Economic Recovery Tax Act of 1981 dramatically reduced the taxation of capital income, shifting some of the tax burden to consumption and labor income. Professor Grossman suggested that monetary policy, rather than fiscal policy, was the chief determinant of current economic activity as well as high interest rates. Current fiscal policy, according to Grossman, is primarily affecting the interindustry allocation of the burden of the recession; for example, the new tax policies are significantly less favorable to investment in consumer durables and residential construction. Professor Kotlikoff pointed out that conventionally defined "fiscal," "expenditure," and "deficit" policies are often indistinguishable at a theoretical level. According to Kotlikoff, the implicit "deficits" associated with "expenditures" on unfunded federal retirement programs in the past two decades dwarf current official projected deficits; since high real interest rates were not observed in the 1960s and 1970s, attributing current U.S. real rates to the officially projected deficits is problematic.

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## Conference Calendar

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Each *Reporter* will include 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 1982/83 issue of the *Reporter* is December 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss at (617) 868-3974.

**November 5, 1982**

Program Meeting: International Studies, NBER

**November 5-6, 1982**

Incentive Effects of Government Spending, NBER

**November 10-12, 1982**

State Corporate Income Taxes, Hoover Institution

**November 12, 1982**

Program Meeting: Labor Studies, NBER

**November 15-16, 1982**

Minority Youth Unemployment (Preconference Meeting), NBER

**November 17-19, 1982**

Annual Meeting, International Association of Energy Economists

**November 19-20, 1982**

50th Anniversary of Berle and Means's book, *The Modern Corporation and Private Property*, Hoover Institution

**November 19-20, 1982**

Conference on Public Policy, Carnegie-Rochester

**December 3-4, 1982**

U.S. Trade Relations, NBER

**December 28-30, 1982**

Annual Conference, American Economic Association\*

**January 6-7, 1983**

Corporate Capital Structures in the United States, NBER

**January 20-21, 1983**

Labor Economics, Hoover Institution

**January 20-22, 1983**

Program Meeting: Development of the American Economy, NBER

**March 24-25, 1983**

Panel on Economic Activity, Brookings Institution

**March 24-26, 1983**

Pensions, Labor, and Individual Choice, NBER

**April 15-16, 1983**

Conference on Public Policy, Carnegie-Rochester

**April 22-23, 1983**

Minority Youth Unemployment, NBER

**April 22-23, 1983**

Conference on Political Economy, Carnegie-Mellon University

**May 5-6, 1983**

Program Meeting: Financial Markets and Monetary Economics, NBER

**May 6-7, 1983**

Economics of Trade Unions, NBER

**May 17-18, 1983**

Spring Symposium, National Tax Association\*

**May 23-27, 1983**

Interlaken Seminar on Analysis and Ideology, University of Rochester

**May 31-June 3, 1983**

Konstanz Conference on Monetary Theory and Monetary Policy, University of Rochester

**June 27-28, 1983**

International Seminar on Macroeconomics, NBER

**July 6-8, 1983**

Conference on Macroeconomics, NBER

**July 20-24, 1983**

Annual Conference, Western Economic Association

**August 15-18, 1983**

Annual Meeting, American Statistical Association\*

**August 18-20, 1983**

Conference on Productivity in Health, NBER

**September 1983**

First Quarter Century of Cliometrics, NBER

**September 15-16, 1983**

Panel on Economic Activity, Brookings Institution

**September 27-30, 1983**

Annual Conference, National Association of Business Economists\*

**October 2-6, 1983**

Annual Conference, National Tax Association\*

**October 14-15, 1983**

Business Cycle Conference, NBER

**December 28-30, 1983**

Annual Conference, American Economic Association\*

**March 16-17, 1984**

Public Pensions, NBER

**March 22-24, 1984**

Income and Wealth: Long-Term Factors in American Economic Growth, NBER

**June 24-28, 1984**

Annual Meeting, Western Economic Association

**August 12-15, 1984**

Annual Meeting, American Statistical Association\*

**October 25-29, 1984**

Annual Conference, National Tax Association\*

**December 28-30, 1984**

Annual Conference, American Economic Association\*

**August 12-15, 1985**

Annual Meeting, American Statistical Association\*

**December 28-30, 1985**

Annual Conference, American Economic Association\*

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

### Economics of Trade Unions: A Call for Papers

On May 6 and 7, 1983, the National Bureau of Economic Research will hold a conference in Cambridge on the Economics of Trade Unions. The program, being organized by Professor Daniel S. Hamermesh of Michigan State University and the NBER, will consist of seven papers with two formal discussants assigned to each paper.

A broad range of topics relating to the role of trade unions in the economy, their behavior and effects, is appropriate for the conference. Among the topics satisfying these criteria are: models of trade unions as institutions enforcing implicit and explicit contracts; the nature and process of bargaining; determinants of the incidence of unionism; the effects of trade unions on the pecuniary and nonpecuniary rewards to workers; their effects on unionized and nonunionized firms; their effects on the structure of labor markets; their impact on macroeconomic adjustment, particularly on the determination of employment and real wage levels; their role in the adjustment of the public sector to changes in the demand for public services; international comparisons of unionism, and the role of unions in economic development. Other potential topics in the general area of trade union behavior and effects will also be considered. Priority will be given to empirically oriented research; the submission of theoretical papers on these topics is very welcome also.

Papers will be selected on the basis of abstracts of about 500 words or, when possible, complete papers. Any research that will not be published before November 1983 may be submitted. The deadline for submissions of abstracts and papers is January 21, 1983. Authors chosen to present papers will be notified by February 15. Finished papers must be ready for distribution to conference participants and discussants by April 5, 1983. The NBER will pay the expenses of those chosen to give papers at the conference. Abstracts and papers should be sent to Professor Daniel S. Hamermesh, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

## Administrative Changes at NBER

Martin Feldstein, president of NBER since 1977, resigned in late August to become Chairman of the President's Council of Economic Advisers (CEA). He will be succeeded in the presidency by Eli Shapiro.

Shapiro, who is Alfred P. Sloan Professor of Management at MIT, has been a member of NBER's Board of Directors since 1974. For the past two years, he has served as Chairman of the NBER Board.

Succeeding Shapiro in that post is Walter W. Heller, Regents' Professor of Economics at the University of Minnesota. Heller has been on the Board since 1960 and was Chairman from 1971-74. In addition to his academic achievements, Heller achieved prominence as Chairman of the CEA under President John F. Kennedy.

### Productivity in Health: A Call for Papers

On August 18-20, 1983, the National Bureau of Economic Research will hold a Conference on Productivity in Health at Stanford, California. This conference will afford an opportunity for economists, physicians, and other health researchers to present and discuss new work that contributes to an understanding of how resources can be used more efficiently and effectively in the production of health. Priority will be given to empirical studies, but purely theoretical or methodological papers are also welcome. Appropriate topics include the effects of medical care or other interventions on health status (including quality of life). Research at any level of aggregation will be considered.

Papers will be selected on the basis of abstracts of about 500 words or, when possible, completed papers. The NBER does not expect to publish the conference papers. Research that will have been published by the time of the conference should not be submitted. The deadline for submission of abstracts and papers is February 15, 1983; authors will be notified by March 31, 1983; accepted papers must be ready for distribution to conference participants by July 15. The NBER will pay living expenses while at Stanford, and some travel assistance will also be available. Abstracts and papers should be sent to Professor Victor R. Fuchs, National Bureau of Economic Research, 204 Junipero Serra Boulevard, Stanford, CA 94305.

## NBER China Trip

At the invitation of the Chinese Academy of Social Sciences, a delegation of seven NBER economists lectured and met with prominent Chinese economists on May 20 to June 12 in several Chinese cities. The NBER delegation gave the following talks:

David F. Bradford, Princeton University and NBER, "Recent Developments in the Tax System of the United States"

Benjamin M. Friedman, Harvard University and NBER, "U.S. Monetary Policy: Recent Developments and Current Problems," and "Financing Capital Formation with Debt and Equity"

Victor R. Fuchs, Stanford University and NBER, "The Economic Approach to Problems of Health and Medical Care"

Zvi Griliches, Harvard University and NBER, "Explanations of the Productivity Slowdown"

Robert E. Hall, Stanford University and NBER, "Employment Relations and Wage Inflation"

Robert E. Lipsey, Queens College and NBER, "Recent Trends in U.S. Trade and Investment"

Martin Feldstein, Harvard University and NBER, "The Recent Revolution in American Economic Thought: The Retreat from Keynesian Economics"

At the Institute of Economics in Peking, the group discussed China's aggregate economic policy, economic management, and finance with members of the Institute staff. Discussions also took place with Chinese representatives of the American Embassy in Peking, the National Planning Committee, and Peking University.

In Sian, NBER's delegates met for a discussion with the president of the Chinese Academy of Social Sciences and the deputy president of the Provincial Academy of Social Sciences. In Wuhan, four professors from Wuhan University, which has an Institute for Study of the North American Economy, addressed the NBER group. In Shanghai, there was a meeting between the head of the Shanghai Investment and Trust Corporation, a government entity, and the NBER delegation.

Later in the Shanghai visit the Deputy Director of Research and the Deputy Head of the Trust Department of the Bank of China, which deals primarily with foreign exchange and trade, spoke with the NBER group on those topics. Throughout the visit, discussions between NBER delegates and the Chinese economists emphasized the role of China in world trade and the future of foreign investment in China.

## Summer Institute

The 1982 Summer Institute brought together nearly 250 economists from the United States and abroad for eight weeks of meetings, seminars, conferences, and individual research. Six Bureau programs were involved: economic fluctuations; financial markets and monetary economics; international studies; labor studies; productivity and technical change; and taxation.

### Economic Fluctuations

The economic fluctuations group, under Program Director Robert E. Hall, Stanford University, met during July. Small group seminars were arranged in three areas: real business cycles, organized by Robert King, University of Rochester; intertemporal substitution, led by Kenneth Singleton, Carnegie-Mellon University; and investment, arranged by Olivier Blanchard, Harvard University. An additional highlight of this group's summer institute was a program meeting on July 8 and 9, organized by Thomas J. Sargent, University of Minnesota, on "Intertemporal Puzzles in Macroeconomics." The following papers were presented at this meeting:

Robert Lucas, University of Chicago and NBER, and Nancy Stokey, Northwestern University, "Optimal Growth with Many Consumers"

Discussant: Edward Prescott, Northwestern University

Lars Hansen and Scott Richard, Carnegie-Mellon University, and Kenneth Singleton, Carnegie-Mellon University and NBER, "Testable Implications of the Intertemporal Capital Asset Pricing Model"

Discussant: Richard Clarida, Harvard University

Bruce Smith, Boston College, "Limited Information, Money, and Competitive Equilibrium"

Discussant: Sanjay Srivastava, MIT

Rajnish Mehra, Columbia University, and Edward Prescott, University of Minnesota, "A Test of the Intertemporal Asset Pricing Model"

Discussant: Dan Peled, Carnegie-Mellon University

Robert Townsend, Carnegie-Mellon University, "Asset Return Anomalies: A Choice-Theoretic, Monetary Explanation"

Discussant: Paul Richardson, Harvard University

Fumio Hayashi, University of Minnesota, "The Effect of Liquidity Constraints on Consumption: A Cross-Sectional Analysis"

Discussant: Robert Hall

John Taylor, Princeton University and NBER, "Union Wage Settlements during a Disinflation" (NBER Working Paper No. 985)

Discussant: Bennett McCallum, Carnegie-Mellon University and NBER

Dennis Epple, Lars Hansen, and Will Roberds, Carnegie-Mellon University, "Linear-Quadratic Games of Resource Depletion"

Discussant: Martin Eichenbaum, Carnegie-Mellon University

Christopher Sims, University of Minnesota and NBER, "Policy Analysis with Econometric Models"

Discussant: Kenneth Rogoff, Board of Governors, Federal Reserve System

The Lucas/Stokey paper presents some formal methods for finding competitive equilibriums in dynamic economic models under the assumption of perfect foresight. Unlike traditional analyses of optimal growth, these methods do not require that all agents in the economy be alike or that agents' utility functions be additively separable over time. A specific result of the paper is a condition on agents' utility functions that guarantees that no one has zero consumption in the economy's steady state.

Hansen, Richard, and Singleton develop a rigorous and general theory of intertemporal capital asset pricing based on the value-additivity principle. They define and characterize the properties of a benchmark payoff and show how it is used in asset pricing. As a step toward testing this model econometrically, the authors discuss observable implications of the model when the econometrician can observe only a subset of the information observed by economic agents. Finally, they discuss strategies for implementing tests of the theory.

Smith examines the role of fiat money in economies where there is asymmetric information about the creditworthiness of borrowers. He shows that, in some cases, money (or some government-supplied asset) is necessary for the existence of equilibrium. He also gives an example of how the presence of money, by leading to an equilibrium where agents have an incentive to reveal private information, can increase the amount of information available in the economy.

Mehra and Prescott develop a stochastic general equilibrium model of asset pricing and use this model to analyze the risk premium earned by equity relative to a riskless asset. After calibrating their model to match certain long-run characteristics of the U.S. economy, they calculate the equity risk premium implied by the model. The largest equity risk premium obtainable with their basic model is 0.2 percent, which is dramatically below the historically observed premium of 6 percent. Various modifications of the model fail to raise the predicted risk premium substantially, leading the authors to conclude that a different class of models, perhaps with infeasibility of certain risk-sharing arrangements, may be needed to explain equity risk premiums.

Townsend examines the question of why money is held even though its return is dominated by the return on other assets such as capital. He shows that incorporating a cash-in-advance constraint into a stochastic general equilibrium model without double coincidences of wants can provide an explanation of such rate-of-

return dominance. The reason that capital earns a higher apparent rate of return than money is that money, in effect, earns a shadow liquidity premium in addition to any appreciation or depreciation from changes in the price level. That is, money can be used to buy market-produced consumption goods directly, whereas capital must first be converted to money before it can be used to buy such goods. The presence of a liquidity constraint also leads to other apparent anomalies such as "inefficient" pricing of assets.

Hayashi's paper reports his attempt to use cross-sectional data on consumption and other variables to test for the presence of liquidity constraints. In essence, his approach is to estimate a regression predicting consumption for a subsample in which liquidity constraints can be ruled out a priori; then, to compare this regression to one estimated for the entire sample. He finds that younger families in particular seem to be constrained below the level of consumption suggested by purely life-cycle considerations.

In his paper, Taylor tries to quantify the effects of union wage-setting practices on the process of monetary disinflation. Using disaggregated BLS data on labor contract lengths and terms, he simulates a monetary policy that can gradually reduce inflation from 10 percent to 3 percent. He finds that monetary tightening can reduce inflation without creating recession but that, at best, the process is quite slow; there is almost no effect on inflation during the first two years of the program.

Epple, Hansen, and Roberds present an analysis of dynamic, two-player games for the case where objective functions are quadratic and the environment is stochastic. They study solutions to these games under a variety of equilibrium concepts, including some that treat the players symmetrically and others that assign one of the players a dominant role. While the specific example that was worked out concerns the extraction of nonrenewable resources under oligopoly, it was pointed out that these methods might be applied to the study of the "game" between macroeconomic policymakers and the public.

Sims's paper warns against excessive reliance on structural models, even rational expectations models, for analyzing macroeconomic policies. He advocates instead a greater reliance on reduced-form approaches, such as vector autoregression, which are less sensitive to the econometrician's choice of model or identifying restrictions. As an example, he shows how the administration's economic projections could be statistically evaluated, with little use of prior economic theory.

## Financial Markets and Monetary Economics

Members of the Program in Financial Markets and Monetary Economics, under the direction of Benjamin M. Friedman of Harvard University, also met during July. Their summer institute program culminated in a conference on July 29 and 30, when the following papers were presented:



Bennett McCallum, Carnegie-Mellon University and NBER, "Are Bond-Financed Deficits Inflationary? A Ricardian Analysis" (NBER Working Paper No. 905)

Discussant: Paul Wachtel, New York University and NBER

Robert McDonald, Boston University and NBER, "The Value of Waiting to Invest"

Discussant: Michael Rothschild, University of Wisconsin and NBER

Carl Walsh, Princeton University and NBER, "Interest Rate Volatility and Monetary Policy" (NBER Working Paper No. 915)

Discussant: John Makin, University of Washington and NBER

Vance Roley, Federal Reserve Bank of Kansas City and NBER, "The Response of Short-Term Interest Rates to Weekly Money Announcements"

Discussant: Patric Hendershott, Ohio State University and NBER

Edward Kane, Ohio State University and NBER, "Implementing Monetary Policy in a Changing Environment"

Discussant: Benjamin Friedman, Harvard University and NBER

Roger Waud, University of North Carolina, "Supply Shocks, Demand Variability, and the Output-Inflation Trade-Off"

Discussant: Olivier Blanchard, Harvard University and NBER

Lawrence Summers, MIT and NBER, "Do We Know That the Markets Are Efficient?" (NBER Working Paper No. 994)

Discussant: James Pesando, University of Toronto and NBER

McCallum's paper considers the possible theoretical validity of the following "monetarist hypothesis": that a constant, positive government budget deficit can be maintained permanently and without inflation if it is financed by the issue of bonds rather than money. He studies the question in a discrete-time, perfect-fore-sight version of a competitive equilibrium model, modified by the inclusion of government bonds as a third asset. He shows that the monetarist hypothesis is invalid if the deficit is defined exclusive of interest payments but is valid under the conventional definition. He also shows that the stock of bonds can grow indefinitely at a rate in excess of the rate of output growth, provided that the difference is less than the rate of time preference. In addition to the main analysis, the paper includes comments on alternative deficit concepts, a brief consideration of data pertaining to the announced budget plans of the Reagan Administration, and a new look at a much-studied issue: whether the operation of a Friedman-type constant money growth rule (with nonactivist fiscal rules) would be dynamically feasible.

When investment decisions cannot be reversed costlessly, it is generally optimal to defer investing until the

present value of a project's expected cash flows exceeds, by some positive amount, the cost of investing. McDonald's paper derives relationships for the value of an investment opportunity when the investment is irreversible; the present value of the project's cash flows and the cost of investing both evolve randomly. For surprisingly reasonable parameter values, it can be optimal to defer investing until the project's value is *twice* its cost. This analysis has implications in a variety of areas, from the analysis of environmental issues to questions in industrial organization and investment theory.

In October 1979 the Federal Reserve shifted from an interest-rate-oriented operating procedure to a reserves-oriented procedure. Walsh argues in his paper that part of the very large increase in interest-rate volatility that resulted from the policy switch may have been the result of the response of money demand behavior to the adoption of a reserve-aggregates operating procedure. He derives this result by comparing rational expectations equilibriums in a simple theoretical model under alternative policy rules. This allows the behavior of money demand and the variance of interest rates to be explicitly expressed as functions of the policy rule.

Roley examines the response of short-term interest rates to weekly money announcements since the Federal Reserve's change in operating procedures on October 6, 1979. The results indicate that the response increased significantly since October 1979, and that it varies nonlinearly according to the relation of money growth to the Federal Reserve's long-run targets. The results also suggest that the increase in the response and the rise in the volatility of unanticipated money have contributed about equally to the large rise in interest-rate volatility during this period.

In deciding what emphasis to place on controlling growth rates in monetary and reserve aggregates as against movements in interest rates, Fed officials face trade-offs between current macroeconomic performance and the Fed's future political standing and autonomy. In a sense, Fed targets choose themselves, when they emerge as variables for which well-placed or vocal segments of the public hold them responsible. In Kane's paper, the political costs and benefits arising from the policy emphasis adopted on October 6, 1979, are expressed in a conjectural table of sectoral attitudes toward subsequent macroeconomic developments. It is argued that, except for President Reagan and congressional monetarists, major political players would prefer a monetary policy that would lower and stabilize real interest rates. If the president were to withdraw his support for monetary targeting, a renewed emphasis on interest-rate targets could develop in short order.

Waud's paper examines the shift in the relation between the inflation rate and the rate of growth of real output that has occurred in the United States over the past three decades. He attempts to assess the relative importance of three possible lines of explanation: (1)

the new classical view of the output-inflation trade-off, initially specified by Lucas; (2) the effect of supply-side shocks, such as energy prices; and (3) the effect of inflation variability on the natural rate of real output, as hypothesized by Milton Friedman. The paper concludes that the latter two theories seem to have played a significant role in the observed shift from a positive to a negative correlation between the rate of inflation and the rate of real output growth, but that the first did not.

Summers examines the power of statistical tests commonly used to examine the efficiency of speculative markets. He shows that for markets with "long horizons," such as the stock markets or the market for long-term bonds, these tests have very low power. Market valuations can differ substantially and persistently from the rational expectation of the present value of cash flows without leaving statistically discernible traces in the pattern of ex post returns. This observation also suggests that speculation is unlikely to ensure rational valuations, since similar problems of identification plague both financial economists and would-be speculators.

## International Studies

During August the Program in International Studies, led by William Branson of Princeton University, held a number of small group meetings and two major conferences. The smaller discussion sessions focused on "Trade Growth and Structural Change," organized by Gene Grossman of Princeton University and J. David Richardson, University of Wisconsin; and "International Macroeconomics and Finance," led by Richard Marston, University of Pennsylvania.

The first of the conferences, held on August 9, was on "U.S. Trade Policy Issues in the Modern Economy: Trends, Strategy, and Foreign Response." The formal portion of the program was:

C. Michael Aho and Thomas O. Bayard, Office of Foreign Economic Research, U.S. Department of Labor, "The 1980s: Twilight of the Open Trading System?"

Discussants: James Galbraith, Executive Director, Joint Economic Committee, and Gene Grossman  
William Reinsch, Chief Legislative Aide to Senator H. John Heinz III (R-PA), "Reciprocity and Trade-Policy Activism: Is This the Time?"

Discussants: William Barreda, Office of International Trade, U.S. Department of the Treasury, and William H. Branson

Geza Fekete-kuty, Assistant U.S. Trade Representative, Office of the U.S. Trade Representative, "Meeting the International Challenges of the New Industrial Revolution: Economic Problems and Opportunities"

Discussants: Irving B. Kravis, University of Pennsylvania and NBER, and Alfred Reifman, Congressional Research Service

Aho and Bayard expressed fears of a "final orgy of protection," not unlike that of the 1930s, for the 1980s. They also predicted that problems of adjustment will become paramount during this decade, in part because of demographic changes within the United States and in part because the volume of international trade has been stagnant or falling since 1980. They caution that if policymakers focus on growth and adjustment (rather than protection), then trade will follow.

Reinsch presented an explanation and defense of "activist" U.S. trade policy, a concept that was dubbed "aggressive reciprocity" in its early consideration. He directed his remarks at the proposed Reciprocal Trade and Investment Act of 1982, a bill that embodies this new trade posture. Reinsch argues that the bill was a prelude to future trade negotiations and allowed them to be either multilateral or unilateral. He suggested that the bill had both desirable substance and desirable announcement effects, enhancing the credibility of U.S. trade policy and signaling the seriousness of U.S. intentions to insist on adherence to international codes and obligations that were already in place. In the lively discussion that followed, some felt that this brand of trade-policy activism would inevitably pressure sovereign governments to adopt a U.S. view of regulation. Others thought that a more desirable alternative to aggressive reciprocity was aggressive initiation with "carrots rather than sticks" as the instrument to encourage foreign adjustment. Still others thought that most U.S. trade-policy activism would fail because the United States would be undermined by competitive pressures in world markets that it no longer dominates.

Fekete-kuty closed the conference with a presentation that focused on future industrial and international trends. He claims that automation and high-technology communication are revolutionizing international trade, transforming many nontradable products into tradables and multiplying the geographical locations where services can be produced. He finished by outlining the implications of these trends for the ministerial meetings of the General Agreement on Tariffs and Trade at the end of the year. In the discussion period, skepticism was expressed about the proposition that technological change is faster paced or more threatening than in the past. Additional trade policy options were aired, such as bilateral bargaining or special negotiations between the United States and developing countries.

A second miniconference, on "Strategic Behavior and International Trade," was held on August 11. The agenda was:

Richard Freeman, Board of Governors, Federal Reserve System, "A Model of International Competition in Research and Development"

Discussant: Thomas Pugel, New York University  
James Brander, Queen's University, and Barbara Spencer, Boston College, "Industrial Strategy with Committed Firms"

Discussant: Robert Willig, Princeton University

Gene Grossman opened the conference by summarizing the unfamiliar perspectives that the participants would encounter. Trade researchers, he said, would be surprised by the asymmetries in industry structure and the circumstances that were common in industrial organization. Industrial organization researchers would be correspondingly surprised by the asymmetries among firms exposed to different national regulations and by the segregation of consumers by nationality. Grossman pointed to the nonenforceability of contracts in international transactions as the key difference in the two research traditions.

Freeman's paper considers the consequences of process innovation in an international model of Schumpeterian competition. Process innovation is in turn determined in the model by international competition in R and D. The paper also considers the outcome of cooperative solutions to the competition and to the question of entry.

Brander and Spencer pursue some of these same themes. They demonstrate the potential efficacy of government promotion of cost-reducing innovation (for example, R and D) in a two-firm, two-country model with two-stage competition and two-stage establishment of Nash equilibriums. In the first stage, firms choose the level of cost-reducing innovation; in the second stage, the optimal level of output is conditional on the fixed cost of the first-stage innovation. Even though firms are assumed to have rational expectations of competitors' and governments' behavior, there are still potential grounds for each government to intervene. Each government in essence becomes an additional player in the game, helping its own firms to fashion a more credible precommitment—essentially by subsidizing cost reduction at a preprimal stage, even earlier than the first stage. Willig described this as a "second-level precommitment" in lively commentary. He also thought of this as a new potential argument for government promotion of exports but wondered how robust it would be to asymmetric multiplication of firms and to incorporation of consumer gains from foreign predation.

Dixit closed the conference by discussing foreign direct investment from the perspective of sequential economic games. He restricts his attention to agreements between governments and firms that were self-enforceable because, otherwise, the security of international contracts is difficult to guarantee. Each agreement considered was aimed at avoiding the kind of expropriation that would dry up foreign investment. Among potential solutions outlined are transfer payments, posting of bonds, employment of firm-specific factors or technology, and joint participation. The credibility and repetition of the game feature prominently in evaluating these potential solutions. The similarity of Dixit's

investment structure to that of a trade war between governments was noted in the discussion.

## Labor Studies, Productivity, and Taxation

These three programs met in Cambridge during August. The presentations within the labor studies group fell into four categories: Compensation and Labor Dynamics, organized by Edward P. Lazear of the University of Chicago and NBER; Unionization in Labor Market Analysis, led by Program Director Richard B. Freeman of Harvard University; Macroeconomic Analysis of the Labor Market; and Social Insurance/Retirement Programs and Their Effect on the Labor Market. Papers were presented by: John Abowd, University of Chicago; Peter Kuhn, Harvard University; Hank Farber, MIT; Richard Freeman and James Medoff, Harvard University; David Ellwood, Harvard University; Gary Chamberlain, University of Wisconsin; Steven Allen, North Carolina State University; Orley Ashenfelter, Princeton University; James Brown, Princeton University; Robert Topel, University of Chicago; Casey Ichniowski, MIT; Ron Ehrenberg, Cornell University; Daniel Hamermesh, Michigan State University; George Johnson, University of Michigan; Olivia Mitchell, Cornell University; Kip Viscusi, Duke University; and Gregg Lewis, Duke University.

The discussions of the productivity group, whose director is Zvi Griliches of Harvard University, focused on two main areas: patent statistics, and cost and production function approaches to estimation of R and D effects. Papers were presented by: M. Ishaq Nadiri, Edward Wolff, and Pierre Mohnen, New York University; Timothy Bresnahan, Stanford University; John Beggs, Anil Deolalikar, and Robert Evenson, Yale University; Jeffrey Bernstein, Carleton University; Ariel Pakes, Hebrew University; Bronwyn H. Hall, NBER; Eli Noam, Columbia University Law School; and others.

The taxation group, under the direction of David Bradford of Princeton University, discussed a wide range of issues in taxation and its effect on the economy. One of the highlights of their summer institute program was an explanatory presentation by J. Gregory Ballantine, Deputy Assistant Secretary of Tax Policy for the U.S. Treasury, on the new tax legislation (sometimes referred to as "revenue enhancement") passed during the summer of 1982. Others who presented papers were: Lawrence Summers, MIT; Alan Auerbach, Harvard University; George Constantinides, University of Chicago; Roger Gordon, Bell Labs; Harvey Rosen, Princeton University; Michelle White, New York University; John Shoven, Stanford University; and Don Fullerton, Princeton University.

The papers discussed this summer and the participants at NBER's Summer Institute are far too numerous to list. However, those papers by NBER economists will, in general, become part of the Bureau's Working Papers series and will be summarized in this and future issues of the *NBER Reporter*.

## Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-266 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others there is a charge of \$1.50 per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than \$10.00. Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

267. "Changes in the Provision of Correspondent-Banking Services and the Role of Federal Reserve Banks under the DIDMC Act," by Edward J. Kane, 1982 (NBER Working Paper No. 731)
268. "Wages, Relative Prices, and the Choice between Fixed and Flexible Exchange Rates," by Richard C. Marston, 1982 (NBER Working Paper No. 793)
269. "Teenage Unemployment: What Is the Problem?" by Martin Feldstein and David T. Ellwood, 1982 (NBER Working Paper No. 393)
270. "Social Security and Private Saving: Reply," by Martin Feldstein, 1982 (NBER Working Paper No. 579)
271. "Can We Sterilize? Theory and Evidence," by Maurice Obstfeld, 1982 (NBER Working Paper No. 833)
272. "Government and Health Outcomes," by Michael Grossman, 1982 (NBER Working Paper No. 780)
273. "Exchange-Rate Dynamics and the Overshooting Hypothesis," by Jacob A. Frenkel and Carlos A. Rodriguez, 1982 (NBER Working Paper No. 832)
274. "Economic Policy Assessment: The Labor Market," by Mary Eccles, Richard B. Freeman, and Daniel S. Hamermesh, 1982 (NBER Working Papers No. 878 and 771)
275. "Economic Determinants of Geographic and Individual Variation in the Labor Market Position of Young Persons," by Richard B. Freeman, 1982 (NBER Conference Paper No. 24)
276. "Why Does the Rate of Youth Labor Force Activity Differ across Surveys?" by Richard B. Freeman and James L. Medoff, 1982 (NBER Conference Paper No. 23)
277. "The Youth Labor Market Problem in the United States: An Overview," by Richard B. Freeman and James L. Medoff, 1982
278. "Debt and Economic Activity in the United States," by Benjamin M. Friedman, 1982 (NBER Working Paper No. 704)
279. "Time Preference and Health: An Exploratory Study," by Victor R. Fuchs, 1982 (NBER Working Paper No. 539)
280. "Physical Disabilities and Post-secondary Educational Choices," by Robert A. Shakotko and Michael Grossman, 1982 (NBER Working Paper No. 609)
281. "Prenatal Medical Care and Infant Mortality," by Jeffrey E. Harris, M.D., 1982 (NBER Conference Paper No. 84)
282. "Labor Turnover and Youth Unemployment," by Linda Leighton and Jacob A. Mincer, 1982 (NBER Working Paper No. 378)
283. "Children's Health Problems: Implications for Parental Labor Supply and Earnings," by David S. Salkever, 1982 (NBER Conference Paper No. 88)
284. "The Dynamics of Youth Unemployment," by Kim B. Clark and Lawrence H. Summers, 1982 (NBER Working Paper No. 274)
285. "Financing Capital Formation in the 1980s: Issues for Public Policy," by Benjamin M. Friedman, 1981 (NBER Working Paper No. 745)
286. "Analysis of Covariance with Qualitative Data," by Gary Chamberlain, 1980 (NBER Working Paper No. 325)
287. "Investment Strategy in an Inflationary Environment," by Zvi Bodie, 1982 (NBER Working Paper No. 701)
288. "Changing Balance Sheet Relationships in the U.S. Manufacturing Sector, 1926-77," by John H. Ciccolo, Jr. 1982 (NBER Working Paper No. 702)
289. "Private Pensions as Corporate Debt," by Martin Feldstein, 1982 (NBER Working Paper No. 703)
290. "Inflation, Resource Utilization, and Debt and Equity Returns," by Patric H. Hendershott, 1982 (NBER Working Paper No. 699)
291. "Risk and Return: A New Look," by Burton G. Malkiel, 1982 (NBER Working Paper No. 700)
292. "Labor Markets and Evaluations of Vocational Training in the Public High Schools—Toward a Framework for Analysis," by Alan L. Gustman and Thomas L. Steinmeier, 1982 (NBER Working Paper No. 478)
293. "Monetary Policy and Short-Term Interest Rates: An Efficient Markets-Rational Expectations Approach," by Frederic S. Mishkin, 1982 (NBER Working Paper No. 693)
294. "Does Anticipated Monetary Policy Matter? An Econometric Investigation," by Frederic S. Mishkin, 1982 (NBER Working Paper No. 506)
295. "Dead-end Jobs and Youth Unemployment," by Charles Brown, 1982 (NBER Conference Paper No. 31)

296. "The Minimum Wage and Job Turnover in Markets for Young Workers," by Robert E. Hall, 1982 (NBER Conference Paper No. 33)
297. "Statistical Decision Theory Requiring Incentives for Information Transfer," by Jerry R. Green, 1982 (NBER Conference Paper No. 47)
298. "Heterogeneity and State Dependence," by James J. Heckman, 1981
299. "Estimating the Determinants of Employee Performance," by Charles Brown, 1982 (NBER Working Paper No. 353)
300. "Inflation, Tax Rules, and Investment: Some Econometric Evidence," by Martin Feldstein, 1982 (NBER Working Paper No. 577)
301. "Asset Holdings and the Life Cycle," by Mervyn A. King and Louis Dicks-Mireaux, 1982 (NBER Working Paper No. 614)
302. "Risk Shifting, Statistical Discrimination, and the Stability of Earnings," by Herschel I. Grossman and Warren T. Trepeta, 1981 (NBER Conference Paper No. 41)
303. "Healthiness, Education, and Marital Status," by Paul J. Taubman and Sherwin Rosen, 1982 (NBER Working Paper No. 611)
304. "Labor Mobility and Wages," by Jacob A. Mincer and Boyan Jovanovic, 1981 (NBER Working Paper No. 357)
305. "Black Economic Progress after 1964: Who Has Gained and Why?" by Richard B. Freeman, 1981 (NBER Working Paper No. 282)
306. "The Location of Overseas Production and Production for Export by U.S. Multinational Firms," by Irving B. Kravis and Robert E. Lipsey, 1982 (NBER Working Paper No. 482)
307. "Time-Series Changes in Youth Joblessness," by Michael L. Wachter and Choongsoo Kim, 1982 (NBER Working Paper No. 384)
308. "The Youth Labor Market Problem: Its Nature, Causes, and Consequences," by Richard B. Freeman and David A. Wise, 1982
309. "Import Competition and Macroeconomic Adjustment under Wage-Price Rigidity," by Michael Bruno, 1982 (NBER Working Paper No. 522)
310. "Trade in Differentiated Products and the Political Economy of Trade Liberalization," by Paul R. Krugman, 1982 (NBER Conference Paper No. 113)
311. "Tax Neutrality and the Social Discount Rate: A Suggested Framework," by Alan J. Auerbach, 1982 (NBER Working Paper No. 457)
312. "Measuring Unemployment," by Lawrence H. Summers, 1981
313. "The Choice of Health Policies with Heterogeneous Populations," by Donald S. Shepard and Richard J. Zeckhauser, 1982 (NBER Working Paper No. 612)
314. "Household Wealth in a Settlement Economy: Utah, 1850-1870," by J. R. Kearl, Clayne L. Pope, and Larry T. Wimmer, 1980
315. "Self-Selection and Pareto Efficient Taxation," by Joseph E. Stiglitz, 1982 (NBER Working Paper No. 632)
316. "Issues in the Design of Saving and Investment Incentives," by David F. Bradford, 1981 (NBER Working Paper No. 637)
317. "Pitfalls in the Construction and Use of Effective Tax Rates," by David F. Bradford and Don Fullerton, 1981 (NBER Working Paper No. 688)
318. "Self-Employment and Labor Force Participation of Older Males," by Victor R. Fuchs, 1982 (NBER Working Paper No. 584)
319. "Planning and Market Structure," by Dennis W. Carlton, 1982 (NBER Working Paper No. 425)
320. "PPP Exchange-Rate Rules and Macroeconomic Stability," by Rudiger Dornbusch, 1982 (NBER Working Paper No. 567)
321. "Wage Growth and Job Turnover: An Empirical Analysis," by Ann P. Bartel and George J. Borjas, 1981 (NBER Working Paper No. 285)
322. "Stabilization Policies in the World Economy: Scope and Skepticism," by Jeffrey Sachs, 1982 (NBER Working Paper No. 862)
323. "Taxation and On-the-job Training Decisions," by Harvey S. Rosen, 1982 (NBER Working Paper No. 733)
324. "Inflation Risk and Capital Market Equilibrium," by Zvi Bodie, 1982 (NBER Working Paper No. 373)
325. "Minimum Wages and the Demand for Labor," by Daniel S. Hamermesh, 1982 (NBER Working Paper No. 656)

## Bureau Books

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628. Academic discounts of 10 percent for individual volumes and 20 percent for standing orders for all NBER books published by the University of Chicago Press are available to university faculty; orders must be sent on university stationery.

### ... *Economy in Transition* Now in Paperback

A paperback edition of *The American Economy in Transition* is now available from the University of Chicago Press at a cost of \$10.00. This NBER conference volume, edited by Martin Feldstein and originally published in 1980, presents the views of twenty-nine distinguished contributors on this country's economic condition since World War II. In each of the nine areas covered, there is a background paper by an academic specialist in the field and two personal statements by leading figures in the government or private sector. These latter contributors include Milton Friedman, Arthur Okun, Herbert Stein, Irving Kristol, James Schlesinger, George Shultz, and Paul Samuelson. The introductory overview was written by Feldstein, and the conclusion by Arthur Burns, former NBER president and former chairman of the Federal Reserve Board.

### Goldsmith Volume Available

*The National Balance Sheet of the United States, 1953-1980* by Raymond W. Goldsmith is available from the University of Chicago Press for \$30.00. This landmark monograph presents detailed estimates of the nation's assets and liabilities each year from 1953-75, and for the benchmark years of 1900, 1929, and 1980. The data are presented sector by sector, which casts light on the changing roles of financial institutions. Moreover, by presenting the data as ratios rather than dollar values, Goldsmith makes the material more informative and easier to absorb. This should be a rich resource both for researchers and for users of the national accounts.

Professor Goldsmith is an NBER research associate emeritus and an emeritus professor of economics at Yale University.

### Cragg/Malkiel Volume Published

*Expectations and the Structure of Share Prices* by John G. Cragg and Burton G. Malkiel is available from the University of Chicago Press at a cost of \$24.00. Both Cragg and Malkiel are NBER research associates; Cragg is also professor of economics at the University of British Columbia, and Malkiel is dean of the Yale School of Organization and Management, where he teaches economics and management courses.

The Cragg/Malkiel volume presents information on the forecasts of professional investors regarding future growth of 175 companies. This information is used to examine the impact of the forecasts on the market's evaluations of the companies and to test and extend traditional models of how stock market values are determined. One of the book's conclusions is that no extraordinary profits are to be made by following the advice of professional forecasters. What is significant, however, is the varying importance that investors give to different risks at different times. The practical nature of the problems addressed in this volume should make it valuable not only to academic researchers but also to the investment community.

### New Work Highlights National Income and Product Accounts

*The U.S. National Income and Product Accounts*, an NBER Income and Wealth conference volume edited by Murray F. Foss, will be available from the University of Chicago Press in December.

The main topics treated in the book are problems of deflation and quality change, the adequacy of the data used to construct the U.S. national accounts, and the broad theoretical evolution of the accounts. This volume represents a new stage in the study of the national accounts in that it places the emphasis on their information content rather than on their structure. This new emphasis is highlighted by the inclusion of a roundtable discussion among prominent users—Lawrence Klein, Otto Eckstein, Alan Greenspan, and Arthur Okun—indicating the difficulties that confront those whose work depends upon this information.



## Inflation Study Available in January

An NBER project report on inflation, edited by Robert E. Hall, will be available from the University of Chicago Press in January 1983 at a cost of \$27.00. Hall is director of NBER's Program of Research in Economic Fluctuations, professor of economics at Stanford University, and senior fellow of that university's Hoover Institution.

*Inflation: Causes and Effects* presents the latest thoughts of a group of distinguished economists on the persistent problem of inflation in the United States and abroad. The contributors illuminate both the economic and the political processes involved in the issue of inflation. Two papers consider what would happen to output and employment if inflation were brought to an end; two others investigate the changes in economic institutions that might contribute to limiting inflation. Eight of the papers examine how inflation has changed the U.S. economy, and one paper concerns the volatility of inflation during the 1970s and its relation to energy and food price shocks.


## Current Working Papers

### Technical Papers Series

Additional studies in the NBER Technical Working Papers series are now available (see previous issues of the *NBER Reporter* for other titles). Like NBER Working Papers, these studies may be obtained by sending \$1.50 per paper to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Prepayment is required for all orders under \$10.00.

#### Identification in Dynamic Linear Models with Rational Expectations

**Olivier J. Blanchard**  
Technical Working Paper No. 24  
July 1982  
JEL No. 211

 This paper characterizes identification in dynamic linear models. It shows that identification restrictions are linear in the structural parameters and are therefore easy to use. Using these restrictions, it analyzes the role of exogenous variables in helping to achieve identification.

### Smoothness Priors and Nonlinear Regression

**Robert J. Shiller**  
Technical Working Paper No. 25  
August 1982  
JEL No. 211

In applications, the linear multiple regression model is often modified to allow for nonlinearity in an independent variable. I argue here that in practice it may often be desirable to specify a Bayesian prior that the unknown functional form is "simple" or "uncomplicated" rather than to parameterize the nonlinearity. I define "discrete smoothness priors" and "continuous smoothness priors" and show how posterior mean efforts can easily be derived by using ordinary multiple linear regression modified with dummy variables and dummy observations. I point out relationships with spline and polynomial interpolation and provide illustrative examples of cost function estimation.

### Working Papers Series

Individual copies of NBER Working Papers are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies of the Working Papers by sending \$1.50 per copy to Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please make checks payable to the National Bureau of Economic Research, Inc.

*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 July 1982 are presented below. For previous Working Papers, see past issues of the *NBER Reporter*. The Working Papers are intended to make results of NBER research available to other economists in preliminary form, to encourage discussion and suggestions for revision before final publication. Working Papers are not reviewed by the Board of Directors of NBER.

#### Investment in R and D, Costs of Adjustment, and Expectations

**Mark A. Schankerman and M. Ishaq Nadiri**  
Working Paper No. 931  
July 1982  
JEL Nos. 621, 522

This paper proposes a framework that integrates convex costs of adjustment and the formation of expectations in firms' decisions to invest in R and D. The

model is based on cost minimization subject to the firm's expectations of the stream of output and the price of R and D; it results in equations for actual and for multiple-span planned investments in R and D and for the realization error as a function of the firm's expectations. Our model accommodates alternative specifications of the formation of expectations and provides a methodology for empirically testing these hypotheses. We derive estimable equations and testable parameter restrictions for the rational, adaptive, and static expectations hypotheses. Based on pooled firm data, our empirical results strongly reject the rational and static expectations hypotheses and generally support adaptive expectations.

## **The Optimal Use of Fines and Imprisonment**

**A. Mitchell Polinsky and Steven Shavell**

Working Paper No. 932

July 1982

This paper examines the use of fines and imprisonment to deter individuals from engaging in harmful activities. These sanctions are analyzed separately as well as together, first for identical, risk-neutral individuals and then for two groups of risk-neutral individuals who differ by wealth.

When only fines are used and individuals are identical, the optimal fine and the probability of apprehension are such that there is some "underdeterrence." If individuals differ by wealth, then the optimal fine for the wealthier group exceeds the optimal fine for the less wealthy group.

When imprisonment alone is used and individuals are identical, the optimal length of imprisonment and its probability may be such that there is either underdeterrence or overdeterrence. If individuals differ by wealth, then the optimal length of imprisonment for the wealthier group may be either longer or shorter than the term for the less wealthy group.

When both fines and imprisonment are used, it is desirable to use the fine to its maximum feasible extent before possibly supplementing it with a prison sentence. We also discuss the effects of individuals' risk aversion on our results.

## **Estimating Distribution Lags in Short Panels with an Application to the Specification of Depreciation Patterns and Capital Stock Constructs**

**Zvi Griliches and Ariel Pakes**

Working Paper No. 933

July 1982

In this paper, we investigate the problem of estimating distributed lags in short panels. Estimates of the

parameter of distributed lag relationships based on single time series of observations usually have been rather imprecise. The promise of panel data is in the  $N$  repetitions of the time series that they contain; this should allow one to estimate the identified lag parameters with greater precision. On the other hand, panels tend to track their observations over only a relatively short time interval. Thus, some assumptions about the contribution of the unobserved presample  $x$ s to the current values of  $y$  have to be made before any lag parameters can be identified from such data. In this paper we suggest two such assumptions both of which are testable, at least in part; and we outline appropriate estimation techniques. The first assumption places reasonable restrictions on the relationship between the presample and the insample  $x$ s, while the second imposes conventional functional form constraints on the lag coefficients. The paper concludes with an example that empirically investigates how to construct a "capital stock" for profit or rate of return regressions.

## **The American Fiscal Deficit: Facts and Effects**

**Herschel I. Grossman**

Working Paper No. 934

July 1982

JEL No. 321

The main objective of this paper is to understand and evaluate the recently expressed anxiety among Americans about large fiscal deficits. The paper begins with a discussion of the problems involved in measuring the fiscal deficit. One general conclusion is that all interesting measures of the federal fiscal deficit have increased substantially over the past eight presidential terms and are likely to increase more in the near future. The paper goes on to analyze possible connections between fiscal deficits and inflation, economic growth, and fluctuations in the level and composition of economic activity. Important conclusions are: (1) monetary policy, inflation, and aggregate economic activity are all largely independent of the fiscal deficit; and (2) the fiscal deficit can have major effects on the division of output between consumption and investment. Key elements in the analysis are: the effects of taxation on consumption and investment demands, and the relations between real and financial developments.

## **Optimal Funding and Asset Allocation Rules for Defined-Benefit Pension Plans**

**J. Michael Harrison and William F. Sharpe**

Working Paper No. 935

July 1982

This paper considers a world in which: pension funds may default; the cost of the associated risk of default is

not borne fully by the sponsoring corporation; and there are differential tax effects. The focus is on ways in which the wealth of the shareholders of a corporation sponsoring a pension plan might be increased if the Internal Revenue Service (IRS) and the Pension Benefit Guaranty Corporation (PBGC) were to follow simple and naive policies. Under the conditions examined, the optimal policy for pension plan funding and asset allocation is shown to be extremal in a certain sense. This suggests that the IRS and the PBGC may wish to use more complex regulatory procedures than those considered in the paper.

## **A Framework for Monetary and Banking Analysis**

**Stanley Fischer**

Working Paper No. 936

July 1982

JEL No. 311

This paper sets out and analyzes a simple model of money, banking, and determination of the price level. The model is first used to illustrate recent developments in the theory and analysis of banking, particularly the distinction between the portfolio management services provided by banks and their provision of transactions services. The assumptions are then extended to analyze price level determination in an economy that becomes an inside-money economy as high-powered money goes out of use. The paper concludes by discussing the major unresolved questions about banking, money, and price level determination.

## **Products Liability, Consumer Misperceptions, and Market Power**

**A. Mitchell Polinsky and William P. Rogerson**

Working Paper No. 937

July 1982

This paper compares alternative liability rules for allocating losses from defective products when consumers underestimate these losses and producers may have some market power. If producers do not have any market power, the rule of strict liability leads to both the first-best accident probability and industry output. If producers do have some market power, strict liability still leads to the first-best accident probability, but there will now be too little output of the industry. It is shown that if market power is sufficiently large, a negligence rule is preferable. Under this rule, firms can still be induced to choose the first-best accident probability, but now the remaining damages are borne by consumers. Since consumers underestimate these damages, they buy more than under strict liability. However, there is a limit to how much extra consump-

tion the negligence rule can encourage. It is shown that if market power is sufficiently large, the rule of no liability may then be preferred to the negligence rule. Without any liability imposed, producers will not choose the first-best accident probability. However, the increased output of the industry may more than compensate for this.

## **Pension Funding Decisions, Interest Rate Assumptions, and Share Prices**

**Martin Feldstein and Randall Mørck**

Working Paper No. 938

July 1982

JEL Nos. 520, 310

This paper explores how unfunded pension obligations affect the market values of firms. Firms appear to choose the interest rate they use in discounting future benefit obligations so as to balance the tax advantages of a low rate against the more healthy-looking annual reports a high rate allows. Investors seem to penetrate this ruse and value firms as if obligations were figured at a standard rate. The rate thus used seems to be much lower than current long-term interest rates. Pension liabilities are therefore overemphasized by the market. There is also some evidence that pension assets are undervalued. This suggests that growth of the private pension system might increase savings by investors and firms.

## **Torts in Which Victim and Injurer Act Sequentially**

**Steven Shavell**

Working Paper No. 939

July 1982

This paper considers the effect of liability rules on accident avoidance in two types of sequential situations: (1) those where the victims act first and the injurers second; and (2) those where the reverse is true. What is particularly interesting about liability rules in these types of sequential situations is that the second party behaves in response to the first, and the first party has already taken this into account. The major result is that liability rules induce optimal behavior only if they lead the party who acts second to do so optimally if and only if the first party did so. In an important extension of the basic model considered, however, this result may not hold.

## **Minimum Hours Constraints and Retirement Behavior**

**Alan L. Gustman and Thomas L. Steinmeier**

Working Paper No. 940

July 1982

JEL No. 821

This paper presents statistics that confirm the existence of constraints on minimum hours for a majority of jobs held by prime aged male workers who are not self-employed. It then considers the implications of these constraints for studies of retirement behavior and related policy analyses. Potential biases associated with conventional analyses, that either ignore the existence of constraints on minimum hours or assume that they are pervasive, are then discussed in the context of structural life-cycle retirement models. A more realistic but still imperfect specification, which can be estimated given available data, assumes constraints on minimum hours on the main job and variable hours elsewhere.

## **The Leading Indicator Approach to Economic Forecasting—Restrospect and Prospect**

**Philip A. Klein and Geoffrey H. Moore**

Working Paper No. 941

July 1982

For many years a system of leading, coincident, and lagging economic indicators, first developed in the 1930s by the National Bureau of Economic Research, has been widely used in the United States to appraise the state of the business cycle. Similar systems have been developed by government or private agencies in Canada, Japan, the United Kingdom, and more recently in many other countries. A few years ago the Organization for Economic Cooperation and Development set up a working party to develop this type of analysis, and most of the member countries participated. During the past three years, the Center for International Business Cycle Research at Rutgers University has given guidance in this field to some fifteen countries in Europe, Asia, the Middle East, Africa, and South America.

Our purpose in this paper is to explain briefly the theory and rationale underlying this approach to economic forecasting, to describe the more important statistical procedures used, and to review the evidence on how the indicators have performed in practice. The tests of performance concentrate on data not used in the selection of the indicators, in the United States and nine other countries. We conclude with some suggestions for future research and development, including the application of the approach to the analysis of inflation.

## **World Shocks, Macroeconomic Response, and the Productivity Puzzle**

**Michael Bruno**

Working Paper No. 942

July 1982

On the basis of a comparative growth analysis of ten major industrial countries, this paper shows that the productivity slowdown of the 1970s can be attributed to a combination of the energy and raw material price shocks and the contractionary macroeconomic policies that were followed in response to these shocks. For a raw-material-intensive sector, the rise in the relative price of material inputs lowered gross output per unit of the other complementary factors, labor and capital. For the aggregated manufacturing sector of the ten economies, this explains on average about 60 percent of the productivity slowdown. A more disaggregated analysis for U.K. manufacturing industries is also given.

On the demand side, deterioration in terms of trade reduced real income and consumption, and the profit squeeze lowered investment demand. Fear of inflation and current account deficits imparted a further deflationary bias to aggregate demand management in most industrial countries. Depressed demand and greater output variability hampered factor reallocation in response to the exogenous shocks.

The paper further shows the overriding role of demand contraction, particularly in the nonmanufacturing industries, in a comparative analysis of the aggregate business sector; it also provides a partial view of labor productivity growth in the service industries of these economies.

The industrial countries may be contrasted with the middle-income, developing countries where output and productivity continued to grow more evenly after 1973, at the cost of large current account deficits and higher persistent inflation. This provides further evidence that productivity growth is closely linked to macroeconomic response.

## **Are Inflation Rates Different for the Elderly?**

**Michael J. Boskin and Michael D. Hurd**

Working Paper No. 943

July 1982

JEL Nos. 134, 227, 921

This paper presents new evidence on cost-of-living indexes and annual inflation rates for the elderly population as well as the general population. It employs a now fairly widely accepted adjustment for the inappropriate treatment of housing in the Consumer Price Index. We disaggregate by five-year age cohorts for the

elderly and analyze various features of the differences in the inflation faced by the elderly and the general population, as well as within the elderly group itself. We conclude that, conditional on a housing adjustment, the inflation experience of the elderly from 1961–81 was quite similar to that of the general population, both cumulatively and year-by-year.

## **Pensions as Severance Pay**

**Edward P. Lazear**

Working Paper No. 944

July 1982

Using a new data set drawn from the 1980 Bankers Trust corporate pension plan study, this work corroborates earlier claims that pensions serve as severance pay. A model is developed that shows how pension values that vary with the age of retirement make both workers and firms better off by moving the equilibrium in the direction of a perfect-information, first-best optimum. This requires that pension values decline with the age of retirement beyond a certain point. Evidence from the 1975 and 1980 data sets supports this claim. To the extent that any significant change has occurred between 1975 and 1980, the ratio of pension value at early retirement to pension value at normal retirement has increased.

## **Bubbles, Rational Expectations, and Financial Markets**

**Olivier J. Blanchard and Mark W. Watson**

Working Paper No. 945

July 1982

JEL Nos. 130, 310

This paper investigates the nature and the presence of bubbles in financial markets. Are bubbles consistent with rationality? If they are, do they, like Ponzi games, require the presence of new players forever? Do they imply impossible events in finite time, such as negative prices? Do they need to go on forever to be rational? Can they have real effects? These are some of the questions asked in the first three sections. The general conclusion is that bubbles, in many markets, are consistent with rationality, and that phenomena such as runaway asset prices and market crashes are consistent with rational bubbles.

In the last two sections, we consider whether the presence of bubbles in a particular market can be detected statistically. The task is much easier if there are data on both prices and returns. As shown by Shiller

and Singleton, in this case the hypothesis of no bubble, which implies restrictions on the joint distribution of prices and returns, can be tested. In markets in which returns are difficult to observe, possibly because of a nonpecuniary component such as gold, the task is more difficult. We consider the use of both “runs tests” and “tail tests” and conclude that they both give circumstantial evidence at best.

## **Cost Implications of Hospital Unionization: A Behavioral Analysis**

**David Salkever**

Working Paper No. 946

July 1982

JEL Nos. 913, 830

The growth of unionization among hospital workers was sharply accelerated by the 1974 amendments to the NLRA covering voluntary workers in hospitals. With continuing inflationary pressures in the hospital sector, the cost implications of the recent and projected growth of hospital unions is of some concern to policymakers. This paper presents estimates of the impact of union costs based on data from hospitals in Maryland, Massachusetts, New York, and Pennsylvania. Cross-sectional regressions with data for 1975 yield positive union impacts of 3.3 percent on total costs, 4.1 to 5.9 percent on cost per case, and 6.1 percent on cost per day. Reestimation of the model with data on changes over the 1971–75 period yields similar results. We also find that the cost impact of unionization varies with the pattern of coverage (being lower for service employees and RNs) and with the extent of cost-based reimbursement. This suggests that future cost impacts of union growth may be moderated as prospective payment systems for hospitals become more widespread.

## **Domestic Saving and International Capital Movements in the Long Run and the Short Run**

**Martin Feldstein**

Working Paper No. 947

July 1982

JEL No. 441

The evidence and analysis in this paper support the earlier findings of Feldstein and Horioka (1980) that sustained increases in domestic savings rates induce approximately equal increases in domestic rates of investment. New estimates for the post-OPEC period, 1974–79, imply that each extra dollar of domestic saving increases domestic investment by approximately 85 cents in a sample of seventeen OECD countries.

An explicit analysis of the problems of identification and simultaneous equations bias suggests that the regression estimates are more relevant as a guide to the long-run response of international capital flows than to their short-run behavior. Coefficient estimates based on annual variations in savings and investment are subject to potentially severe simultaneous equations bias that is not present when annual observations are averaged over a decade or more and the regression is estimated with a cross-country sample of these averages.

A portfolio model of international capital allocation that is presented in the paper indicates that the short-run change in the rate of net foreign investment in response to a sustained increase in domestic saving is likely to be substantially greater than the ultimate steady-state response.

### **Are High-Income Individuals Better Stock Market Investors?**

**Martin Feldstein and Shlomo Yitzhaki**

Working Paper No. 948

July 1982

JEL No. 313

This paper presents evidence that the corporate stock owned by high-income investors appreciates substantially faster than the stock owned by investors with lower incomes. Those with very high incomes enjoy the greatest success on their investments while those with incomes under \$20,000 have the least success. The evidence indicates that the differences are large and that they have persisted for a long time.

### **A Synthesis of Keynesian, Monetary, and Portfolio Approaches to Flexible Exchange Rates**

**Thorvaldur Gylfason and John F. Helliwell**

Working Paper No. 949

July 1982

JEL No. 431

This paper presents a simple synthesis of Keynesian, monetary, and portfolio approaches to macroeconomic theory under flexible exchange rates. By including the key features of all the partial approaches in a general model, we show that some of the important contrasts that have been drawn between the approaches are attributable to a neglect of repercussions elsewhere in the economy. After reconciling these false contrasts, we show how some of the approaches still give different predictions about the effects of monetary and fiscal policy using differing assumptions about the international mobility of goods and financial assets.

## **General Equilibrium and Business Cycles**

**Fischer Black**

Working Paper No. 950

August 1982

In this paper, the general equilibrium models with complete markets can give the major features of business cycles. The models include real investment; information is costless and is available to everyone at the same time. Fluctuations in the match between resources and wants across many sectors create major fluctuations in output and employment, because moving resources from one sector to another is costly. Fluctuations in the demand for the services of durable goods cause much larger fluctuations in the output of durables and cause unemployment in the form of temporary layoffs. Since specialized factors cooperate in producing goods and services, it makes sense to lay people off in groups rather than to lower wages and wait for workers to quit. Similarly, a vacancy is created when a specialized factor is missing from such a group. Technology comes with varying levels of risk and expected return associated with the degree of specialization. More specialization means more severe fluctuations and a higher average level of unemployment, along with a higher average level of output and growth. Monetary policy, interest rates, and fiscal policy have no special roles to play in the model.

### **Tax Effects on the Allocation of Capital among Sectors and Individuals: A Portfolio Approach**

**Joel Slemrod**

Working Paper No. 951

August 1982

JEL No. 323

This paper deals with the allocational effects and the implications for efficiency of a system in which the tax rate on capital income differs depending on the recipient of the income and on the type of capital producing the income. It suggests that, in their attempts to measure the distortionary effect of the U.S. capital income tax system, economists may have been looking in the wrong places. In the presence of uncertainty, the intersectoral distortion may be much less than had previously been imagined. However, the tax system distorts in two other ways that have not received much attention: (1) It distorts the interhousehold allocation of the housing stock, since the aftertax rate of interest is one component of the opportunity cost of owner-occupied housing. (2) It distorts the interhousehold allocation of risk-bearing. Calculations using a simple, computable



general equilibrium model suggest that the excess burden from these latter two distortions is a significant component of the total distortionary impact of the tax system.

## Long-Run Trends in Patenting

**John Beggs**

Working Paper No. 952

August 1982

This paper examines patenting in the United States from its origins in 1790 up to 1980. The prime intent is to identify relationships between patenting and the rate of industrial development, and to further look for any regular cyclical patterns in the time series of patents themselves.

To this end, detailed records were gathered on annual patenting, along with key descriptive data on industry structure, for a sample of twenty industries for the period 1850 through 1940. In general, the correlations between changes in the rate of patenting and changes in industry characteristics are small. A tentative conclusion is that the rate of change in patenting may move inversely with the rate of change in value added. This leads to speculation on a "defensive R and D hypothesis" that may strongly reflect the choice of sample industries. The industries in the study were in existence in 1850 and managed to ward off challenges from other new industries so that they were still in existence in 1940. At each new challenge from a new product or a foreign competitor, these industries have attempted to protect their existing capital stock by upgrading the production process and final product. While these changes do not normally represent major technological advances, they are of a "tinkering" variety and are likely to produce large numbers of patents.

A special analysis of the 190-year time series of patents issued suggests that the rate of change of this variable might be characterized as a moving average process with lags at five and eight years.

## OSHA Enforcement, Industrial Compliance, and Workplace Injuries

**Ann P. Bartel and Lacy Glenn Thomas**

Working Paper No. 953

August 1982

JEL Nos. 820, 610

This paper develops and tests a three-equation simultaneous model of OSHA enforcement behavior,

industrial compliance, and workplace injuries. The enforcement equation is based on the assumption that OSHA acts as a political institution that gains support through the transfer of wealth from firms to employees; the empirical results are largely consistent with this notion. Contrary to previous work, we find that OSHA enforcement efforts have indeed had a statistically significant impact on industrial compliance and, further, that this compliance has led to a statistically significant decrease in worker injuries. The point estimate of the elasticity of the lost workday rate with respect to the OSHA inspection rate is  $-0.04$ .

## The Theory of Local Public Goods Twenty-Five Years after Tiebout: A Perspective

**Joseph E. Stiglitz**

Working Paper No. 954

August 1982

JEL No. 320

This paper asks under what conditions the fundamental theorem of welfare economics can be extended to economies with local public goods. There are some fairly restrictive sets of assumptions under which a competitive local public goods equilibrium (if it exists) is efficient; more generally, however, competitive local public goods equilibria may be inefficient in the allocation of individuals among communities, in the number of communities, and in the level and kinds of public goods provided.

This paper identifies and analyzes the primary sources of inefficiency. These "market" failures are closely related to some important policy issues concerning, for instance, urban centralization, fiscal decentralization, and regional redistribution. In communities in which landlords control the public sector, the level and kinds of public goods provided may be incorrect, and what goods are provided are supplied inefficiently. In contrast, in communities in which renters control the public sector, there are no incentives for efficiency in the supply of public goods. Because of what we refer to as rental capitalization, there may in fact be perverse incentives with respect to the kinds of public goods or "bads" provided.

It is not only the case that not every competitive equilibrium is Pareto optimal, but also that not every Pareto efficient allocation can be sustained by a competitive local public goods equilibrium (with the appropriate lump sum redistributions). Just as the fundamental theorem of welfare economics does not adequately reflect the vices and virtues of competition in the market economy with purely private goods, so too the virtues of a decentralized mechanism for providing public goods may be vastly underestimated by this analysis.

## **Taxes, Firm Financial Policy, and the Cost of Capital: An Empirical Analysis**

**Alan J. Auerbach**

Working Paper No. 955

August 1982

JEL Nos. 520, 323

This paper develops a theoretical model of firm behavior consistent with the maximization of shareholder utility and empirically derives testable implications of different theories of equity finance. Using data on firm earnings and previous investment and financial behavior, I assess whether firms treat new share issues as a more expensive source of finance than retentions and whether such behavior varies across firms according to the composition of their shareholders.

The results strongly support the hypothesis that firms perceive a higher cost of capital when issuing new shares, and that, as theory would predict, the cost of capital varies significantly across firms that have different estimated tax clienteles.

## **Valuing Pensions (Annuities) with Different Types of Inflation Protection in Total Compensation Comparisons**

**James E. Pesando**

Working Paper No. 956

August 1982

Pensions provided in the public sector are often indexed, while pensions in the private sector typically are not. To conduct the comparisons of total compensation that ostensibly guide government pay policy, one must value annuities that differ in their degree of inflation protection. This paper conducts the exercise from the viewpoint of modern finance theory and contrasts the results with those of a representative government, the government of Canada. The results suggest that governments may typically understate the value of indexed pensions and overstate the value of pensions that receive incomplete inflation protection. A contributing factor is the apparent belief that standardizing actuarial assumptions is sufficient to ensure comparability, in spite of the fact that risk is ignored and that interest rate and inflation assumptions are typically not those of the market.

## **Pension Funding, Pension Asset Allocation, and Corporate Finance: Evidence from Individual Company Data**

**Benjamin M. Friedman**

Working Paper No. 957

August 1982

JEL No. 313

This paper examines the relationship between U.S. corporations' management of their pension plans and their management of the more familiar aspects of corporate financial structure. The chief conclusion, on the basis of data for 7828 pension plans sponsored by 1836 companies and their subsidiaries, is that corporations manage the pension plans that they sponsor as if these plans had something to do with the corporation. Different responses appear to characterize firms' behavior in different contexts, but the evidence persistently indicates clear relationships between decisions about pension assets and liabilities and decisions about the other assets and liabilities of the firm. At the same time, the pattern of these relationships is, more often than not, inconsistent with familiar hypotheses that have emerged thus far in the theoretical literature analyzing pension aspects of corporate finance. Hence the conclusion from the data is that the connections between pension decisions and corporate financial decisions in the more conventional sense are, at least as yet, not well understood.

## **The Reaction of Stock Prices to Unanticipated Changes in Money**

**Douglas K. Pearce and V. Vance Roley**

Working Paper No. 958

August 1982

JEL Nos. 313, 311

This paper investigates the short-run effect of unexpected changes in the weekly money stock on common stock prices. Survey data on money market participants' forecasts of money changes are employed to construct the measure of unanticipated movements in the money stock. The results indicate that an unexpected increase in money depresses stock prices and, consistent with the efficient markets hypothesis, only the unexpected part of the weekly money announcement causes stock price fluctuations. The October 1979 change in Federal Reserve operating procedures appears to have made stock prices somewhat more sensitive to large money surprises.

## **Optimal Currency Diversification for a Class of Risk Averse International Investors**

**Jorge Braga de Macedo**

Working Paper No. 959

August 1982

This paper derives the optimal consumption and portfolio rules for an international investor with constant expenditure shares,  $\alpha_i$ , and constant relative risk aversion,  $1-\gamma$ , in a dynamic context and a framework of continuous-time finance theory. The index of value obtained from the consumption rule is used to calculate real returns on  $N$  different currencies in terms of their purchasing power over  $N$  goods. The portfolio rule is defined by the determinants of the purchasing powers, namely exchange rates and prices expressed in the numeraire currency. The optimal portfolio is interpreted as a capital position (given by the expenditure shares) and zero-net-worth portfolios that depend on unanticipated inflation and risk aversion. I show that the minimum variance portfolio is independent of returns but depends on expenditure patterns; the speculative portfolio depends on risk aversion and real return differentials. When the effect of preferences on real return differentials is made explicit, the minimum variance portfolio is affected by risk aversion. In that case, the effect of an increase in  $\alpha_i$  on the portfolio proportions  $x_i$  will be positive if relative risk aversion is greater than one, as generally presumed.

I use actual data from eight major countries to compute optimal portfolios based on real return differentials for different weighting schemes, degrees of risk aversion, and sample periods (when exchange rates and prices are assumed to be Brownian).

## **International Portfolio Diversification: Short-Term Financial Assets and Gold**

**Jorge Braga de Macedo, Jeffrey A. Goldstein, and David M. Meerscham**

Working Paper No. 960

August 1982

Using a continuous-time finance-theoretic framework, this paper presents the optimal portfolio rule of an international investor who consumes  $N$  national composite goods and who holds  $N$  domestic-currency-denominated assets with known nominal interest rates. The environment is one where prices of goods, assets, and exchange rates follow geometric Brownian motion. We show that the currency portfolio rule described in Macedo (1982a) is applicable to the case where there are  $N$  assets with a known price and one asset, gold, with a random price in terms of the numeraire.

Under these assumptions, it is found that the optimal portfolio of an investor consuming goods from all major industrialized countries (according to their weight in total trade) would be dominated in March 1981 by long positions in U.S. dollars (25 percent), yen (17 percent), Deutschmarks (16 percent), French francs (15 percent), and pounds sterling (10 percent). An investor consuming only U.S. goods, by contrast, would hold 96 percent of his optimal portfolio in U.S. dollars. Because of the covariance of exchange rates and gold, the exclusion of the latter generates substantial reshuffling.

The analysis of the evolution of portfolios over time shows that shares changed dramatically at the beginning of the period and did not begin to approach their March 1981 values until the end of 1976. In the case of the yen and the pound there were oscillations throughout the period. With respect to the dollar share in the optimal portfolio of the U.S. and international investor, we find that in the period between late 1974 and mid-1976, a period in which the dollar is considered to have been "strong," a large decline in its optimal share took place.

## **Comparing Productivity Growth: An Exploration of French and U.S. Industrial and Firm Data**

**Zvi Griliches and Jacques Mairesse**

Working Paper No. 961

August 1982

This paper compares and analyzes the growth of productivity in the manufacturing industries and firms in France and the United States based on newly assembled comparable data sets in both countries. Three explanations of the recent productivity slowdown are reviewed: shortfall in physical investment, rise in materials prices, and a decline in the intensity or fecundity of R and D investment. These explanations are found not to bear on the differences in productivity growth between and within the two countries, either at the industry or the firm levels.

## **Pension Wealth and Household Savings: Tests of Robustness**

**Mervyn A. King and Louis Dicks-Mireaux**

Working Paper No. 962

August 1982

JEL Nos. 915, 921

A substantial literature exists on the impact of pension schemes, both public and private, on the level of

household saving. Yet there is no clear consensus on the impact of pensions on private saving. This paper shows how beliefs about the displacement effect of pensions on saving are modified by prior beliefs about variables that might be relevant in an equation for private savings and by beliefs about the magnitude of the displacement effect. Using data for 8279 households, and estimates of pension wealth (both private and Social Security) that we construct for each household in the sample, we find the estimated displacement effects to be relatively robust with respect to both types of prior belief.

### **Exchange Rates, Inflation, and the Sterilization Problem: Germany, 1975-81**

**Maurice Obstfeld**  
Working Paper No. 963  
August 1982  
JEL No. 431

When the goals of internal and external macroeconomic equilibrium are in conflict, sterilized intervention in the foreign exchange market may provide an independent policy instrument through which the central bank can resolve its dilemma, at least in the short run. This paper looks at the West German Bundesbank's use of sterilization during the recent years of exchange-rate flexibility and asks whether the Bundesbank in fact pursued sterilization from 1975-81, and whether sterilized foreign exchange intervention exerted a significant influence on the exchange rate in the German case. My estimate of a stylized, Bundesbank reaction function suggests an affirmative answer to the first of these questions.

To assess the efficacy of sterilized intervention, I estimate a structural portfolio balance model of German asset markets and prices. I then use dynamic, perfect-foresight simulations of this empirical model to ascertain whether imperfect substitutability between foreign and domestic bonds is sufficient to allow the Bundesbank to attain independent internal and external goals (over the short run of about a month). The model predicts that the Bundesbank has little if any power to influence the exchange rate over that time span without altering current or expected future money-market conditions.

### **The Economic Effects of Government Expenditures**

**Laurence J. Kotlikoff**  
Working Paper No. 964  
August 1982  
JEL No. 320

This paper discusses conceptual problems of distinguishing "expenditure" policy from "tax" and "deficit"

policy. I argue that each of these concepts is ill-defined and none provides a useful basis for examining the government's underlying fiscal policies. The fundamentals of fiscal policy involve: changes in marginal incentives; inframarginal, intra- and intergenerational redistribution; and direct government consumption. The paper reviews some of the effects of these fundamental policy choices on economic growth.

### **Government Debt and Private Leverage: An Extension of the Miller Theorem**

**Robert L. McDonald**  
Working Paper No. 965  
August 1982

This paper shows how government financing decisions can influence corporate decisions to use debt or equity finance. In particular, it is shown that an increase in the stock of taxable government debt reduces the equilibrium quantity of corporate debt, and that an increase in the stock of tax-free government debt reduces the equilibrium quantity of corporate equity. The effects of inflation rate and tax rate changes are also considered.

### **The Fiscal Framework of Monetary Policy**

**Martin Feldstein**  
Working Paper No. 966  
August 1982

This paper illustrates the importance of the fiscal framework for monetary analysis by discussing three separate issues. First I examine how the fiscal framework changes the macroeconomic equilibrium associated with different steady-state rates of money growth. This section includes a summary of research that I have presented elsewhere and comments on several additional aspects of the way in which the fiscal structure destroys the neutrality of monetary policy.

The second section deals with the short-run impact of changes in monetary policy. Here again the fiscal structure complicates the economy's response to monetary policy.

The final section looks at the effect of the fiscal structure on the central bank's choice of monetary policies. Because fiscal structures affect the costs and benefits of monetary policies, they are likely to influence the policies adopted.

## **Tax Policy and Foreign Direct Investment in the United States**

**David G. Hartman**

Working Paper No. 967

August 1982

JEL Nos. 441, 323

This paper provides some evidence on one aspect of international investment: the impacts of domestic tax policy on foreign direct investment in the United States. The possible impacts, which are discussed in the first section, are complex. For example, an investment incentive that applies to both domestic and foreign investors would be expected to result in increased foreign investment in the United States. On the other hand, a savings incentive, which has no direct impact on foreign investors, would nevertheless tend to increase domestic investors' demand for capital assets, thereby driving down the returns expected by foreign investors and possibly resulting in significant decreases in foreign investment. Because of measurement difficulties, we are only partly successful in obtaining precise estimates of this sort of impact. However, the results we do obtain suggest that foreign investment in the United States is strongly affected, in the manner predicted, by changes in domestic tax policy.

## **An Extended Accelerator Model of R and D and Physical Investment**

**Jacques Mairesse and Alan K. Siu**

Working Paper No. 968

August 1982

Using a multivariate, autoregressive framework, we have found a simple causal structure for the variables of interest ( $q$ ,  $s$ ,  $r$ , and  $i$ ) that is consistent with our data. As expected from the stock market efficiency hypothesis,  $q$  (the one-period holding rate of return in the stock market) is exogenous relative to the other three variables (or a Granger causes them). As postulated in the traditional accelerator model of investment, the rate of growth of sales,  $s$ , can also be treated as exogenous to the rates of growth of R and D and physical investment,  $r$  and  $i$ . Moreover, no strong feedback interaction is detected between the last two ( $r$  and  $i$ ).

Within the simple structure of the extended accelerator model, the substantive conclusion is that R and D and physical investment react very similarly to the growth of sales and to movements in  $q$ ; the response of R and D is, however, more stable or less irregular than that of physical investment. Expected demand and expected profitability thus both appear to be important determinants for R and D expenditures and physical investment.

## **The Welfare Cost of Social Security's Impact on Private Saving**

**Martin Feldstein**

Working Paper No. 969

August 1982

Although there have been several studies of the effect of Social Security on private saving, there has been no attempt to measure the welfare cost of this distortion. This paper develops an analytic framework for this evaluation and presents numerical calculations.

## **The Optimal Level of Social Security Benefits**

**Martin Feldstein**

Working Paper No. 970

August 1982

JEL Nos. 322, 915

The optimal level of Social Security benefits depends on balancing the protection that these benefits offer to those who have not provided adequately for their own old age against the welfare costs of distorting economic behavior. The primary such cost is the distortion in private saving. This paper derives the level of Social Security benefits that is optimal in three basic cases.

In the first section of the paper, the optimal level of benefits is derived for an economy in which all individuals do not anticipate retirement at all and therefore do not save. The second and third sections then derive the optimal benefits for economies with two different definitions of attitudes toward retirement and saving.

## **Anticipations, Recessions, and Policy: An Intertemporal Disequilibrium Model**

**Olivier J. Blanchard and Jeffrey Sachs**

Working Paper No. 971

August 1982

JEL Nos. 023, 130, 321

This paper presents an intertemporal disequilibrium model with rational expectations; that is, a model in which agents rationally anticipate the future but in which prices and wages may not adjust fast enough to maintain continuous market clearing. Therefore, optimizing firms and households base their intertemporal plans on anticipations of both future quantity restraints and future prices.

Such a policy shows clearly that the effect of a policy depends not only on its current values but also on its anticipated path. After a presentation of the model and its basic dynamics, we therefore consider the effects of various paths of fiscal policy on the economy.

## **A Theory of Expropriation and Deviations from Perfect Capital Mobility**

**Jonathan Eaton and Mark Gersovitz**

Working Paper No. 972

August 1982

This paper develops a theory of capital movements in the presence of potential expropriation, as derived from utility-maximizing behavior by host countries. Potential investors, anticipating this behavior, modify their investment plans so as to avoid expropriation. Whenever the host country faces competitive foreign investors, expropriation represents part of a time-consistent but suboptimal plan [of the type discussed by Kydland and Prescott (1977)] in which the consequent equilibrium may be characterized by a number of distortions.

In the simplest model we analyze, a host country faces a large number of potential, competitive foreign investors. We explore the implications of the threat of expropriation for shadow pricing in the host country and for the optimal technology choice by potential investors. We also consider variants of the model in which: (1) the potential investor is in a monopoly position vis-à-vis the host country; (2) the foreign investment project is subject to risk that is unresolved at the time of the expropriation decision; and (3) factors affecting the optimality of expropriation by the host country are unresolved at the time of the investment decision.

The larger the penalty incumbent on the host country in the event of expropriation, the greater its welfare in the simple, competitive model. When the foreign investor is a monopolist, however, this result is reversed.

## **A Transactions-Based Model of the Monetary Transmission Mechanism: Part 1**

**Sanford J. Grossman and Laurence Weiss**

Working Paper No. 973

September 1982

This paper proposes a new explanation of how open-market operations can change both real and nominal interest rates. It emphasizes three frequently mentioned but seldom explicitly articulated features of actual monetary economies: (1) going to the bank is costly, so people tend to bunch their cash withdrawals; (2) people do not all go to the bank simultaneously; and (3) at any instant, agents hold different amounts of cash. These considerations imply that an open-market purchase of a bond for fiat money will: drive down nominal and real interest rates; lead to a delayed, positive price response; and have damped, persistent effects on both prices and nominal interest rates if agents have logarithmic utility of consumption. We assume that output is exogenous, so that the model can shed only indi-

rect light on the relationship between money and aggregate output.

The model emphasizes how a change in the money supply affects the spending decision of those agents making withdrawals at the time of an open-market operation. Considerations of intertemporal substitution imply that the real rate must decline to induce these agents to consume more. Because this new money is spent gradually, prices will rise slowly and reach their steady-state level long after the interval of time between trips to the bank.

## **A Transactions-Based Model of the Monetary Transmission Mechanism: Part 2**

**Sanford J. Grossman**

Working Paper No. 974

September 1982

In Part 1, the dynamics of an open-market operation were analyzed for the case of logarithmic utility. Although such a utility function is useful for illustrative purposes, the implication that current prices are independent of current and future monetary injections is unsatisfactory. This implication results from the fact that with logarithmic utility, future consumption is independent of the rate of return to savings. In Part 2, the logarithmic utility assumption is replaced by the more general assumption that utility is of the constant elasticity form, so that future consumption is an increasing function of the interest rate. Although a closed-form solution cannot be derived for this case, it is shown that the basic results of Part 1 still hold: an increase in money causes a sluggish response of the price level and a fall in interest rates.

## **Unemployment with Observable Aggregate Shocks**

**Sanford J. Grossman, Oliver Hart, and Eric Maskin**

Working Paper No. 975

September 1982

Consider an economy subject to two kinds of shocks: (1) *observable* shocks to the relative demand for final goods that cause dispersion in relative prices, and (2) shocks, *unobservable* by workers, to the technology for transforming intermediate goods into final goods. A worker in a particular intermediate goods industry knows that the unobserved price of his output is determined by both the technological shock that influences which final-goods industry uses his output intensively, and by the price of the final good that uses his output intensively. When there is very little relative price dispersion among final goods, it does not matter which

final goods industry uses the worker's output. Thus, the technological shock is of very little importance in creating uncertainty about the worker's marginal product when there is little dispersion of relative prices. An increase in the dispersion of relative prices amplifies the effect of technological uncertainty on a worker's marginal-value product.

We consider a model of optimal labor contracts in a situation where the workers have less information than the firm about their marginal-value product. A relative price shock of the type described above increases the uncertainty that workers have about their marginal-value product. We show that with an optimal, asymmetric-information employment contract, the industries that are adversely affected by the relative price shock will contract more than they would under complete information (that is, where workers could observe their marginal-value product). On the other hand, the industry that is favorably affected by the relative price shock will *not* expand by more than would be the case under complete information. Hence, an observed relative demand shock, which would leave aggregate employment unchanged under complete information, will cause aggregate employment to fall under asymmetric information about the technological shock.

## **Life-Cycle Effects on Consumption and Retirement.**

**Daniel S. Hamermesh**  
Working Paper No. 976  
September 1982  
JEL Nos. 821, 921, 915

This paper examines the effects on consumption and retirement of characteristics of the life cycle, especially the length of the horizon. At any given age people will work more and consume less if they expect to live longer. I test this and other propositions on several sets of data. I use the Terman sample of gifted individuals (320 in 1972, 228 in 1977) to relate work status to the length of the horizon, as proxied by parents' longevity. The results suggest the expected positive effect on effort, but its magnitude is quite small. I then use the panel from the Retirement History Survey to estimate jointly life-cycle effects on consumption and retirement for 1973 and 1975. There is a weak, small effect of a more distant horizon (proxied by the number of living parents) in increasing work effort and a stronger, but still fairly small, effect in reducing consumption; goods and leisure are consumed jointly, suggesting their complementarity in household production; and spending propensities out of Social Security wealth are far below those out of pension wealth. The small effect of changes in the horizon on work effort suggests that the rapid secular increase in longevity has produced a disproportionate increase in people's lifetime demand for leisure. The implied small increase in lifetime income

and the slight reduction in consumption among persons with longer horizons indicate that increased longevity has not been met with sufficient spending cuts to enable people to maintain real consumption over their longer lifetimes.

## **Labor Force Participation: Timing and Persistence**

**Kim B. Clark and Lawrence H. Summers**  
Working Paper No. 977  
September 1982

This paper examines the relative importance of timing and persistence in explaining cyclical fluctuations in labor supply. We use data from the natural experiment provided by World War II, cross-sectional data on local U.S. labor markets, and aggregate time-series data in the empirical work. We find little evidence that timing effects play an important role in labor market dynamics. The evidence suggests that views emphasizing persistence are more accurate and that previous employment tends to raise the probability of subsequent employment.

## **A Monetary Equilibrium Model with Transactions Costs**

**Julio J. Rotemberg**  
Working Paper No. 978  
September 1982

This paper presents the competitive equilibrium of an economy in which people hold money for transactions purposes. It studies both the steady states that result from different rates of monetary expansion and the effects of such nonsteady-state events as an open-market operation. Even though the model features no uncertainty and perfect foresight, open-market operations affect aggregate output. In particular, a simultaneous increase in money and governmental holdings of capital temporarily raises aggregate capital and output while it lowers the real rate of interest on capital.

## **Are Unemployment and "Out of the Labor Force" Behaviorally Distinct Labor Force States?**

**Christopher J. Flinn and James J. Heckman**  
Working Paper No. 979  
September 1982

This paper formulates and tests the hypothesis that the categories "unemployed" and "out of the labor force"



are behaviorally distinct states of the labor force. Our empirical results indicate that they are. In the empirically relevant range, the exit rate from unemployment to employment exceeds the exit rate from "out of the labor force" to employment. This evidence is shown to be consistent with a simple job search model of productive unemployment with log-concave distributions of wage offers. We prove that if unemployed workers receive job offers more frequently than workers out of the labor force, and if distributions of wage offers are log concave, then the exit rate from unemployment to employment exceeds the exit rate from "out of the labor force" to employment.

## **Monetary Policy with a Credit Aggregate Target**

**Benjamin M. Friedman**  
Working Paper No. 980  
September 1982  
JEL No. 311

The principal criteria for the selection of an intermediate target for monetary policy are: (1) that the target be closely related to the nonfinancial objectives of monetary policy; (2) that it contain information about the future movements of those relevant aspects of the non-financial economy; (3) that it be closely connected to the instruments over which the central bank can exert direct control; and (4) that data on it be readily available on a timely basis.

The evidence presented in this paper indicates that, on each of the four criteria considered, total net credit is just as suitable as any of the monetary aggregates to serve as an intermediate target for monetary policy in the United States. As long as the Federal Reserve System continues to use an intermediate target procedure, this evidence is consistent with adopting a two-target framework based on both money and credit, thereby drawing on information from both sides of the public's balance sheet for the set of signals that govern the systematic response of monetary policy to economic events.

## **Production Technology Differences between Canadian-Owned and Foreign-Owned Firms Using Translog Production Functions**

**Vittorio Corbo and Oli Havrylyshyn**  
Working Paper No. 981  
September 1982  
JEL Nos. 440, 210

The discussion of foreign ownership in Canada frequently refers to a conventional view that foreign-owned firms are larger and more capital intensive, that they pay higher wages, and that they are more efficient. Unfortunately, evidence for these characterizations

has come from comparisons of partial productivity measures of labor, or measures of average capital intensity, with all the uncertainty that this entails. It is the object of this paper to compare the technology characteristics of Canadian and U.S.-owned establishments in Canada by means of a translog production function estimate, utilizing microlevel data. While we find strong evidence for the view that the two groups operate with different technologies, and that U.S.-owned establishments are larger, we do not find support for the conventional view that U.S.-owned establishments are more capital intensive, have higher labor productivity, or have lower costs of production.

## **Issues in the Coordination of Monetary and Fiscal Policy**

**Alan S. Blinder**  
Working Paper No. 982  
September 1982  
JEL Nos. 310, 320

This paper examines issues in the current debate over coordination between fiscal and monetary policies. Section II uses the traditional targets-instruments approach to assess the potential gains from greater coordination. Since greater coordination is often equated with looser money and tighter fiscal policy, I use two econometric models of the economy to estimate the quantitative importance of the policy mix. I also analyze the expectational effects that arise from the government budget constraint.

Section III shows that our attitudes toward the non-coordination problem may be quite different depending on why policies were not coordinated to begin with. It argues that there are plausible circumstances under which it may be better to have uncoordinated policies. Section IV turns to the design of a coordination system. It stresses the game-theoretic aspects of having two independent authorities and offers a general reason to expect that uncoordinated behavior will result in tight money and loose fiscal policy even when both parties would prefer the converse (easy money and tight fiscal policy). Finally, Section V considers the old "rules versus discretion" debate from the particular perspective of this paper.

## **Equilibrium and Disequilibrium Exchange Rates**

**Rudiger Dornbusch**  
Working Paper No. 983  
September 1982  
JEL No. 430

This paper reviews theoretical developments in the field of exchange-rate theory and then assesses the

empirical evidence. Since the empirical evidence does not lend support to the models that have been formulated, the paper suggests a number of reasons for that failure. These include the argument that the current account has been overrated as an exchange-rate determinant and that the role of "news" still remains to be tested in an extensive way.

I identify four exchange-rate problems as possibly justifying exchange market intervention or other policies. They are: (1) the possibility of speculative bubbles; (2) the peso problem; (3) the use of irrelevant information; and (4) the problem of real appreciation in the case of monetarist stabilization. In each case, the exchange rate can deviate from fundamentals, following the asset market rather than the goods market and thus can disturb macroeconomic equilibrium.

### **Covered Interest Parity, Uncovered Interest Parity, and Exchange-Rate Dynamics**

**Jonathan Eaton and Stephen J. Turnovsky**  
Working Paper No. 984  
September 1982  
JEL No. 431

A number of macroeconomic models of open economies under flexible exchange rates assume a strong version of perfect capital mobility, implying that currency speculation commands no risk premium. If this assumption is dropped, a number of important results no longer obtain. First, the exchange rate and the interest rate cannot be in steady state unless both the government deficit and the current account, not simply their sum, equal zero. Second, even in steady state the domestic interest rate can deviate from the foreign interest rate by an amount that depends upon relative supplies of domestic assets. Finally, introducing risk aversion on the part of speculators can reduce the response of the exchange rate to changes in supplies of domestic assets. In this sense rational speculators, if they are less risk averse than other agents, can *destabilize* exchange markets.

### **Union Wage Settlements during a Disinflation**

**John B. Taylor**  
Working Paper No. 985  
September 1982  
JEL Nos. 310, 830

This paper examines the role of union wage contracts in the periods of persistent inflation and the implication of these contracts for the problem of disinflation in the United States. I develop a quantitative model of overlapping contracts that is explicitly oriented toward the major union sector. The model takes account of expecta-

tations of future wages, prices, and employment conditions, just as in more aggregated models that have been used in macroeconomic research. In addition, the model explicitly uses the distribution of workers according to contract length as well as to deferred wage increases and escalator clauses. The main aim of the model is to determine the constraints that these contracts impose on disinflation paths. The model indicates that the maximum speed of disinflation is extremely slow in the early phases—if a rise in unemployment is to be avoided—but increases considerably before the new lower rate of inflation is reached. The disinflation path is considerably slower than that observed after periods of hyperinflation. However, the existence of a path of inflation reduction raises questions about whether the institution of union wage contracts is really the *direct* cause of costly disinflations, or whether their influence works indirectly by raising credibility problems about a monetary disinflation.

### **Social Security and Labor Supply Incentives**

**Roger H. Gordon**  
Working Paper No. 986  
September 1982  
JEL Nos. 915, 821

Many provisions of the Social Security program distort an individual's labor supply incentives. In particular, the payroll tax, the earnings test, the offsetting actuarial adjustment, and the dependence of the size of future benefits on the level of current earnings all affect the net return to extra work. The purpose of this paper is to estimate the size of the net tax rate on labor income in a variety of circumstances, taking into account all these provisions as well as the personal income tax. I find that, on net in the past, the Social Security program has provided a large subsidy to labor supply, which for many people effectively offsets the personal income tax. This subsidy rate, however, has been declining steadily over time.

### **Inflation, Monetary Velocity, and Welfare**

**Paul R. Krugman, Torsten Persson, and  
Lars E. O. Svensson**  
Working Paper No. 987  
September 1982

This paper develops a simple general equilibrium model of a monetary economy with a capital market in which monetary demand arises from a "cash-in-advance" constraint rather than from any direct role in the utility function. Uncertainty gives rise to a meaningful portfolio choice between money and bonds. We show that monetary velocity is increasing in the rate of inflation,

and that the optimal monetary policy is that which maximizes real balances. We show that the real rate of interest is not invariant to monetary policy: inflation lowers the real rate of interest.

## **Identification in Tax-Price Regression Models: The Case of Charitable Giving**

**Daniel Feenberg**

Working Paper No. 988

September 1982

JEL No. 323

Recent cross-section studies of the demand for charitable giving, owner-occupied housing, capital gains realizations, and the supply of labor hours have been careful to use prices net of income tax levies. The use of aftertax prices in a behavioral equation is a direct consequence of utility maximization under a budget constraint and cannot be objected to. Nevertheless, when most or all of the variance in prices comes from differences in marginal tax rates, questions can arise about the identification of structural parameters. The variables that determine marginal tax rates, chiefly income and marital status, are quite plausible determinants of the behavior being modeled, in addition to any indirect effect they might have through the tax price. A nonlinear dependence among the explanatory variables of a linear regression is not a source of bias, provided that the linear specification is known to be correct. Because the functional form of a demand equation is not known a priori, this identification through functional form is not persuasive. In this note, I propose an instrumental variable estimation designed to exploit any independent variation present; this allows unbiased estimates of tax-price elasticities under quite general conditions. I apply the estimator to the demand for charitable giving. The tax-price elasticity is then estimated to be  $-1.23$ .

## **The Role of Overlapping-Generations Models in Monetary Economics**

**Bennett T. McCallum**

Working Paper No. 989

September 1982

JEL Nos. 130, 310

The main arguments of this paper can be summarized as follows: (1) The overlapping-generations (OG) structure provides a useful framework for the analysis of macroeconomic issues involving intertemporal allocation. (2) As a "model of money," the basic OG setup—which excludes cash-in-advance or money-in-the-utility-function (MIUF) features—is inadequate and misleading because it neglects the medium-of-exchange property that is the distinguishing characteristic of money. (3) To verify this neglect, I note that, in contrast

with an axiomatic "traditional presumption," the same aggregate leisure/consumption bundles are available in equilibria in which "money" is valued and in which it is valueless. (4) The misleading nature of the model may be demonstrated by examples in which three of its most striking properties—tenuousness of monetary equilibrium, optimality of zero money growth, and price level invariance to open-market exchanges—disappear in the presence of modifications designed to reflect the medium-of-exchange property. (5) There is no compelling reason why cash-in-advance, MIUF, or other appendages should not be used in conjunction with the OG framework.

## **Unionization and Firm Performance: The Impact on Profits, Growth, and Productivity**

**Kim B. Clark**

Working Paper No. 990

September 1982

JEL No. 831

Using time-series data on over 900 product-line businesses in the North American (predominantly U.S.) manufacturing sector, this paper examines the impact of unionization on profitability, growth, and productivity. The first section of the paper develops a simple theoretical framework for studying the effect of the union on the firm's performance. A key result of this analysis is that information about union wage and productivity effects is not sufficient to permit prediction of the sign (or magnitude) of consequent changes in the rate of return on capital; one must know the parameters of production and demand. Expanding the model to allow for the effects of market structure and alternative bargaining regimes establishes the need to examine several indicators of firm performance in assessing the impact of the union. The empirical analysis reveals sizeable negative union effects on profitability; but growth, productivity, and the capital-labor ratio appear to be little affected by unionization (in these data). The data are thus consistent with a model of union-firm interaction in which collective bargaining affects the distribution of profits but leaves real magnitudes unchanged. The evidence suggests, however, that unionization may have longer-term implications for efficiency since the impact on profitability appears to fall heavily on firms with relatively little market power.

## **Oil Prices, Welfare, and the Trade Balance: An Intertemporal Approach**

**Lars E. O. Svensson**

Working Paper No. 991

September 1982

JEL Nos. 411, 431

This paper examines the welfare effects and the trade balance response of a small oil-importing economy to

changes in world oil prices and interest rates. The trade balance is seen mainly as the difference between saving and investment; these two factors are derived from intertemporal optimization. I show that the welfare effects consist of static terms-of-trade effects, intertemporal terms-of-trade effects, and employment effects. The trade balance deteriorates with temporary oil price increases, whereas it responds ambiguously to permanent oil price increases. If there is a fall in the world interest rate, the economy is a net borrower, and the trade balance deteriorates.

### **On Variable Capital Utilization and International Trade Theory**

**Lars E. O. Svensson**  
Working Paper No. 992  
September 1982  
JEL No. 411

This paper makes two points about how standard international trade theory is modified when an endogenous degree of capital utilization is introduced. The first point is that if capital utilization during a period is less than full because of an exogenous time-dependent variation in productivity, then there is no modification of the standard theory. In particular, there is no need to adjust estimates of capital intensity according to the degree of capital utilization. This is in contrast to what has been argued in the literature. The other point is that if capital utilization is less than full because of higher wages during part of the period (for example, one night of a day and night), then the required modification of trade theory is to introduce several kinds of labor and endogenous labor supply, or, equivalently, to introduce nontraded goods.

### **Money Surprises and Short-Term Interest Rates: Reconciling Contradictory Findings**

**John H. Makin**  
Working Paper No. 993  
September 1982  
JEL No. 300

This note attempts to reconcile contradictory findings about the impact of money surprises on short-term interest rates. The expectations effects of anticipated monetary policy and of anticipated inflation would

suggest a positive relationship. The liquidity and output effects of monetary surprises would suggest a negative relationship. I show that intraday data and end-of-period data will capture liquidity/output effects. Seemingly contradictory results can thus be reconciled by differences in dependent variables employed by various authors.

### **Do We Really Know That Financial Markets Are Efficient?**

**Lawrence H. Summers**  
Working Paper No. 994  
September 1982

This paper analyzes the power of statistical tests commonly used to examine the efficiency of speculative markets. It shows that for markets with "long horizons," such as the stock markets or the market for long-term bonds, these tests have very low power. Market valuations can differ substantially and persistently from the rational expectation of the present value of cash flows without leaving statistically discernible traces in the pattern of ex post returns. This observation also suggests that speculation is unlikely to ensure rational valuations, since similar problems of identification plague both financial economists and would-be speculators.

### **Tax Policy, the Rate of Return, and Savings**

**Lawrence H. Summers**  
Working Paper No. 995  
September 1982

The theoretical and empirical results in this paper make a strong *prima facie* case for the proposition that increases in the aftertax rate of return caused by tax policy are likely to bring forth significant increases in saving. Theoretical analysis using a variety of standard models tends to suggest that the aggregate response to savings incentives is likely to be substantial. It has been argued, though, that the existing empirical evidence sheds little light on the question. I conduct empirical analyses using three alternative approaches. All three confirm the hypothesis of a significant positive response of savings to changes in the rate of return.

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