Editors' Summary

THIS ISSUE OF *Brookings Papers on Economic Activity* contains papers and discussions presented at the thirty-ninth conference of the Brookings Panel on Economic Activity, which was held in Washington, D.C., on April 4 and 5, 1985. Three articles cover, respectively, the determinants of U.S. business investment, wage developments in declining, unionized industries, and the U.S. economic policy posture during the 1980s. A special symposium of three short papers and three discussion papers explores exchange rate movements and their implications. One shorter report examines the disinflation of the 1980s.

DURING THE FIRST two years of the present U.S. economic expansion, business fixed investment outlays rose exceptionally fast. Although the rise in total GNP during the first eight quarters of recovery just matched the average rise in previous postwar recoveries, spending on both nonresidential structures and producers' durable equipment increased noticeably faster than usual. In the first paper of this volume, Barry P. Bosworth examines this strong investment performance, exploring in particular the role of tax changes introduced during 1981 and 1982.

Bosworth first examines the failure of most neoclassical econometric models to forecast the strength of investment demand during 1983 and 1984. In the neoclassical model, the desired capital stock depends on the price of capital services (rental price) and on anticipated future demand for output. The rental price of capital, in turn, can be decomposed into three components: the cost of acquiring a unit of capital, measured by its price relative to the price of output; the cost of using the capital, measured by the cost of funds (adjusted for inflation) plus depreciation; and taxes. In the aggregate, changes in the acquisition price and in taxes each lowered the rental price of capital between 1980 and 1984—by about 11 percent and 5 percent, respectively, according to Bosworth's calculations. The combined effect of lower tax rates and lower average

prices for capital provided a powerful stimulus for investment over these years. But the cost of funds as measured in the Federal Reserve Board model and most other econometric models rose dramatically during the same period, as nominal interest rates rose while inflation declined. As a consequence, most models found the rental price of capital virtually the same in 1984 as in 1980, despite the substantial declines coming from the acquisition price and tax components.

Bosworth observes that the appropriate measure of the cost of funds is uncertain and that alternative measures to that of the FRB give quite different results. For example, a measure of the cost of funds developed by researchers at the Federal Reserve Bank of New York rose much less over this period, and actually declined after 1982. This alternative measure differs from the FRB's mainly in its treatment of expected inflation, which is used in estimating the expected real return to bondholders. It also combines the costs of debt and equity in a different way in arriving at an overall measure of the cost of funds. Using this measure, together with the acquisition price and tax components, Bosworth finds that the total rental price of capital declined substantially between 1980 and 1984 and especially after 1982, a pattern consistent with actual investment behavior.

Because both acquisition price and tax treatment have changed in very different ways for different types of assets during the 1980s, Bosworth turns to a disaggregated analysis in order to illuminate better the factors affecting investment over this period. He observes that changes in the cost of funds have widely different effects on investment incentives for different assets. For short-lived assets, whose rental price is dominated by depreciation cost, the cost of funds has a relatively modest incentive effect, while for long-lived assets, whose annual depreciation is small, the effect is major. In view of the uncertainty about how best to measure the important cost of funds variable, Bosworth employs two alternative estimates in his disaggregated analysis. He estimates a simple accelerator equation for investment in each of nineteen categories of producers' durable equipment and two types of structures for the period 1958–80. Using these equations, he then forecasts investment in each asset category for the 1980–84 period and relates the cumulative error from each equation during 1983 and 1984 to the changes in the rental price and in the separate components of the rental price for each asset category.

Bosworth's disaggregated analysis supports the assumption of the neoclassical model that the rental price of capital influences the level and composition of investment spending. But he gets mixed results using the separate components of the rental price. He finds a strong correlation between changes in acquisition prices and investment. However, he finds no significant correlation between changes in the tax component and the investment performance of different assets. Finally, when he assumes that the cost of funds rose by 2 percentage points between 1980 and 1984, he finds a much stronger correlation between the rental price and the capital stock than he does on the assumption that the cost of funds was unchanged over this period. These findings lead him to suggest that investment analysts using the rental price of capital place too much emphasis on the role of taxes and too little on the specification of the cost of funds.

Bosworth notes that office equipment and automobiles accounted for fully 93 percent of the rise in equipment spending between 1979 and 1984. The acquisition price for both classes of assets declined sharply, leading to large declines in their total rental price calculated with either of the two assumptions Bosworth makes about the cost of funds. However, the fact that tax changes had little effect on the tax rate on automobiles and actually increased the tax rate on computers underscores the relative insignificance of tax changes in explaining the performance of investment in this period.

Because equipment investments receive an investment tax credit and because depreciation allowances on long-lived structures are not indexed for inflation, conventional studies of taxation of capital conclude that income from structures is taxed at a far higher rate than that from equipment. Indeed, Bosworth shows that conventional calculations reveal that tax rates on structures are close to 35 percent, whereas many categories of equipment have negative rates of taxation. Bosworth thus finds it curious that investments in structures are often described as good vehicles for tax shelter, implying that they offer above-average tax benefits. He resolves this apparent contradiction by noting that debt finance can have a major role in determining effective tax rates, a role that is often ignored in conventional analysis. The differential use of debt financing for different types of assets adds an important dimension to measuring rental price that has not generally been recognized in studies of investment, including Bosworth's own disaggregated analysis.

If realistic variations in the proportion of debt finance across assets were recognized, the calculated distribution of tax burdens would also vary widely. Although the data are not available to apply this type of analysis to the asset categories that Bosworth analyzes, he demonstrates the importance of debt finance analytically.

Partial debt financing of an asset changes its rental price to the extent that the after-tax return to equity differs from the real after-tax cost of borrowing. Because additional debt increases the riskiness of the income expected from an asset, the required return to equity holders will rise with increases in debt financing. Under present tax law, with interest payments deductible as an expense, some debt finance is clearly an advantageous way to finance investment. However, there is a limit to the use of debt finance, because risk to both equity holders and lenders rises as the use of debt increases. Bosworth notes that the way in which risk increases with debt depends on the nature of the asset being financed. An inherently low-risk asset can be financed with a high proportion of debt without risk of bankruptcy; hence, investment in such assets can take full advantage of debt finance.

Bosworth also notes that assets that can be sold in a well developed resale market will be much better candidates for debt finance because, in the event of bankruptcy, they retain much of their value. This fact appears to explain the very high debt ratios used in financing commercial buildings and the attraction of such investments in our present tax system. Specifically, it can help explain why the recent rise in commercial structures investment has been much stronger than the rise in investment in industrial structures: the latter, which are more firm- or product-specific, do not have the resale market that makes them low-risk projects to lenders. Bosworth concludes that calculations of relative tax burdens cannot reliably be made without considering the degree to which assets are debt financed. In fact, the interaction of debt financing and taxes may contribute more to distorting investment incentives among assets than do depreciation schedules or other features of the tax system.

A STRIKING FEATURE of U.S. labor markets in recent years has been the growing wage dispersion among manufacturing industries. In the second paper of this issue, Colin Lawrence and Robert Z. Lawrence present a fresh explanation. They report that the coefficient of variation of hourly wages, a measure of wage dispersion, increased by one-third between

1970 and 1984, after a period of fifteen years of relative stability. They trace this increased dispersion to a pattern of above-average wage increases in the high-wage industries during most of this period, noting that the compensation of steel and auto workers during the 1970s increased 30 and 15 percent more, respectively, than the average for other industries, and that union wages rose 11 percent more than nonunion wages in the U.S. manufacturing sector.

The authors observe that the large wage increases in already high-wage industries may have important consequences for the performance of the economy. The premiums paid to steel and automobile workers are a cause of declining U.S. competitiveness in those industries. Large wage differentials encourage high-wage workers to avoid job loss by promoting trade protection or industry subsidies. And if laid off, such workers are likely to delay seeking alternative employment, thereby increasing unemployment and its associated waste of resources.

Lawrence and Lawrence find it difficult to reconcile observed wage developments during the 1970s with conventional explanations of wage behavior. The period was marked by developments that should have reduced relative union wages. Rates of profitability were unusually low; employment and demand in numerous heavily unionized industries grew rather slowly; and foreign competitive pressures increased. While the authors recognize that cost-of-living adjustments (COLAs) in many union contracts may explain relative increases in those wages over the life of a contract, they find it difficult to accept COLAs as an explanation for wage changes running over several contract settlements. Although they acknowledge that restraints on foreign competition may have protected wages in some instances, they dispute the importance of such restraints for major industries in the 1970s. The steel industry's protection was only intermittent, and the automobile industry received no trade protection until 1981. Relative wages rose in many high-wage industries that received no increases in protection.

The authors base their own explanation of recent union wage behavior on the observation that decreases in demand may, in the short run, actually increase the monopoly power of unions and lead them to increase their wage demands. The essential argument is that, although the long-run demand for labor will be adversely affected by a reduced demand for an industry's output, the short-run effect of a decrease in product demand is to narrow the scope for capital-labor substitution because

that substitution is associated mainly with new investment. Unions facing reduced product demand no longer need fear the effect that higher wages would have on a firm's choice of new technology. In the extreme case where no new investment is contemplated—the "end game"—unions and management are essentially fighting over the rents remaining on existing capital facilities; in the authors' words, the unions may seek to "harvest" the rents before the owners do. Wages come under renewed downward pressure in the later stages of the end game, when the industry can threaten the workers with bankruptcy or plant closures because it has become unprofitable even to operate existing facilities.

The importance of the end game phenomenon for a given industry will depend upon the amount of capital involved, the substitution possibilities for existing capital, and whether the capital itself is industry-specific, with little value in alternative use. The authors construct a model that demonstrates the theoretical possibility of the end game and show how the effect would be present not just in cases where there was an absolute decline in demand, but also in cases where growth in demand simply slowed—the "slow game." The authors also indicate how the same effects could result from other shocks to the industry's operations, such as a rise in the cost of capital or related productive inputs such as energy, or from a decline in capital productivity.

Examining the U.S. steel industry during the period 1970–84, they see a prime example of an end game situation. Most workers in the industry belong to a single union. Steel is produced in large, highly capital-intensive, long-lived plants whose equipment is industry-specific. During the 1970s, the prospects of the industry declined markedly. The authors argue that it was apparent to both steel companies and unions that the decline in demand and the increase in foreign competition made the expansion of U.S. facilities uneconomic. But if new investment had become unprofitable, variable costs could usually be covered, and existing plants continued operating. The authors see this period as the beginning of the end game, the stage in which unions can—and steel unions did—capture an increasing proportion of the rents on existing capital by raising wages. During the 1980s, the steel industry moved to the end of the end game, the stage in which the effective threat of bankruptcy and plant closings places downward pressure on wages. In this latest period, steelworkers have, in fact, made wage concessions, as the model predicts.

Next, the authors test the slow game version of their theory by examining the behavior of relative wages among fifty-seven U.S. manufacturing industries from 1970 to 1984. They find that the ten industries that had the fastest wage growth conform to the slow game's predictions. On the average, the capital-labor ratio in those industries is twice as high as that in the rest of manufacturing, and a disproportionate part of their work force works in large plants and is unionized. These industries also have relatively slow growth in both output and employment.

A more formal test of the theory involves a set of regressions explaining wage levels and wage changes. The authors control for a number of industry and worker characteristics that are known from past research to affect wages but that are unrelated to their theory, and they inquire whether other industry characteristics bear the relation to wages predicted by the slow game theory. The authors conclude that they do, although the results are not decisive. During the hypothesized slow game period from 1970 to 1980, they find wage increases were particularly rapid in industries with high capital-labor ratios and large plants. For this period too, in equations explaining wage changes, they find significant increases in the coefficients on the capital-labor ratio, unionization, and the proportion of workers in large plants, indicating that these slow game variables had become important. Interestingly, they find that high wages in the automobile industry in 1970–80, regarded by many observers as idiosyncratic, are well explained by the basic regressions for manufacturing industries. The regressions do not account so well for developments in the steel industry, with wages rising faster than predicted from 1970 to 1980, more slowly than predicted since 1980. The regression evidence on steel wage changes during both these periods is consistent with the end game hypothesis.

Lawrence and Lawrence speculate that their model of the slow game may also shed some light on manufacturing productivity. They recall Martin Neil Baily's finding (*BPEA, 1:1981*) that the industries with the largest wage increases during the 1970s also experienced the largest slowdowns in productivity growth. Because unions regard both wages and work rules as bargaining objectives, their improved bargaining power, as predicted in slow game situations, could result in reduced productivity as well as higher wages. The authors speculate further that large wage increases in stagnating European industries may be explained by the slow game theory.

THUS FAR in the 1980s, the United States has undergone the most dramatic economic policy shift in its peacetime history. Structural budget deficits have been increased, to nearly 5 percent of GNP, while tight monetary policy has helped raise real interest rates to unusually high levels. In the third paper of this volume, Jeffrey D. Sachs analyzes this change in policy from several perspectives: Can this fiscal-monetary mix be seen, in retrospect, as an effective policy strategy? Can it explain the post-1980 appreciation of the dollar exchange rate? Relatedly, how much has it contributed to the disinflation of the past few years? And finally, where does an optimal policy strategy go from here?

Sachs's analysis is motivated by an earlier model proposed by Robert Mundell for using the fiscal-monetary policy mix to achieve multiple policy objectives. Mundell's model calls for a fiscal expansion and monetary contraction as a way of appreciating a country's currency, thereby slowing inflation while simultaneously expanding output. The Mundell analysis is confined to the short run and leaves the country with an appreciated exchange rate and enlarged current account deficit. Sachs develops a dynamic and long-run model in which the exchange rate and current account are predicted eventually to reverse their initial response to the altered policy mix and in which the optimal strategy calls for a gradual reversal of the original policy change. Thus Sachs deals with the issue of optimal policy in this long-run context and, in particular, looks at how U.S. policy should be changing at present.

How exchange rate movements affect domestic inflation is central to Sachs's quantitative analysis, and he provides new estimates of this relation. He distinguishes three types of effects. First are the direct effects of exchange rates on import prices. For some imports, this change may be less than proportional, as foreign producers may, for example, use an appreciating dollar to expand profit margins on sales to the United States, rather than simply cutting prices in dollar terms. A second effect comes from competitiveness, as U.S. producers of tradable goods, including imports, exports, and import-competing goods, respond to lower foreign prices arising from dollar appreciation. Finally, the direct and competitiveness effects may be amplified if changes that they induce in consumer prices in turn induce changes in domestic wages and in the dynamics of wage inflation. As Sachs notes, only if this last effect is substantial will exchange rate movements significantly affect domestic inflation for a country like the United States.

Sachs produces a range of estimates of exchange rate effects on U.S. inflation, based on a careful analysis of various categories of prices and on different assumptions about the dynamics of wage behavior. Using a wage norm model in which the effect of consumer price increases on wage inflation is modest, he estimates that exchange rate movements between 1980 and 1984 subtracted 1.1 percentage points from the 1984 U.S. inflation rate, and a little more than that in each of the two preceding years. By contrast, using a model allowing for a full but gradual pass-through of price changes into wage inflation, he estimates that the dollar's appreciation subtracted 2.8 percentage points from the U.S. inflation rate in 1984, out of a total slowdown of 6.2 percentage points between 1980 and 1984. Thus the exchange rate has had a major effect in this model of wage dynamics, the one that Sachs uses in his subsequent analysis of the policy mix issue.

Sachs next offers a model of the exchange rate that relates it to the interest rate changes brought about by changes in the policy mix. The expected real exchange rate is assumed to be fixed in the long run, but it deviates from this long-run level as real interest rates differ across countries. Investors are assumed to be nearly indifferent about which currency their assets are held in so that real interest rate differentials reflect expected changes in real exchange rates. When real interest rates in one country rise in this model, the exchange rate must rise so that it can subsequently fall back toward its long-run level at the faster rate indicated by the new, larger interest rate differential. With present real interest rates in the United States higher than those elsewhere, the dollar is expected to depreciate in the future at a rate that will leave investors at each point in time indifferent to whether assets are held in dollars or a foreign currency.

When he implements this model empirically, Sachs forms estimates of real long-term interest rates that are quite sensitive to changes in current inflation rates. But in addition he assumes that a substantial downward shift in inflation expectations occurred upon President Reagan's election in 1980, raising U.S. real interest rates at that time. Using these estimates in his exchange rate model, Sachs is able to track movements in the deutsche mark–dollar exchange rate during 1977–84 reasonably well, and to show that these movements are consistent with unchanged expectations of the long-run real exchange rate of the dollar over that period. The dollar appreciation since the end of 1980 has been

gradual, according to Sachs's model, because there have been continual surprises about long-term real interest rate differentials, with U.S. long-term rates remaining unexpectedly high and inflation expectations being continually revised down. On this interpretation, the dollar gained strength in each of the past three years because the real interest rate differential continued its rise, most of which was unanticipated.

Finally, Sachs presents a policy model in which a country's welfare depends on output, inflation, and the exchange rate. Because the dollar's appreciation in recent years has reduced inflation for any given level of output, the policy mix that brought about the exchange rate appreciation is credited with improving national welfare to date. But when the dollar's appreciation is reversed, as Sachs's exchange model predicts it must be, the rate of inflation will increase, thus worsening national welfare in the future. The actual amount of additional inflation to be experienced in any year depends on how abruptly the dollar depreciates and on how policy responds. Using his inflation model, Sachs estimates that a 10 percent annual depreciation beginning in 1986 will be adding 2.6 percentage points to the inflation rate by 1988 if the authorities maintain the same path of output. With a soft landing, in which the exchange rate depreciated by 5 percent a year, the added inflation would be 1.3 percentage points by 1988. Sachs believes it plausible that there is more value to reducing inflation when it is high than when it is low, and builds that assumption into the welfare function that he specifies for his policy model. Thus, in the early 1980s, when inflation was high, the welfare gain from appreciating the currency was exceptionally great and may more than offset the welfare loss that will come from depreciation in the future.

Sachs conducts a series of optimal policy experiments for the United States to illustrate how various combinations of fiscal and monetary policy can be used to optimize national welfare. Under a range of quantitative assumptions about the nation's welfare function, the optimal policy involves initially high but steadily declining deficits. It results in an early recession and gradual recovery and in an initial currency appreciation and large current account deficit. Eventually, the currency depreciates to a new long-run equilibrium level slightly below the initial level. Actual U.S. policies and economic performance have approximated the initial phases of an optimal policy. But, Sachs notes, the fiscal

expansion has been carried too far, too long, and the real depreciation that the optimal policy calls for has been delayed.

Sachs's policy experiments assume that other nations do not respond to future changes in the U.S. policy mix or to economic developments that flow from them. In an earlier paper (*BPEA, 1:1984*), Sachs and Gilles Oudiz explicitly modeled foreign responses to U.S. policy and showed that cooperative strategies would differ from noncooperative strategies among nations. With either type of policy response from other nations, the optimal strategy outlined in the present paper would no longer apply. Sachs further qualifies his analysis by noting that if there were major costs to large variations in exchange rates, such as the rise of sectors producing nontradable goods at the expense of sectors producing tradable goods, the optimal policy would be modified. But for the actual situation of the past few years, including the actual policy responses from abroad, Sachs regards his present analysis as relevant.

Now that the U.S. economy has enjoyed the benefits of a strong dollar, the future looks somewhat bleaker, according to Sachs. Some of the gains of the past will have to be given up in coming years. But both the precise path of future developments and their costs depend on several things. If the dollar's depreciation is now gradual, as the optimal policy implies it will be in the absence of shocks, Sachs's analysis indicates that net benefits will have been achieved. But he sees risks in the current situation either if the dollar depreciates sharply or if it continues its real appreciation too long. If, instead of declining steadily, deficits remain at a very high level, the economy will experience an enormous increase in external debt, and real consumption will be squeezed in the long run to make room for the net exports needed for debt servicing. If the dollar plummets abruptly, the risk is that inflation will rise rapidly, more than offsetting the gains to welfare that disinflation has provided until now.

In the first symposium paper on exchange rates, Jeffrey A. Frankel examines two explanations for the dramatic appreciation of the dollar since 1980: first, that it has been the result of portfolio adjustments in response to the large real interest rate differentials that opened up between dollar and foreign assets; and second, that it has been a self-fulfilling speculative movement. In the context of the portfolio model,

he also examines the importance of changes in relative supplies of dollar assets, such as might arise from large U.S. current account deficits.

Frankel believes that the differential between real interest rates in the United States and those abroad is the major factor explaining the dollar's rise. In his explanation, as in Jeffrey Sachs's paper in this volume, there is a long-run equilibrium exchange rate. But an increase in U.S. real interest rates causes an immediate appreciation to a level above this equilibrium rate. The dollar is thus "overvalued" in the short run and is expected to depreciate subsequently, as it returns to its long-run equilibrium. This expected depreciation is just sufficient to offset the interest rate advantage of the dollar during the period of adjustment.

It is hard to provide strong tests of this view, in which exchange rates are well explained by fundamentals. In formulating a test, there is considerable discretion in the choice of a real interest rate, the period in which the dollar is assumed to be in long-run equilibrium, and the period over which it is expected to return to equilibrium after an interest rate disturbance. Furthermore, most proponents of this view would allow for other factors changing the equilibrium rate itself over time. However, Frankel finds the recent experience consistent with his model. Almost all of the approximately one-third real post-1980 appreciation of the dollar relative to its 1973–79 average can be explained by his estimates of long-term real interest rate differentials and his assumption that the dollar will return to its earlier level in approximately ten years. He argues, in turn, that the increase in the real interest rate differentials itself reflects weak U.S. national saving rather than strong investment.

Because the evidence does not preclude alternative explanations for the dollar's rise, Frankel examines the possibility that some part of the appreciation reflects speculative behavior rather than fundamentals. He applies monthly data for the period of dollar appreciation to a model of a stochastic rational bubble in which the probability that the speculative bubble will burst is just compensated for by an expected short-run appreciation; that appreciation itself is taken to be unjustified by a change in either the equilibrium exchange rate or the interest rate differentials. Assuming that the expected rate of appreciation over the period has been equal to its observed trend rate, Frankel calculates, for each month, the probability of the bubble collapsing that is implied by the theory. Under his assumptions, this probability must (implausibly) decrease as the exchange rate moves higher above its equilibrium level. His estimates

of the probability start at over 7 percent per month in January 1981 and decline to 1.4 percent per month by March 1985. These monthly probabilities imply that there is only a 16 percent chance that a bubble would have lasted through the period. Hence, the bubble theory itself suggests that the sustained period of "overvaluation" is not likely to have been a bubble.

Returning to his equilibrium model, Frankel examines whether relaxing the assumption that dollar and other currencies are very close substitutes would affect the equilibrium exchange rate significantly. If dollar and nondollar assets are imperfect substitutes, the growing relative supply of dollars arising from large U.S. current account deficits would raise the risk premium on dollar assets and require either an increasing interest differential on such assets to sustain a given exchange rate or a depreciation of the dollar to offset the increased nominal supply. To show that variations in the risk premium will almost surely be small, Frankel uses standard mean-variance portfolio analysis and rough estimates both of the variance of relative returns on dollars and foreign assets and of the degree of risk aversion of investors. He estimates that a 1 percent change in the relative supplies of foreign and dollar denominated assets will change the risk premium by only 2.4 basis points. Consequently, only small changes in interest rates are required to offset substantial changes in relative supplies. To overturn this conclusion, the portfolio balance theory would require much larger variances or degrees of risk aversion than Frankel finds plausible.

Frankel's results imply that only minor increases in the U.S. interest rate differential would be required to maintain current exchange rates, even in the face of the large U.S. current account deficits now in prospect. But he notes that, although the U.S. interest rate increase required to avoid depreciation would be small in any one year, rates would have to continue to rise year after year if deficits were to continue. Eventually, the level of rates would be too high to support domestic prosperity, and then U.S. interest rates and the dollar would have to decline. Frankel believes that, recognizing this, investors may bring down the dollar well before policymakers are forced to take action.

THE APPRECIATING DOLLAR has called attention to international capital flows, with observers often attempting to identify the source of the dollar's strength with particular components of these flows. In the second

symposium paper, Peter Isard and Lois Stekler point out the difficulties inherent in attempting to infer the causes of the dollar's strength from such data. They also examine recent concerns about growing U.S. international indebtedness and the possibility of a gradual depreciation of the dollar.

The authors first point out how arbitrary and misleading the available data on capital flows can be. For example, published data on private capital flows show a dramatic reduction in the annual flow of U.S. private assets abroad from over $100 billion in 1981 and 1982 to only $12 billion in 1984. Such a swing would itself finance nearly the entire change in the current account deficit over this period. But Isard and Stekler show that most of this swing may be accounted for by the establishment in late 1981 and early 1982 of International Banking Facilities (IBFs), which shifted both assets and liabilities to the books of banking offices in the United States, and by other interbank transactions of an essentially bookkeeping nature. They provide two alternative measures of private capital flows adjusted for these effects that show a much more modest reduction in the flow of U.S. private claims on foreigners and a larger increase in the flow of private foreign claims on Americans. The view, which has recently gained currency, that the current account deficit has been financed mainly by a decline in U.S. investment abroad is unsupported.

Although they regard these adjusted flows as more meaningful than the official data, the authors stress that many ambiguities remain and that the causes for capital flows cannot be inferred even from their adjusted data. For example, the importance of the safe haven explanation of the shift into dollar assets cannot be tested adequately, because assets leaving "unsafe" Latin American countries might be invested in Eurodollar assets, with U.S. accounts subsequently recording inflows from Europe rather than Latin America. Nor is it possible to use data on direct investment to test whether there has been an improvement in the productivity of capital. If funds first flow into bank accounts and are then used for direct investment, the capital flows will not show it. On the other hand, direct investment inflows in recent years reflect several major corporate takeovers motivated by opportunities to purchase undervalued assets, fears of protectionism in industries such as automobiles, and other developments not directly related to the productivity of investment in general.

Isard and Stekler conclude that the composition of capital flows offers little evidence on what forces or decisions might explain the strength of the dollar. Nor does the magnitude of net inflows measure the upward pressure on the currency. They remind us that, should the dollar decline abruptly, implying downward pressure on the dollar, the current account deficit would remain large for a time. Barring large official dollar purchases, net private capital inflows would thus remain large as well.

There is little in our historical experience from which to judge whether the growing U.S. indebtedness to foreigners that is in prospect poses special risks of instability. The authors believe that eventually the trade deficit will have to be eliminated in order to stabilize the share of dollars in foreign net worth. They calculate the consequences of a gradual 3 percent per year depreciation in order to judge the plausibility of such an orderly change. They estimate that this gradual depreciation would eliminate the trade deficit in thirteen years, with the current account deficit doubling to $200 billion before beginning to decline. In this scenario, U.S. international indebtedness will rise to some $2.3 trillion, representing only about 10 percent of foreigners' net worth according to the authors' estimates. Although they do not regard this hypothetical path as a forecast, they believe it shows that such a soft landing cannot be ruled out as implausible.

STEPHEN N. MARRIS disagrees, presenting an analysis in the third symposium paper that predicts that a soft landing for the dollar and the U.S. economy is now highly unlikely, at least in the absence of prompt, coordinated policy steps by the nations of the Organization for Economic and Cooperative Development (OECD). Given that the United States is now in a position in which its debt to foreigners will expand rapidly unless its exchange rate and trade balance decline sharply, Marris questions formal models that assume a gradual "equilibrium" depreciation of the dollar. With a very slow depreciation, he reasons, foreign asset holders would not, ex ante, accept the required huge increases in their dollar asset holdings. A depreciation rate as fast as 5 percent a year would correct the current account faster and build up less debt. But the implied real interest rate differential of 5 percentage points would require either real interest rates in the United States that are too high to sustain growth or real rates elsewhere in the OECD that are so low as to court inflation.

Observing that such formal models linking interest rates and exchange rates have not predicted well in the past, Marris relies instead on observations of how these key variables have behaved in past periods of "financial stress and marked changes in exchange rate expectations." This leads him to expect a "hard landing" for the dollar, with unfortunate consequences for the economy that offer difficult choices for policymakers.

In the central hard landing scenario that he outlines, the U.S. economy is pushed into recession accompanied by interest rates 5 percentage points higher than they otherwise would have been and a speedup of inflation to the 6 to 7 percent range. Higher interest rates result from strong ex ante pressures to get out of dollar assets on which asset holders are suffering substantial capital losses, while the price level is pushed up by the sharp dollar depreciation. Marris anticipates that other OECD nations will continue to pursue their restrictive fiscal policies. Although their interest rates decline somewhat in this scenario, they experience mild recessions as the stimulus they had been receiving from the growing U.S. trade deficit is reversed.

Marris sees little that U.S. authorities can do unilaterally to avoid these outcomes. A rapid decline in the dollar to a new stable level 40 to 50 percent below its present value would limit the interest rate pressures coming from asset holders but would push the Federal Reserve to raise interest rates to minimize the inflationary threat posed by such a depreciation. If the Federal Reserve attempted to hold down interest rates in this environment, it would risk an erosion of confidence in financial and foreign exchange markets, adding to the pressures in both. Eliminating the structural budget deficit in the near future would minimize the interest rate pressures inherent in the shift in portfolio preferences against the dollar that Marris regards as inevitable. But he sees the modest shift in fiscal policy that seems to be in prospect as too little and too late.

Marris does see substantial benefits from a coordinated policy change in which other OECD nations pursue expansionary budget and monetary policies while U.S. structural deficits are reduced. He reasons that a reversal of budgetary policies here and in the rest of the OECD would provide Europe and Japan the kind of expansion enjoyed by the United States in 1983–84, while minimizing output weakness in the United States. But he sees no signs that such policy steps are being contemplated.

THREE DISCUSSANTS at the symposium, Richard N. Cooper, Rudiger Dornbusch, and James Tobin, whose formal remarks are included in this volume, comment on the symposium papers and elaborate on the general issues they raise. In his paper, James Tobin is more optimistic than Marris about the Federal Reserve's ability to maintain the U.S. expansion, even in the face of a shift in portfolio preferences that depreciates the dollar. He emphasizes the importance of maintaining a monetary policy that restores high employment, in part because the higher GNP would provide additional government saving to help replace the loss in foreign saving that would accompany a decline in the dollar and in the current account deficit. He also observes that the inevitable price increases that would accompany a depreciation of the dollar could be absorbed more safely now, while there is plenty of slack in the economy and while wage and price setting is still moderated by strong competitive forces, than they could be later, when the economic environment might be more inflation-prone.

Tobin reasons that the greatest risk posed by present U.S. policies is the federal deficit, which is now on an explosive track along which growing debt would increasingly raise interest rates and crowd out investment. With the current account deficit growing as well, confidence in U.S. assets would eventually weaken and the dollar would plummet, leaving Americans with large interest payments to meet at much worsened terms of trade. To avoid this apocalyptic outcome, Tobin prescribes a major change in the present U.S. fiscal-monetary mix that would reduce both the budget deficit and interest rates.

Richard Cooper notes that safe haven arguments are implausible as explanations for private capital flows out of countries such as West Germany, Japan, and Great Britain, where political conditions have been attractive to investors, and thus agrees with Frankel and most other participants at the meeting that economic considerations must have dominated the dollar's appreciation. But he observes that investors' incentives to hold funds in a currency depend not on real interest rate differentials but on nominal rate differentials adjusted for any change investors expect in the exchange rate. The latter is not proxied well by any of the measures of inflation expectations that Frankel and Jeffrey Sachs use in their models.

Cooper also suggests analyzing the buildup of U.S. foreign debt in terms of annual flows rather than accumulating stocks. Viewing the

buildup in this way, he does not find it implausible that the rest of the world might want to invest 10 percent of its estimated annual saving of $1.1 trillion in the United States, which accounts for roughly one-quarter of the world's GNP. For that reason, an annual current account deficit of $100 billion might be maintainable without pressure on the exchange rate. However, unless expansions quicken in the rest of the industrial world, he judges that the U.S. current account deficit will grow further, to levels that are not maintainable. Cooper reasons that exchange market intervention might be successfully applied to bring down the dollar exchange rate without reviving inflationary expectations. Such a policy would be especially advantageous if, as he believes, there are elements of a speculative bubble in the most recent part of the dollar's appreciation.

Rudiger Dornbusch reiterates the conclusions of Isard and Stekler that capital flow data cannot identify the source of the dollar's strength, and adds some examples of how misleading such data can be. The credit rationing of less developed countries has forced them to earn more of their debt service by means of a trade surplus and less of it by borrowing to pay interest. One result is a worsening of the U.S. trade balance and an increased capital inflow corresponding to the reduced rate of bank lending; these changes offset each other in their effect on the exchange rate but cause a major shift in the U.S. capital account. As another example, shifting dollar deposits from Zurich to New York has no effect on exchange rates but shows up as a capital inflow. More complex transactions may affect exchange rates, but they cannot be inferred without better models and data than are now available.

Dornbusch notes that the type of exchange rate model used by Frankel predicts that even a massive shift in the supply of dollars can be accommodated with only slight movements in the level and expected change in exchange rates. Thus, such a model cannot explain the large fluctuations that occur in exchange rates from observable shifts in asset supplies. Furthermore, he argues that exchange rates must be viewed as determined jointly with other asset prices, since fluctuations in stock or bond markets change the relative supply of dollar assets by significant amounts.

Dornbusch sees the disruptive effects of trade on exposed sectors of the economy as a major cost of the presently overvalued dollar. Together with other Panel participants, he recommends a fiscal tightening in the United States, accompanied by fiscal easing in other industrial nations

and a reduction in real interest rates throughout the world, as a sensible strategy to provide growth while correcting the U.S. trade deficit. In the event that such adjustment policies are not adopted and the dollar remains strong or grows even stronger, he suggests, as does Cooper, that currency intervention might be successful if there are elements of a bubble in present exchange rates. If the high dollar appears to reflect more basic factors, Dornbusch further suggests an interest equalization tax or a substantial tax on earnings of U.S. assets held abroad as measures that would be appropriate to the extent that safe haven motives account for the strong dollar. Rather than suffering trade problems as a result of such capital flight, he reasons, "it makes sense to charge rent for this place in the sun."

IN A REPORT that concludes this volume, Robert J. Gordon examines the U.S. disinflation of recent years. His report has several aims: determining whether developments in this recent period represent a departure from past economic relationships; evaluating the contribution of different economic developments both to the buildup of inflation through 1980 and to the subsequent disinflation; and estimating the noninflationary limits of economic expansion in the future. Gordon examines these issues by adapting an econometric model that he had developed earlier (*BPEA, 1:1977*) and has subsequently refined.

Gordon's basic inflation equation is an augmented Phillips curve model that allows for a gradual response of inflation to output gaps—deviations of GNP above or below an estimated path of potential output—and also allows for supply shocks, tax changes, productivity trends, import price effects, or similar developments that may affect prices independently of the level of output. The level of potential output is the GNP that would be produced with the economy operating at its natural unemployment rate, which, in Gordon's model, is the unemployment rate that would keep inflation from either accelerating or decelerating in the long run.

When he estimates his equation from 1954 through the end of 1984, and for various shorter periods within that time, Gordon finds that the natural unemployment rate has been constant at about 6 percent since the mid-1970s and that the effects of output gaps on inflation have been relatively stable and significant throughout the period. Supply shocks from food and energy have been important and significant in most

periods. But he finds no significant effects on inflation from variations in effective tax rates. In a separate analysis, Gordon finds no distinctive effect of the money supply on inflation; what matters is GNP growth, whether it comes with money growth or with growth in the velocity of money.

For the period 1964–71, when inflation increased gradually, Gordon attributes virtually the entire increase to the rise in GNP above its potential level. From 1972 to 1980, the rise in food and energy prices and in other import prices accounted for most of the acceleration of inflation. Unemployment remained above the natural rate during most of this period, so that substantial output gaps helped hold down inflation. Finally, between 1981:4 and 1984:4, inflation slowed by 4.4 percentage points. Gordon attributes 2.8 points of the slowdown to the large output gaps that corresponded to the period's deep and long recession. The balance of the improvement he attributes to several small effects, including a modest reduction of 0.7 percentage point to slowing import prices and another of 0.8 percentage point to steadying or declining food and energy prices.

Looking ahead, Gordon finds that there is still room for economic expansion because unemployment is well above its natural rate of 6 percent. He calculates that, in the absence of supply shocks or exchange rate changes, optimal policy would aim for 7.8 percent nominal GNP growth in 1985 and 1986 and 6.8 percent growth thereafter. Allowing for 4 percent ongoing inflation, such a path would reduce unemployment to its natural rate by 1987. If the dollar were to depreciate substantially during this period, policymakers would have to choose whether to accommodate the added price pressures by raising their targets for nominal GNP growth or to maintain those targets and let higher unemployment offset the price pressures.