Editors' Summary

THIS ISSUE of *Brookings Papers on Economic Activity* contains papers and discussions presented at the forty-first conference of the Brookings Panel on Economic Activity, which was held in Washington, D.C., on April 3 and 4, 1986. Three major articles cover, respectively, the role of liquidity constraints in tax policy analysis, the perplexing relationship between short-term and long-term interest rates, and the relations between the cost of capital and business fixed investment. A special symposium of four short papers explores exchange rate, trade, and capital flow issues arising from the fluctuation of the dollar's exchange rate during the early 1980s.

IN RECENT YEARS most sophisticated analyses of the effect of tax policy and reform on consumption and capital formation have used life-cycle models of household behavior. These models have the great virtue that they explicitly recognize that the intertemporal choices facing households are constrained by lifetime earnings and affected by tax laws and the returns available in financial markets. Although they agree that a life-cycle framework is appropriate for the analysis of tax issues, R. Glenn Hubbard and Kenneth L. Judd, the authors of the first paper in this volume, argue that the assumption made by most investigators, namely, that capital markets are perfect and that households can borrow or lend whatever amounts are dictated by their optimal consumption plans, is unrealistic. They go on to show that relaxing that assumption quantitatively alters, sometimes even reverses, conventional conclusions about the welfare effects of various types of tax reforms.

The authors present a variety of evidence to support the idea that liquidity, or borrowing, constraints are an important departure from the assumption of perfect capital markets. They observe that many empirical studies have found "excess sensitivity" of consumption to changes in disposable income—that is, that consumption is more responsive to such

changes than is consistent with the existence of perfect capital markets and rational expectations. They report data suggesting that a significant fraction of U.S. households have insufficient financial assets to insulate consumption from modest declines in earnings and cite related findings of other authors that a significant fraction of consumers are liquidity constrained. Finally, they note that variables representing liquidity constraints have been useful in explaining aggregate consumption.

The centerpiece of the authors' own analysis is a life-cycle model for an idealized household in which the household maximizes an intertemporal utility function subject to a lifetime budget constraint. The authors consider consumption and saving behavior both with and without the possibility that households can borrow against future labor income. Using an estimated profile of life-cycle earnings and assumed values for the elasticity of labor supply and the elasticity of intertemporal consumption, the authors calculate the consumption, saving, and wealth of representative households of various age compositions. In their simulations they find that the number of years during which households would be affected by the borrowing constraint varies from four to eleven, depending on the elasticity of intertemporal consumption. Aggregate consumption and wealth are obtained by simply summing the consumption and net worth of households of different age compositions living at a given time. Because the authors assume a 1 percent rate of growth of the population, there are always more younger, lower-income households than older, established ones.

The authors complete their model by assuming that output is produced according to a Cobb-Douglas production function with the wage rate and return on capital being determined in competitive markets. Hence, any change in tax laws that affects saving will alter the capital stock, as well as interest rates and wages. Simulations of this model show the potential importance of borrowing constraints not only for individual consumption patterns and welfare, but also for the aggregate variables. Comparison of the constrained and unconstrained regimes indicates that, depending upon the assumed elasticity of substitution chosen for the utility function, from 7 to 24 percent of the population is in a constrained condition. Unconstrained households choose to go into debt early in their life cycle, borrowing from older households for their consumption and therefore competing with investment for national saving. If they are constrained from going into debt, investment and the

capital stock are greater, wages are higher, and the interest rate is lower. The authors' simulations indicate that, for low elasticities of intertemporal substitution, the difference due to borrowing constraints can be quite large, the capital-income ratio being increased by almost a factor of two.

Not only do borrowing constraints significantly affect the consumption profiles of households and the aggregate capital stock, they can also alter the responsiveness of household consumption and saving decisions to interest rates and changes in income. That being the case, the distortions introduced by taxes may have quite different effects depending on whether individuals are constrained, and this may alter the comparison of various tax systems. In an examination of the welfare, or efficiency, effects of two commonly discussed reforms—switching from a tax on capital and labor income to a tax on labor income alone and switching from a progressive to a proportional income tax—the authors find that the recognition of borrowing constraints can, in fact, reverse some conventional findings.

A number of authors have argued that taxing capital income leads to large distortions in intertemporal choice. Hubbard and Judd cite a finding by Lawrence Summers that a welfare gain equivalent to almost 12 percent of lifetime income can be obtained by switching from a general tax on both capital and labor income to a consumption tax. They also report a consensus among analysts that when capital markets are assumed perfect, intertemporal distortions induced by capital income taxation dominate the contemporaneous distortions due to labor income taxation.

Hubbard and Judd replicate these qualitative results for perfect capital markets, although the costs they estimate are typically somewhat lower than those estimated by Summers. As expected, efficiency gains from moving to a tax on labor income alone rise with the elasticity of intertemporal substitution of consumption, for when consumption is readily postponed, taxes that drive a wedge between the pre-tax return on capital and the capital income of savers have the greatest effect in altering saving patterns. With borrowing constraints, the magnitude of this intertemporal inefficiency is reduced. For the less elastic cases, there can actually be a welfare loss in switching from capital taxation to labor income taxation.

The analysis of a movement from proportional to progressive income

taxation is similarly affected by recognition of borrowing constraints. Without constraints, such a shift, while having distributional benefits for society, leads to welfare losses as higher marginal tax rates distort the supply of labor and saving. As expected, the losses are higher, the higher the elasticity of intertemporal substitution and the elasticity of labor supply. These losses are reduced in the borrowing-constrained case. And, as in the switch from capital to labor taxation, for low elasticities of intertemporal substitution and labor supply, the effects are actually reversed, with welfare improved as a result of switching to a more progressive income tax. Welfare gains from a more progressive system result from the fact that tax burdens are low in precisely those periods in which an individual's income is low and he is therefore likely to be liquidity constrained. The authors find a similar modification of the conventional results when they analyze changing from a proportional income tax on labor and capital income to even a progressive tax on labor income alone; in the less elastic cases, welfare gains rather than losses result. These same considerations suggest that the social security system is not optimally designed, because it taxes individuals relatively heavily in the early parts of their life cycle when their incomes are low.

Finally, the authors analyze the effect of borrowing constraints on the responsiveness of consumption to temporary tax cuts. According to the life-cycle model, the marginal propensity to consume when capital markets are perfect is near zero, whereas the marginal propensity to consume is 1 for households that are borrowing constrained. Hence, the crucial question is what fraction of the tax cut falls on households that are in a constrained condition. The authors believe that, in practice, a relatively small proportion of a typical tax cut accrues to the benefit of lower-income and constrained households, so the effect of a temporary tax cut on total consumption is unlikely to be large.

INTEREST RATES reached exceptionally high levels in the first half of the 1980s, both in the United States and abroad. In the United States, the increase occurred in both long-term and short-term interest rates, was associated with large fluctuations in the price of long-term bonds, and, for much of the period, produced an unusually large yield spread—the spread between long-term and short-term rates. Some, but not all, of these characteristics were also apparent in the capital markets of Canada, the United Kingdom, and Germany. In the second paper of this volume,

N. Gregory Mankiw examines the ability of various models of the term structure to explain these interest-rate developments in all four countries.

Some analysts have assumed that the world's capital markets are so closely linked that shocks that move rates in one country will have parallel effects in all others. Mankiw shows that there is a substantial independent movement in interest rates in the four countries and substantial independent movement in their term structures as well. From 1961 through 1984, even the correlation between the changes in U.S. and Canadian short-term rates was far from 1.0; and the correlation between the German and the U.K. rates was near zero. In all four countries, there was typically an upward slope to the yield curve, meaning that long rates were higher than short rates, and great variability to this slope.

A noteworthy difference among the countries was in the relative return an investor would have received from continually reinvesting in long bonds rather than in a series of short-term securities. The return from an investment in long-term bonds, known as the holding period yield, includes capital gains or losses as well as coupon payments. Over the period 1961–84, the relative return in the United States was at one extreme, with an investment in three-month bills yielding an average annual return 3.26 percent higher than a strategy of continually reinvesting in long-term bonds. This discrepancy reflects the fact that increases in short-term interest rates that had not been fully anticipated in long-term rates characterized much of the U.S. experience in this period, so that bondholders suffered capital losses on average. As a consequence, despite the higher coupon yield offered by bonds in most quarters, their quarterly holding period yield was relatively poor. The relative return in Germany was at the other extreme, with a strategy of continually reinvesting in long bonds outperforming investment in short-term securities by an average of about 1.5 percent a year.

Mankiw compares the ability of alternative models to explain the term structure in the four countries. He first estimates a traditional type of equation, frequently found in large-scale macroeconomic models, which relates the long rate to a long distributed lag of short rates and a term premium that presumably reflects risk or uncertainty. Typically, a 100 basis point increase in the short rate is predicted to raise long rates initially by about 30 basis points, thus reducing the spread by about 70 basis points. If the initial increase in short-term rates is maintained, the

yield spread is constrained eventually to return to its initial level. But the estimated lags are long. For the United States, for example, the estimated equation implies that after five years only 80 percent of a permanent change in the short rate has been reflected in the long rate.

When Mankiw uses these equations to make out-of-sample forecasts for the 1980s, the equation for the United States does not show a persistent drift in the errors between forecast and actual long-term rates, although the errors for individual quarters are often quite large. By contrast, the equations for the other three countries, especially that for the United Kingdom, rather consistently overpredict the yield spread in the 1980s. That is, except in the equation for the United States, long-term rates do not rise relative to short-term rates by as much as the equations predict.

As Mankiw notes, such traditional equations, which rely on past short rates to forecast bond rates, are not well grounded in theory and should be expected to predict poorly when events or changes in the public policy regime reshape investors' expectations in a way that has not been typical in the past. At best, the traditional equations can hope to capture only the average behavior of short-term interest rates through time and thereby the average relationship between long-term and short-term rates. Mankiw therefore turns to a model of the term structure based on the assumption that expectations are rational. In this model, the long-term rate differs from the short-term rate by a constant term premium and the properly discounted rational expectation of future short-term rates. Equivalently, the theory implies a constant term premium, given by the rationally expected difference between the return on a short-term security and the holding return on a long bond, including capital gains or losses as well as coupon payments.

Utilizing a series of tests, Mankiw shows that some key implications of this expectations theory are rejected by the data. In particular, according to the theory, the excess holding return available from investing in long-term rather than short-term securities should be unforecastable. But Mankiw finds that the excess holding return is significantly positively correlated with the yield spread in the United States and Canada, and that the two are also positively correlated, though not significantly, in the United Kingdom and Germany. Furthermore, a similar relation holds in comparing the averages across countries: in the United Kingdom and Germany, where the yield curve has been steepest,

long bonds have been systematically a better investment than short bonds have been, implying a correlation between their excess holding return and the yield spread. The expectations theory of the term structure also fails a related test, in which changes in the long-term rate are expected to be positively related to the yield spread. Instead, the two are significantly negatively correlated in the United States and Canada and insignificantly, though still negatively, correlated in the other two countries.

If one wishes to retain the assumption of rational expectations of future short-term rates, Mankiw's rejection of the expectations theory implies that the term premium must vary systematically. A meaningful theory would therefore have to explain this variation. One obvious possibility is that it is associated with variations in the riskiness of holding bonds. But Mankiw finds, surprisingly, that the price volatility of bonds—which is one simple measure of their riskiness—is negatively related to the yield spread in the United States and Germany, with no significant relation between the two in the other two countries. Using more sophisticated measures of risk, which attempt to isolate the nondiversifiable risk in holding bonds, Mankiw again fails to establish a positive link between risk and the yield spread. Finally, Mankiw reports that changes in the relative stock of assets of different maturities cannot explain the change in term premiums found in his data.

Mankiw concludes that existing theories do nct provide an adequate explanation of the relative movement of long- and short-term interest rates. But while his study does not explain recent movements in long-term rates, it does alter our perception of the puzzle. While, to many observers, recent long-term rates appeared "too high" in the United States, Mankiw shows that they were lower in Canada, Germany, and the United Kingdom than would have been expected from historical experience.

ACCORDING TO BOTH neoclassical and neo-Keynesian theory, the cost of capital should play an important role in determining investment. The response of the capital stock to interest rates is central to most modern analyses of tax reform and the welfare costs of capital taxation, as in the work of Hubbard and Judd reported in the first paper in this volume. Similarly, in most macroeconometric models, monetary policy affects output and employment by stimulating or restraining investment through

variations in interest rates. Yet macroeconometric studies have found it difficult to find a significant effect of interest rates on investment, and accelerator models, which relate the demand for capital directly to output, bypassing the cost of capital, generally fit the data well.

The usual explanation for this lack of success in obtaining results that support conventional economic wisdom is the difficulty of distinguishing econometrically between those interest rate movements that result from demand shocks and those that are caused by monetary policy. Shocks that stimulate investment by raising the expectations of firms about the profitability of capital, thereby driving up rates, by themselves would create a positive correlation between investment and interest rates, whereas rate changes unrelated to the productivity of capital would have the opposite effect. In the third paper of this volume, Matthew D. Shapiro develops a neoclassical model in which cost-of-capital effects are economically significant, and the predicted correlations among the major economic variables are similar to the patterns actually observed in the U.S. economy.

Shapiro's model contains two distinctive features that play an important role in generating these patterns of correlations among output, investment, employment, and the cost of capital. First, his neoclassical production function incorporates a significant cost of adjustment of the capital stock so that an increase in the capital stock adversely affects output while the investment is taking place. Positive effects on output and the productivity of labor occur only after the investment is completed. The costs of adjustment are assumed to be quadratic; hence, firms will tend to smooth investment. This is one reason why the model anticipates that the effects of stimulants to investment will be spread out over time and that the effects of transitory stimuli will be small. Furthermore, since investment itself is cyclical, this feature of the model affects the estimated residuals of output from the production function.

The second distinctive characteristic of Shapiro's model makes these residuals centrally important. The model attaches a major role to productivity shocks in explaining the fluctuations of output and investment. The residuals of output from the production function are assumed to be productivity shocks affecting the level of the production function and hence the productivity of both capital and labor. Accordingly, such shocks affect investment as well as output, inducing a positive correlation between the two.

Shapiro examines the success of his model in explaining the observed data by calculating the covariances among investment, output, the interest rate, and the price of capital that are implied by the model, using estimated processes for innovations to the variables "forcing" the system—innovations in interest rates, productivity, labor supply, and the price of capital goods. The parameters for the production function itself, including the cost of adjustment, are taken from previous work, and results are calculated for two plausible values of the elasticity of substitution between capital and labor in the production function. According to Shapiro, the price of capital goods and the productivity shock are not significantly different from a random walk, and he treats them as such. Hence, a firm experiencing one of these shocks expects it to continue. Similarly, a labor supply shock, which can also be interpreted as a demand effect, has a permanent component and, in addition, a transitory component that dies out rapidly. An innovation to the interest rate, on the other hand, appears to have only a transitory effect: Shapiro estimates that 2 to 5 percent of any such innovation evaporates each quarter. This fact is important in explaining why, even though the model constrains the cost of capital to be an important determinant of investment, the model also predicts that interest rates and investment will not be correlated: the response of investment to shocks is dampened, and shocks to interest rates are not maintained.

In this and other ways, the covariances of investment, output, and the cost-of-capital variables calculated from the model are reasonably close to those actually observed. The primary exceptions are the excessive correlation between the price of capital goods and investment predicted by the model and the lack of a correlation between productivity shocks and investment predicted in the constant elasticity of substitution version of the model.

Shapiro concludes by demonstrating that the effects of the cost of capital on investment are important. To do this, he simulates the predicted response through time of investment and the capital stock to changes in the price of capital goods and the discount rate. According to the version of the model he prefers, a one standard deviation innovation—a 2.4 percent decrease—in the price of capital, which could come about through a tax change, gradually adds to investment spending, raising it permanently by $0.4 billion (1982 prices) by the fifth quarter. This innovation is assumed to be permanent. A one standard deviation change

in the interest rate—an estimated decrease of 40 basis points—has a much larger impact in the short run, adding over $1.0 billion to investment in each of the first four quarters. However, because Shapiro estimates that the typical interest rate shock is transitory, and treats it as such in his simulation, its impact on investment gradually dies out.

AS RECENTLY AS a year ago, most observers were deploring the high value of the dollar and its effects on U.S. economic performance and debating whether it was feasible and desirable for policy to force the dollar to decline. Although the dollar has since declined by over 30 percent against other major industrial currencies, questions remain about its appropriate level and appropriate U.S. domestic policies now and for the future. Furthermore, the dollar's historic rise and fall during the 1980s raises the broader question of whether and how to alter the exchange rate system for the future.

A symposium of four papers, by John Williamson, William H. Branson, Richard N. Cooper, and Rudiger Dornbusch, respectively, examines these questions. In this examination, one set of issues concerns the interaction between exchange rates and policies. Can exchange rates be influenced independently of domestic monetary and fiscal policies, and, in turn, will the exchange rate regime discipline the conduct of fiscal and monetary policies? Another set of issues concerns the nature of observed exchange rate movements. Whether it is desirable to move away from unfettered, freely floating exchange rates depends importantly on whether exchange rate fluctuations of recent years were optimal responses to real and monetary shocks, including domestic policies, or were, in part, currency misalignments generated by speculative market forces.

IN THE FIRST PAPER of the symposium, John Williamson outlines and presents arguments for a target zone system that would limit the range of exchange rate movements. Williamson proposes that the major industrial countries negotiate real exchange rate targets that would be designed to secure basic balance in current accounts over several years while maintaining employment at the highest level consistent with controlling inflation. Basic balance is defined as the current account position needed to offset underlying long-term capital flows among countries. Nominal exchange rate targets would be regularly updated to

reflect differential inflation rates, whereas real targets would only be revised more gradually to reflect differential productivity growth, other real shocks, or new evidence about what rates are appropriate for achieving basic balance. Williamson does not advocate rigid targets, such as those that exist in a fixed rate system. Rather, he proposes bands of plus or minus 10 percent around the target exchange rates, the bands, in turn, being treated as elastic under some circumstances. Monetary policy, at times reinforced by exchange rate intervention, would be the principal instrument used for keeping exchange rates within the specified bands. It would be supplemented by changes in fiscal policy if the implied monetary action threatened internal balance in the economy.

In support of his target zone proposal, Williamson offers several crucial judgments about how international economies operate. First, although policy fundamentals are the main determinants of exchange rates, operators in the foreign exchange market take a short-term view, and, as a consequence, the market itself cannot be counted on to achieve equilibrium levels of the exchange rate at all times. Furthermore, a misaligned exchange rate imposes major costs on an economy by affecting the competitiveness of particular sectors, thus giving rise to political pressures for quotas, tariffs, and other forms of interference with the liberal trading system. Finally, fiscal policy is not necessarily independent of the exchange rate regime, and a regime of target zones would help shape appropriate fiscal policies in different countries.

Williamson compares fluctuations in the real exchange rate between the deutsche mark and the Swiss franc on the one hand and between the deutsche mark and yen on the other as examples of what exchange rate targeting can accomplish. He notes that the real yen-mark exchange rate has gyrated far more than the 10 percent margins that his target zone proposal would have permitted. He contrasts this instability with the stability of the Swiss franc–mark rate, which he attributes to Swiss monetary policy in recent years having been conducted with the aim of stabilizing the exchange rate against the mark.

Placing his proposal in the context of prospective U.S. policy, Williamson reasons that, if U.S. fiscal deficits are reduced as scheduled under Gramm-Rudman targets, the dollar will stay within an appropriate target zone—which Williamson estimates would center at an exchange rate about 10 percent below the levels of April 1986—as long as the Federal Reserve orients monetary policy to the exchange rate objective.

If, on the other hand, the U.S. budget deficit remains very high, Williamson sees a range of possible outcomes, most of them bad. Under the best outcome, the exchange rate would remain near its present level while an expansion in exports would generate a strong rise in output. If the natural unemployment rate were low enough that inflation were not rekindled, all would be well. If inflation were to worsen, however, monetary policy might be tightened in response. This would push the dollar to the top of the target zone and pressure the political system to reduce budget deficits. If even these events were to fail to restore fiscal discipline, either the dollar would break through the top of its target zone—in which case the existence of the zone, though breached, might still prevent a speculative bubble—or, as confidence in it eroded, the dollar would collapse to the bottom of the target zone. This last case would be most likely if the Federal Reserve were to monetize the deficit, thus creating too strong an expansion. Williamson sees the existence of target zones and a commitment to defending them as minimizing the chances that we end up with one of the less desirable of these outcomes.

IN THE SECOND PAPER of the symposium, William H. Branson challenges some of the grounds on which Williamson and others support a target zone system. Branson observes that the real exchange rate can be moved by real disturbances, such as fiscal policies or oil shocks, or by monetary disturbances. Monetary coordination of the type envisioned under a target zone system can usefully limit undesirable fluctuations in exchange rates that would arise from monetary disturbances. But target zones would do more harm than good if used to limit exchange rate movements coming from real disturbances. More generally, Branson notes that some fluctuations in exchange rates are appropriate, helping to establish a proper allocation of resources, and some are not, and he doubts the ability of policymakers to distinguish between them.

As a prime example of this problem, Branson cites the real appreciation of the dollar between 1981 and 1984. He presents a model of the U.S. economy and its foreign sector in which this appreciation is a response to the large increase in the U.S. structural budget deficit over this period. And he shows that a monetary policy that attempted to stabilize the nominal exchange rate under these circumstances would have required a substantially faster growth of money than occurred. The result, presumably, would have been faster inflation in the United States

and, ironically, a real appreciation of the dollar through inflation—reducing the competitiveness of American goods—rather than through the nominal appreciation that in fact took place.

Even though his own model explains the developments of the first half of this decade, Branson notes that there is no widespread agreement about the effects of changes in the structural deficit on the real exchange rate. Thus he doubts that the U.S. fiscal shift would have been accepted by policymakers as a real shock requiring a real exchange rate appreciation. Nor is Branson as sanguine as Williamson about the effect that a target zone system would have in disciplining domestic fiscal policies.

Absent a consensus either about analysis or about the objectives of policy in different countries at this time, Branson reasons, no formal agreement on coordination is politically feasible. He believes that some loose form of central bank coordination might usefully smooth out the volatility of exchange rates, which no country favors. But broad swings in real exchange rates may continue in response to fundamentals, and attempts to limit them through monetary policy would be a mistake. Because of the lack of consensus about the analytics of exchange rate movements and the appropriate policy response, Branson sees the issues raised by recent currency fluctuations as "a topic for the National Science Foundation, not a new Bretton Woods."

RICHARD N. COOPER, in the third paper of the symposium, emphasizes the need to focus for the immediate future on domestic policies rather than on the exchange rate system. This emphasis does not stem from any complacency about the exchange rate movements of the past decade. Cooper believes that the degree of exchange rate volatility that has characterized the floating rate era will prove intolerable to firms in the goods-producing sectors of national economies, and he predicts that, if such volatility continues, firms will insist on protection, controls on capital flows, and intervention—all measures designed to limit swings in their competitiveness caused by exchange rate movements. Ideally, Cooper suggests, the industrial democracies should aim for a single currency as a way of eliminating exchange rate uncertainty. But that is a proposal for the future that could evolve only if economic policies and objectives were to become less nationalistic than they are at present. For now, Cooper reasons that even small steps away from freely floating rates, such as Williamson's target zones, will appear flawed once they

are considered closely and will not secure the broad political agreement needed for their adoption.

Cooper therefore considers what domestic policy steps are appropriate for the United States in the context of the floating rate regime, augmented by discretionary exchange rate management, that has characterized the recent past and that can be expected to characterize the future for some time yet. He sees two main consequences of the trade deficit induced by the highly valued dollar of recent years. First, the trade deficit is burdening the nation with unwarranted future debt service because it has largely augmented private and public consumption rather than adding to investment. Second, it has distorted present employment and production patterns. Not surprisingly, Cooper places a high priority on reducing the trade deficit. And because, like Branson, he sees the U.S. budget deficit as a main cause of the trade deficit, he places a high priority on reducing the budget deficit as well.

Although the fundamentals of monetary and fiscal policy are important determinants of the exchange rate in Cooper's view, he also sees a role for official guidance and intervention in exchange markets. He reasons that exchange market expectations are weakly held and subject to crowd effects because of the short horizon of exchange market participants combined with ambiguity about present economic conditions and uncertainties about the future. Thus, he credits the September initiatives of the Group of Five finance ministers—which included strong statements about the direction in which they wanted the dollar to move as well as actual interventions in exchange markets—with a significant role in subsequent exchange rate movements. However, he reasons that the contribution of those initiatives cannot be disentangled from the effects of monetary easing and budget tightening that were occurring at the same time and from the market's belated recognition of the unsustainability of the exchange rate itself.

Cooper offers an array of evidence about the appropriate level of the dollar. While demonstrating that it cannot be projected with any precision, he concludes that a modest further decline from this April's levels is probably called for. Finally, Cooper takes issue with the often-voiced concern that the exchange rate should not move too abruptly. He presents several reasons for preferring a sharp decline in the dollar to a gradual one. The effects of an exchange-rate-induced change in the trade balance are gradual and so must precede fiscal actions if they are to offset them;

the uncertainty of foreign investors about future exchange rate movements will be reduced if the decline is completed quickly; the inflationary effects of the decline may be contained and kept out of the domestic wage-price spiral if they are part of a deliberate, well-explained program and come at a time when wage pressures are weak; and a sharp decline puts early and strong pressure on foreign governments to back off of their fiscal contractions and reliance on export-led growth.

IN THE FINAL PAPER of the symposium, Rudiger Dornbusch provides an overview of exchange rate issues in the context of overall economic performance and policy choices. He observes that the huge swings in the dollar's exchange rate during the 1980s have renewed the debate among economists and policymakers about the flexible rate system and possible alternatives to it. The key issues he identifies in that debate are whether recent exchange rate movements reflect extravagant macroeconomic policies or poorly working capital markets, and whether exchange rate fluctuations can be contained without subordinating policies to that one objective at the expense of other economic goals.

We need to understand why exchange rates move as much as they do in order to prescribe whether and how to contain their volatility. Dornbusch reviews three explanations that have been offered for exchange rate movements. The first attributes them to the monetary and fiscal policies being pursued in different countries. Dornbusch presents a formal model that attributes the appreciation of the dollar during the first half of the 1980s to the large budget deficits produced by the Kemp-Roth tax cuts of 1981, and attributes the depreciation of the dollar during the past year to the anticipation of sharply lower budget deficits in the future. He concludes that this theory largely explains the recent broad swings in the dollar. He is more skeptical of a second explanation that centers on "safe haven" capital movements. Although he agrees that such capital movements can be important at times, possibly leading to currency misalignments, he points out that they cannot provide the sole explanation for the movements in the dollar's exchange rate, since they cannot explain the recent sharp decline in the dollar. A third explanation is that the exchange market is irrational and does not promptly gravitate to levels that are supportable for the longer run. Dornbusch acknowledges that markets may fluctuate and overshoot their fundamental equilibrium levels. But he suggests that there is little reason to believe

that such irrationality is an important source of exchange rate fluctuations.

These and other observations inform Dornbusch's assessment of various plans to limit exchange rate variability. While macroeconomic policies have important effects on exchange rates, coordinating such policies among countries can be difficult, he says, not only because of a lack of agreement about the outcomes of altered policies, but also because of a lack of consensus about what set of outcomes is the most desirable. A target zone system may be advocated based on the belief that asset markets move exchange rates out of line with economic fundamentals; but Dornbusch notes that it would be difficult to know when an exchange rate is misaligned so as to justify intervention. Furthermore, even if there were agreement that currencies were misaligned, other policy conflicts would exist. Lowering the value of the dollar, for instance, would contribute to pushing up U.S. inflation and would require fiscal and monetary policy adjustments here and abroad that would have effects going well beyond exchange rates. Both because of the effects on inflation and because of such other side effects, the changes in policies needed to correct misalignment might be politically difficult to achieve.

A better alternative to targeted exchange rates, argues Dornbusch, would be measures to reduce excessive capital flows that may at times distort exchange rates. Breaking the interest rate linkage among the world's capital markets would allow nations to reduce the risk of misaligned currencies arising from capital movements without sacrificing fiscal autonomy or subordinating monetary policy to exchange rate targets. He suggests that a "Tobin tax"—a small uniform tax on all foreign exchange transactions—would reduce the incentive for short-term capital flows while leaving longer term flows unaffected. But he also cautions that such a tax might limit the exchange rate movement that would otherwise be an appropriate response to real shocks, such as a fiscal expansion in one country. If capital flows had been constrained in the recent past, world interest rates would have been higher when the U.S. fiscal deficits rose than they were with full capital mobility. In Dornbusch's view, therefore, freely floating rates and unimpeded capital movements may be preferable even to schemes to control capital movements.

In conclusion, Dornbusch argues that the present world situation

cries out for lower interest rates, which would encourage expansions here and abroad without necessarily affecting exchange rates or requiring politically difficult changes in fiscal policy abroad. He stresses that the biggest problems confronting national economies come not from the exchange rate system but from inappropriate policy shocks. Now that the U.S. budget deficit is being brought under control, the appropriate policy response for all industrial nations is to lower interest rates both to propel expansions and to help ease the LDC debt problem and the problems of financial institutions.