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5 Roundtable on Exchange Rate Policy

Stanley W. Black, Dale W. Henderson, and John Williamson

Remarks

Stanley W. Black

Since 1973, players in international financial markets have been operating with floating exchange rates among major currencies, such as the U.S. dollar, the West German mark, and the Japanese yen. Initially, most experts in international finance were very supportive of these arrangements. Our views were based on one of several types of asset market theories of exchange rate determination with rational expectations, usually either a monetary theory or a portfolio theory. These theories seemed to explain reasonably well the functioning of the markets as we observed them.

Time passed, and exchange rates fluctuated, indeed rather more than expected. So did inflation and unemployment and the growth of world trade. Many of us have become much more skeptical of our initial predictions, which were based on partial equilibrium models that assumed domestic prices, outputs, and/or monetary policies were given. Subsequent analysis of the relationship between exchange rate behavior and monetary and fiscal policies in industrial countries has identified several major problems with floating exchange rates (see Crockett and Goldstein 1987; Obstfeld 1985; and Black 1977).

First, the increased short-run exchange rate risk associated with floating may have affected international flows of trade and investment. Second, wide medium-run exchange rate fluctuations may represent misalignment of exchange rates induced by some combination of inefficient or risk-averse market participants and/or divergent monetary

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and fiscal policies in major industrial countries. Third, large swings in global credit creation have caused serious problems for both borrowing and lending countries. Fourth, the market-oriented system of floating exchange rates appears to have caused serious management problems for a number of countries with relatively weak fiscal and monetary institutions. Fifth, major industrial countries may have overcontracted in response to common inflationary shocks in the mid and late seventies.

Exchange Risk

Let us now examine these problems as they are reflected in the events of the last few years. To begin with, the evidence clearly shows that short-run exchange rate risk in both nominal and real terms has increased sharply by comparison with the period of pegged rates of the sixties (see International Monetary Fund [IMF] 1984). The effects of this increased variability on trade and investment have, however, been disputed. The IMF's study found no appreciable effects on trade flows. More recently, Cushman (1986) has found significant negative effects of risk on bilateral trade flows among industrial countries, while Kenen and Rodrik (1986) have found significant negative effects on aggregate trade flows. The magnitude of these effects is of the order of 5% of U.S. exports. Striking confirmation of these results based on a time series approach comes from De Grauwe and Verfaille's paper for this conference using a cross-section approach.

Misalignment

The second major problem raised above is misalignment. If we focus on the U.S. dollar, the Federal Reserve Board's index of the dollar vis-à-vis the currencies of ten industrial countries rose 80% between 1980 and February of 1985—75% in real terms after allowing for relative domestic and foreign inflation. Since February 1985, the dollar has fallen about 40% relative to the currencies of the ten industrial countries in nominal terms, and about 30% in real terms.

Whether these movements reflect misalignment or not depends on their causes, which are not always easy to agree on. Nevertheless, a representative list of the causes of the rise of the dollar would include the sharp relative decline in inflation in the United States after 1981 and our high real interest rates compared to other countries. The relative increase in U.S. real interest rates is attributable to the difference between the U.S. mix of tight monetary policy and loose fiscal policy and the tighter fiscal policies in other industrial countries discussed in Bill Branson's paper for this conference. Additional causes that have been suggested include capital inflows induced by tax cuts, efforts to

invest inside a protectionist quota wall, and capital flight from disturbed regions elsewhere. Finally, a speculative bubble at the peak in February 1985 has been suggested.

Relatively permanent factors affecting the dollar exchange rate, such as lower inflation, lower tax rates, and a safer business environment, could not be described as causing the exchange rate to deviate from a sustainable long-run equilibrium level. On the other hand, an unsustainable fiscal policy or a speculative bubble would lead to misalignment, in the sense that the exchange rate deviates from its sustainable equilibrium level.

The decline in the dollar since early 1985 has coincided with a decline in real interest rates and an expectation of increased fiscal restraint in the United States after the passage of the Gramm-Rudman-Hollings bill discussed by Branson. This movement, based as it seems clearly to have been on the evident unsustainability of the previous path of U.S. fiscal policy, reinforces the designation of the high dollar as a misalignment. A related factor was the shift in Administration policy on exchange market intervention embodied in the Plaza Agreement of September 1985. In this case it was the political unsustainability of the current account deficit that led to the shift in exchange rate policy in response to protectionist pressures in Congress.

The effects of the large misalignment of the dollar in the eighties have been penetrating and pervasive. The $150 billion trade deficit, amounting to 4% of GNP, has devastated major sectors of the economy, including agriculture, textiles, machinery, and electronics. The protectionist trade legislation even now passing the Congress is directly attributable to the misalignment. I understand from my Congressman, who voted for it, that the bill is mainly for political posturing, and that the Gephardt Amendment against bilateral trade imbalances only passed because Congressman Gephardt is running for President.

The Global Credit Cycle

During the seventies and eighties there have been two complete cycles of credit expansion and contraction. The first expansion coincided with the breakdown of the Bretton Woods system of pegged exchange rates from 1970 to 1973 and was fueled by the purchase of dollars by foreign central banks to prevent their currencies from rising. It also coincided with a period of relatively low real interest rates in the United States and elsewhere. It concluded with a sharp rise in oil prices and the global recession of 1974–76. The second major expansion during the period 1977–80 featured monetary and fiscal stimulus from the United States and again low real interest rates. It concluded with the second rise in oil prices, a sharp tightening of monetary policy, and

the recession of 1980–84. These cycles in real interest rates and credit expansion have been a major factor in creating the environment for the debt crisis of the eighties.

Global Policy Conflict

The final problem raised above was that of overrestrictive national policy responses to global inflationary shocks. Following the analysis of Hamada, Canzoneri and Gray (1985) developed the argument that two countries responding to a common inflationary shock in a non-cooperative fashion with a floating exchange rate may overcontract. Acting separately, each country seeks to export inflation to the other via restrictive monetary policy that would, in isolation, appreciate its exchange rate. The negative external effect on the other country results in an overrestrictive response, as the two countries compete with each other in deflation. This analysis appears relevant to the recessions of 1974–76 and 1980–82.

Reforming the System

The discussion above suggests that the most important failing of the current system of floating rates is the wide divergence it has allowed in monetary and fiscal policies, both between governments and over time. The issue of more discipline over macroeconomic policies has been widely discussed (Crockett and Goldstein 1987; Obstfeld 1985), although agreement on the need for it and the most likely way to get it is lacking. In my opinion, the need for greater discipline rests strongly on the arguments made above. If less divergence of monetary and fiscal policies could be obtained, there should be fewer and smaller misalignments, smaller global credit cycles (if the United States is more constrained in its cyclical fluctuations), less-widespread debt problems, and fewer policy conflicts. These gains should also reduce short-term exchange rate risk.

It can be argued that the "target zone" approach (Williamson 1983) offers the most appropriate way forward. The basic argument in favor of an exchange rate target is that it is an indirect method of requiring coordination of monetary and fiscal policies. The target zone is a form of managed floating that requires aiming at, but not necessarily enforcing, moveable exchange rate targets, with a wide band around them. Monetary and fiscal policies would have to be more or less consistent with such external targets, as well as with internal targets.

The indirect form of policy coordination, which also underlay the Bretton Woods system, is surely imperfect and would not solve all problems. However, we have to recognize that direct policy coordi-

nation also has perhaps even more serious drawbacks. Different governments often do not agree on objectives. In many cases it appears that they do not agree even on the models which should be used for analysis of macroeconomic problems. One reason that might be so is that the true models differ for countries with different economic structure and institutions. Under these circumstances, it is not surprising that international discussions of policy coordination now are focused on so-called "objective indicators" (Crockett and Goldstein 1987). This amounts to discussion of the outcomes for various targets and instruments in each country, which falls considerably short of true policy coordination. As a friend once remarked, "The secret of success is to aim low."

The target zone approach, while designed to avoid some of the problems of the Bretton Woods system such as reluctant adjustment of parities, asymmetric adjustment responsibilities, and destabilizing capital flows, would clearly retain some others. For example, nothing would prevent global inflation, if several major countries agreed to joint expansion, as happened in the last years of the Bretton Woods system. An international monetary growth rule of the McKinnon type could contain this problem. However, both monetary growth rules and exchange rate targets create problems when there are shifts in the demand for money, the equilibrium terms of trade, or other factors influencing long-run equilibrium. Thus both proposals require a flexible interpretation.

How Can Economic Policy Affect Exchange Rates?

The desirability of an exchange rate policy is of little relevance in the absence of evidence concerning its feasibility. The available tools are monetary policy, fiscal policy, capital controls, and sterilized exchange market intervention. There is little doubt that monetary policy, by affecting current and expected future inflation, interest rates, and output, can affect both the nominal and the (short-run) real exchange rate. As Bill Branson's paper shows, fiscal policy can also have powerful effects on real and nominal exchange rates, although in most industrial countries it is likely to be focused mainly on internal targets. Capital controls act as a tax on the ownership of domestic or foreign assets, and the threat of their future imposition affects the political risk premium on foreign assets.

Sterilized exchange market intervention is the only policy that is explicitly oriented to the exchange market. Therefore it is a bit surprising that it is so controversial. Perhaps that is because under the Bretton Woods system and occasionally under floating rates it has not infrequently been used to avoid following a monetary policy that is

consistent with an exchange rate target. Such misuse should not blind one to the potential, if limited, usefulness of intervention that is in support of a consistent monetary policy (Kenen 1987).

Let me provide a specific model to illustrate the effectiveness of sterilized intervention in support of an equilibrium exchange rate. This model is adapted from Black (1985), but the diagrammatic analysis is new. Define the (logarithm of the) real exchange rate as $q = e + p^* - p$, where p and p^* are the given domestic and foreign price levels and e is the nominal exchange rate. The given real interest rates at home and abroad are r and r^*. I assume the accumulation of private foreign assets Δf occurs through the current account and sterilized intervention to support a target rate $\bar{e} = p - p^*$, which is equivalent to $\bar{q} = 0$. $\Delta f = \mu q + \theta(e - \bar{e}) + u = (\mu + \theta)q + u$. Here μ is the semielasticity of the current account with respect to the real exchange rate, θ is the intervention parameter, and u is a random disturbance. Secondly, the exchange risk premium is proportional to the stock of foreign assets with proportionality factor $\rho = \phi\sigma^2$, where ϕ is the coefficient of risk aversion and σ^2 is the conditional variance of the one-period-ahead exchange rate. $E\Delta q + r^* - r = \rho f$. In this simple model, the equilibrium real exchange rate is $\bar{q} = 0$ and the equilibrium stock of foreign assets is $\bar{f} = (r^* - r)/\rho$. The phase diagram has a saddle path with slope equal to

$$-\frac{1}{.5(\mu + \theta)\,(1 + \sqrt{4/\rho(\mu+\theta)})}.$$

An increase in the intervention parameter θ from zero will reduce the slope of the saddle path from SS to $S'S'$ in the diagram. If the stock of foreign assets varies from A to B, the exchange rate will fluctuate

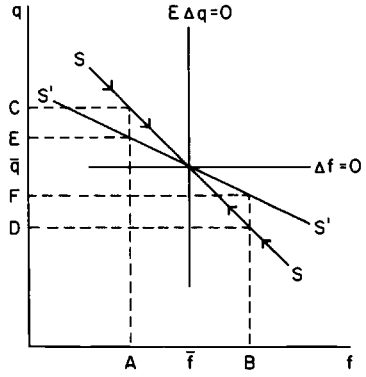

Fig. 5.1 Effect of intervention on exchange rate.

between C and D without intervention and between E and F with intervention. The reduction in σ^2 lowers the risk premium ρ and leads to a further flattening of the saddle path.

In an effort to test for the empirical significance of this effect, Michael Salemi and I (Black and Salemi 1986) have estimated such a model for the dollar value of the deutsche mark over the pegged and floating rate periods. We find evidence for such an effect, if it is assumed that the monetary processes driving relative interest rates and price levels shifted between the two periods.

Needless to say, the effectiveness of the intervention policy discussed above is absolutely dependent upon the choice of a consistent target rate $\bar{e} = p - p^*$.

Conclusion

A system with more international restraints over national policies is likely to perform better than current arrangements. But we are not likely to have such a reform in the absence of a major shock to the system. Therefore we should promote the evolution of the IMF's methods of surveillance in the direction of a target zone system.

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Remarks

Dale W. Henderson

Overview

During the 1970s the Poole (1970) analysis of stabilization policy was extended to include exchange rate policy. In this type of analysis, stabilization problems are caused by exogenous shocks. The policymaker's objective is stabilizing employment, which in the absence of productivity shocks is the same thing as stabilizing output. The usual approach is to assume that stabilization policy must be carried out with the instruments of financial policy; the instruments of fiscal policy are presumed to be too inflexible. There are two main conclusions. First, for some shocks the interest rate and exchange rate should be allowed to vary, and for others they should be fixed. Second, interest rate and exchange rate movements can be used to make inferences about the sources of shocks.

In the first half of the 1980s, the world economy was subjected to a major shock originated by policymakers—fiscal expansion in the United States accompanied by fiscal contraction in other major industrial countries. Taking this shock as given, it seems clear that allowing interest rates and exchange rates to vary was a better policy than trying to keep them fixed. However, it might be argued that if the major industrial countries had been committed to exchange rate targets, the shock would never have occurred.

Recently, the relationship between the exchange rate regime and the control of inflation has been explored using game-theoretic approaches. On the one hand, Canzoneri and Gray (1985) have shown that when policymakers are combating a symmetric inflationary shock, a kind of fixed-exchange-rate regime can lead to better outcomes than Nash noncooperative policymaking. On the other hand, Rogoff (1985) has demonstrated that when policymakers face the inflation bias problem of

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Kydland and Prescott (1977) and Barro and Gordon (1983), a fixed-exchange-rate regime can lead to higher world inflation.

Financial Policy in the Open Economy

Analysts of financial policy in the open economy have made two different assumptions about the degree of substitutability between home (currency) bonds and foreign (currency) bonds. Some authors assume that home and foreign bonds are imperfect substitutes. In this case there are two instruments of financial policy: monetary operations, defined as trades of home money for home bonds, and intervention operations, defined as trades of home bonds for foreign bonds. Intervention operations affect the exchange rate and can be used to stabilize it in the face of shocks. Other authors assume that home and foreign bonds are perfect substitutes. In this case there is only one instrument of financial policy—monetary operations. Monetary policy and exchange rate policy are one and the same. Here, as in Henderson (1984), I focus on the more general imperfect substitutes case.

1. Financial Policy When the Source of the Shock is Known

If the policymaker knows the source of the shock, the correct financial policy response is usually clear. I consider four possible shocks: a shift in demand toward home goods away from foreign goods, a shift in demand toward home money away from home bonds, a shift in demand away from home bonds toward foreign bonds, and an increase in expected inflation. For each shock I consider an aggregates-constant policy, defined as undertaking no monetary operations or intervention operations, and a rates-constant policy, defined as using monetary operations and intervention operations to keep the interest rate and the exchange rate fixed.

A shift in demand toward home goods away from foreign goods increases home output. Suppose the financial policymaker pursues an aggregates-constant policy. The increase in home output raises money demand, pushing up the interest rate and causing the home currency to appreciate. The movements in both the interest rate and the exchange rate tend to reduce the demand for home goods, dampening the increase in output. If instead the policymaker pursued a rates-constant policy, output would expand by the full amount of the initial increase in demand. For shifts in demand between goods, an aggregates-constant policy is better.

Now consider a shift in asset demands toward home money away from home bonds. If the policymaker responds with an aggregates-constant policy, the interest rate must rise and the home currency must

appreciate. These movements in rates tend to reduce home output. The policymaker is better off keeping rates constant by using monetary operations to offset the shift in asset demands. By acting in this way, he completely insulates output from the financial shock.

Another kind of financial shock is a shift in asset demands away from home bonds toward foreign bonds. With aggregates constant, the home currency must depreciate. Actual depreciation raises demand for home bonds by reducing expected depreciation and raising the home currency value of world wealth. Output rises, stimulating money demand and pushing up the interest rate. A better policy is to keep the exchange rate constant by using intervention operations to offset the shift in asset demands. This policy forestalls any change in output and the interest rate. Thus, for both kinds of financial shocks a rates-constant policy is better.

The final shock is an increase in expected inflation. Suppose that there are simultaneous and equal increases in the expected future price level and the expected future exchange rate. At the initial nominal interest rate, price level, and exchange rate, there is an increase in aggregate demand because of the drop in the real interest rate, and there is a decrease in the demand for home bonds since foreign bonds are now relatively more attractive. With aggregates constant, output rises and the home currency depreciates. The rise in output pushes up the nominal interest rate. With rates constant, output rises. The increase in output may be greater or less with aggregates constant. The depreciation of the home currency tends to make it greater, but the increase in the nominal interest rate tends to make it less.

2. Financial Variables as Information Variables

The source of a shock to the economy is often not known. Data on financial variables become available before data on output. Financial data contain information about the disturbances that are affecting the economy. It has been recognized that more information can be obtained if movements in a number of financial variables are analyzed simultaneously.

The policymaker extracts information from financial variables and then acts on it. I will outline the procedure using an example. First, the policymaker selects a desired value for his ultimate target variable, say output; the actual value of output is not observable in the current period. The policymaker then chooses some financial variables, say financial aggregates, as policy instruments. He regards another group of financial variables, say the interest rate and the exchange rate, as information variables. He selects values for the financial aggregates that are consistent with desired output if there are no disturbances and makes forecasts of the interest rate and the exchange rate. Unantici-

pated movements in the interest rate and the exchange rate are used to make inferences about the disturbances that are affecting the economy and therefore about the value of output that is likely to emerge if the financial aggregates remain unchanged. On the basis of these inferences, the values of the financial aggregates are changed to increase the likelihood that the desired value of output will be attained.

All four of the disturbances considered above cause increases in the nominal interest rate. However, the first two disturbances (the shift toward home goods away from foreign goods and the shift toward home money away from home bonds) lead to appreciation of the home currency, while the second two disturbances (the shift away from home bonds toward foreign bonds and the increase in expected inflation) lead to depreciation of the home currency. Thus, the information contained in exchange rate movements makes it possible to distinguish between the two pairs of disturbances. Unfortunately, the policymaker cannot distinguish between the two disturbances in each pair on the basis of interest rate and exchange rate movements. Other information must be brought to bear before the policymaker can decide how to change the financial aggregates.

Exchange rate movements have been used to distinguish between possible explanations for interest rate movements. For about two years after October 1979, the Federal Reserve was targeting M1 quite closely. During this period, if announced M1 was higher than a widely distributed private forecast, the Federal Funds rate rose. Some argued that the interest rate rose because market participants were anticipating a reduction in nonborrowed reserves designed to get M1 back on track. Others argued that the interest rate rose because market participants believed that the Federal Reserve had given up on its M1 target and therefore expected an increase in nonborrowed reserves and higher inflation. The fact that the dollar appreciated when the interest rate rose convinced most observers that the first group was right.

Exchange Rate Targets as a Constraint on Economic Policy

In the first half of the 1980s, the world economy was hit by a large shock originated by policymakers. There was a fiscal expansion in the United States accompanied by a fiscal contraction in other major industrialized countries. The nature of the shock was clear. World demand was shifted toward U.S. goods away from foreign goods. Furthermore, those in control of fiscal policy both in the United States and abroad chose not to reverse the changes in fiscal policy.

According to the analysis above, the appropriate financial policy response to a shift in demand between goods is an aggregates-constant policy. Interest rates rise in the expanding country and fall in the con-

tracting country, and the currency of the expanding country appreciates. These movements in financial variables cause changes in aggregate demands that reduce the output and inflation effects of the demand shift.

U.S. financial policy conformed fairly closely to the aggregates-constant prescription. Financial policy in the other major industrial countries is more difficult to interpret. It is clear that most of these countries took actions to insure that their nominal interest rates would rise somewhat in order to prevent even more dollar appreciation.

It seems clear that an attempt to fix the exchange rate would have been a disaster. According to the best available evidence, intervention operations have little or no effect on exchange rates. Therefore, monetary operations would have to have been used to fix the exchange rate. The required U.S. monetary expansion would have made it possible for the increase in demand to be translated into increases in both output and the price level. Much of what had been gained on the inflation front would have been lost.

Most economists agree that given the shift in fiscal policies, allowing the exchange rate to vary was the right thing to do. However, it might be argued that if the United States and other major industrial countries had been parties to an agreement to keep exchange rates near target levels, say the average levels for the 1973–79 period, the shift in fiscal policies would never have occurred. Those in control of fiscal policy would have recognized that, given the likely response of financial policy, in particular U.S. financial policy, their plans would lead to exchange rates far from the target levels, and they would not have executed them.

This argument is not very convincing. The Reagan administration seemed determined to try to force a drastic cut in nondefense government spending by cutting taxes, increasing defense spending, and then insisting that the resulting government deficit must be eliminated. Those in control of fiscal policy in the other major industrial countries appeared to be convinced that they must try to reduce their government deficits at almost any cost. Most would agree that exchange rate targets would place some constraints on sovereign policymakers. However, it seems unlikely that an administration would let an exchange rate target keep it from pursuing one of its major objectives.

Exchange Rate Regimes and Inflation Control

Suppose that a world economy with two symmetric countries is hit by a negative productivity shock that raises inflation everywhere. Nash noncooperative behavior leads to too much monetary contraction in this case. Both policymakers have an incentive to contract, accepting

some unemployment in order to reduce inflation. Each policymaker thinks that by contracting he can reduce inflation not only by reducing the price of his own output but also by causing his country's currency to appreciate. However, when both policymakers contract, neither gains through exchange rate appreciation. The exchange rate ends up remaining fixed, but both money supplies are too low in the sense that both policymakers would be better off if both money supplies were higher.

Canzoneri and Gray (1985) show that what they call fixed-exchange-rate leadership can lead to a better outcome than Nash noncooperative behavior in this case. The fixed-exchange-rate follower commits himself to vary his money supply to keep the exchange rate fixed. The fixed-exchange-rate leader minimizes his loss subject to this constraint and commits himself to deliver the resulting money supply. In this regime the leader knows that contraction will not lead to an appreciation of his country's currency. Therefore he contracts less, the follower contracts less, and they are both better off.

Unfortunately, the fixed-exchange-rate leadership equilibrium lacks credibility. It is not clear who the third party is who enforces the commitments. If the commitments are not enforced, each policymaker has an incentive to break his commitment. If one policymaker thinks the other will deliver the fixed-exchange-rate money supply, he has an incentive to contract in order to reap the gains from exchange rate appreciation.

Now suppose that the policymakers face the inflation bias problem of Kydland and Prescott (1977) and Barro and Gordon (1983). That is, suppose that the policymakers have target levels of employment that are higher than the natural levels of employment for some reason and that they dislike inflation. In this situation, wage setters know that if wage inflation is zero, each policymaker has an incentive to create positive price inflation in order to increase employment above its natural level. Thus, in order to keep employment at its natural level, they choose a rate of wage inflation high enough that the policymaker has no incentive to create a higher rate of price inflation. The losses generated directly by higher price inflation would just offset the gains from stimulating employment.

Rogoff (1985) explains why Nash noncooperative behavior may lead to lower inflation in these circumstances. A Nash policymaker thinks that if he expands his money supply, inflation will go up, not only because the price of home output will rise but also because his country's currency will depreciate. In contrast, a fixed-exchange-rate leader thinks that if he expands his money supply, inflation will go up only because the price of home output will rise. Therefore the fixed-exchange-rate leader will choose to expand more. Wage setters know the incentives

of the policymakers in the two regimes and will choose a higher rate of wage inflation in the fixed-exchange-rate leadership regime.

The point is that a fixed-exchange-rate regime may or may not be helpful to policymakers who are trying to control inflation. The answer depends on what is causing the inflation.

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Remarks

John Williamson

The purpose of this conference is to assess the effects of exchange rate misalignments. I hope it will succeed in this aim, since I have long been convinced that misalignments are indeed costly, even though the case has not been well documented.

At least the U.S. Congress seems to believe this to be true. The Competitive Exchange Rate Act of 1987, which was incorporated into the trade bill (HR 3) approved by the House of Representatives in April 1987, includes the following (Section 402):

> The Congress hereby finds that—
>
> . . . .
>
> (3) an important factor contributing to our current trade crisis has been the United States dollar, the rise in which over earlier years contributed substantially to our current trade deficit;
>
> . . . .

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(5) a sudden and severe drop in the dollar would reignite inflation and increase interest rates;

(6) fundamental misalignments and erratic fluctuations in exchange rates frustrate business and government planning;

(7) a relatively stable exchange rate for the dollar at competitive levels is desirable and should be encouraged.

If misalignments are indeed costly, it is natural to infer that policy should in future seek to limit them, rather than treating the exchange rate as the residual in the process of policy determination, as is the essence of a system of floating exchange rates. The Congress again appears to agree, since the Competitive Exchange Rate Act also contains the following language.

(10) the actual exchange rate of the dollar cannot be brought into alignment with its competitive exchange rate unless—

A. the Federal budget deficit is reduced;

B. some modification is made in the existing international exchange rate system; and

C. the macroeconomic policies of the major industrialized nations are well coordinated.

SEC. 403. INTERNATIONAL NEGOTIATIONS ON EXCHANGE RATE REFORM.

(a) Policy.—A priority of the United States in international economic negotiations shall be the achievement of a competitive exchange rate for the dollar.

(b) International Negotiations on Exchange Rates.—The President shall seek to confer and negotiate with other countries on the exchange rate system. . . .

(2) to develop a program for modification of that system to provide for long-term exchange rate stability and an agenda for implementing such program; and

(3) to recommend proposals to achieve—

(A) better coordination of macroeconomic policies of the major industrialized nations; and

(B) greater stability in trade and current account balances and in the exchange rates of the dollar and other currencies.

It seems to me that these words represent a challenge to the economics profession.

If policy is to be directed in part to limiting misalignments, a prerequisite is obviously a body of analysis devoted to the identification of a correct set of exchange rate alignments. My own analysis of this question leads me to fear that the dollar may be beginning to overshoot (the key rates were ¥138 and DM 1.78 to the dollar when this judgment was offered), although any such overshooting would seem too modest as yet to justify policy action to support the dollar. The arithmetic that leads me to this view is as follows (all figures in billions of dollars).

1986 current account deficit	140
Estimate of net unrecorded service receipts (U.S. share of world current account discrepancy)	20
Adjustment in the pipeline from past dollar correction and deficit reduction	60
Effect of desirable additional fiscal measures in U.S., Europe, and Japan	40
Additional interest payments on increment in U.S. foreign debt	30
Maximum sustainable current account deficit c. 1990	50

(The last line assumes U.S. foreign debt of $700 billion in 1990 and a growth in nominal income of 7% per year, so that debt can grow up to $50 billion per year without the debt/income ratio rising, as explained in Paul Krugman's paper for this conference.)

Thus I see no reason to abandon my earlier estimates of where exchange rates need to be in order to facilitate a return to a sustainable pattern of payment imbalances in the medium term, provided that fiscal policies are indeed modified. Conversely, without those modifications present policies will not lead to a sustainable payments outcome. But I do not conclude that the absence of assurance that those policy modifications are in train (to phrase the matter delicately) implies that the dollar should decline more, for any further fall unaccompanied by fiscal retrenchment will threaten to undo the inflation stabilization of the early 1980s. I cannot understand how economists who objected to using monetary policy to limit the rise in the dollar in 1983 on the ground that this would have jeopardized the assault on inflation (Dornbusch 1986, p. 12) or that the trade deficit was a second-best response to the budget deficit (Feldstein 1983) can now call for a further 20% or 30% decline in the dollar.

My calculations make no allowance for the possibility of hysteresis. But I am reluctant to make such an allowance in advance of firm evidence that it is necessary, since the existence of hysteresis would imply that it is critically important to prevent other currencies from following the dollar into a period of gross overvaluation.

The disregard of other countries' interests implicit in the Dornbusch-Feldstein call for an undervalued dollar is fortunately not replicated in Congress, which calls in the passage quoted above for a process of international negotiation. It is indeed evident that if exchange rate management directed to limiting misalignments is to do more good than harm, then it will be essential to ensure that the various countries are pursuing consistent targets. This presupposes an international mechanism by which target exchange rates can be negotiated.

Once exchange rate targets have been agreed upon, their pursuit will require a willingness to take the exchange rate into account in for-

mulating monetary policy. One reason for suggesting that exchange rate targets be surrounded by wide zones (± 10 %) is to enable countries to continue to use monetary policy for domestic stabilization. But the pursuit of an exchange rate target does imply a willingness to override the domestically preferred monetary policy by a concern for the exchange rate: since monetary policy is what really can influence exchange rates, it is fatuous to suggest that one can have an exchange rate policy that does not ultimately drive monetary policy. Conversely, once the market is convinced that in the last analysis monetary policy will be driven by a concern for the exchange rate, then I find it reasonable to suppose that sterilized intervention can be helpful in widening the bounds within which monetary policy can be diverted toward domestic ends without pushing the exchange rate to unacceptable levels.

If monetary policy is to be directed in substantial part toward managing the exchange rate, then it will be important to ensure that fiscal policy is consistent with satisfactory domestic performance. This was already made clear in my first discussion of the target zone proposal (Williamson 1983, p. 33):

> One has to conclude that it would be quite wrong to accept macroeconomic follies like the U.S. budget deficit as exogenous, and accommodate them without further question. . . . On the contrary, a principal purpose of seeking a more structured exchange rate system is precisely to expose such examples of myopic and internationally inconsistent national decision making. If the administration had to explain that its budgetary policy required approval of an appreciation of the dollar's FEER, which Congress could recognize would threaten a large number of tradable goods industries, it is surely likely that political forces to restore fiscal discipline would be strengthened.

However, last year two associates and I (Edison, Miller, and Williamson 1987) were led to spell out more explicitly the characteristics of the rule for fiscal policy that would be needed to complement the target zone proposal. We were induced to do this by two considerations. One was the apparent continuing belief of some academic economists that no fiscal coordination was implied, so that target zones might under certain circumstances be a recipe for inflation. The other was the apparent willingness of the Tokyo Summit to contemplate a more ambitious scheme of policy coordination covering fiscal as well as monetary policy.

Our study involved a search for a set of robust policy rules that could be expected to lead to satisfactory outcomes for the world as a whole and each of the major participating countries individually under a wide range of circumstances. We deliberately sought relatively simple feedback rules rather than attempting to seek optimal rules out of a belief

that feedback rules are more robust and that robustness—the assurance that the rules will behave satisfactorily under a wide range of circumstances—is a critically important quality in the context of guidelines for international economic policy coordination.

We suggested that each country should pursue two intermediate targets, related respectively to "internal balance" and "external balance." Dale Henderson argued that because recent shocks have emanated primarily from policy aberrations, it would be better to target policy variables directly rather than intermediate targets. I am unconvinced, because I doubt whether we can rely on a continuing absence of exogenous shocks.

The internal balance target would take the form of a target rate of growth of nominal income, which is of course a simple compromise between promotion of real growth and control of inflation. Our simulations suggested that it would be helpful to endogenize this target according to the formula:

$$(1) \qquad \hat{y}^* = g + \alpha \hat{p}_{t-1} + \beta d$$

where $\hat{y}^*$ = target rate of growth of nominal income

g = estimated rate of growth of productive potential

$\hat{p}^*_{t-1}$ = inherited rate of inflation

d = deflationary gap.

The other intermediate target would be a target for the (real effective) exchange rate, where the target would be set at a level estimated to reconcile internal and external balance in the medium term (what I have previously termed the fundamental equilibrium exchange rate, or FEER). It would be inappropriate to adopt a current balance target directly as the intermediate target, because the lags of trade flows behind exchange rates are so long.

The assignment rules that we suggest to achieve these intermediate targets are the following:

1. The average level of world real interest rates should be revised up (down) if aggregate growth of nominal income is threatening to exceed (fall short of) the sum of the target growth of nominal income for the participating countries.
2. Differences in interest rates among countries should be revised when necessary to limit the deviations of currencies from their target levels.
3. National fiscal policies should be revised with a view to achieving national target rates of growth of nominal income.

Rule (1) deals with the $(n - 1)$ problem in a McKinnonesque way (McKinnon without the monetarism). Rule (2) embodies the essence of the target zone system. Rule (3) endorses Keynesian fiscal policy.

Practical implementation of policy coordination would doubtless be less stark than this summary might suggest. In particular, the guidance to expectations provided by credible target zones plus exchange market intervention plus the wide band will allow significant scope for interest rate differentials to fluctuate with regard to the needs of domestic stabilization. Hence rule (3), which suggests that fiscal policy be used as the residual instrument of anticyclical policy, need not necessarily imply the reinstatement of fine tuning: avoidance of gross mistuning plus the automatic fiscal stabilizers may well suffice. But there is no point in pretending that the world economy can perform satisfactorily irrespective of the fiscal policies pursued by the major powers. Neither can markets be expected to achieve sensibly aligned and reasonably stable exchange rates without the official sector explicitly asking itself what those rates are and being willing to adjust monetary policy to achieve them.

I hope that the economics profession will ask whether the above set of guidelines might not provide an appropriate response to the challenge that the Congress has issued to us.

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