International Aspects of U.S. Monetary and Fiscal Policy

Paul Krugman*

Introduction

Since 1980 U.S. macroeconomic policy has diverged from that of other major industrial countries. While most countries responded to the inflationary impact of the 1979 oil shock by tightening their fiscal policies, the influence of supply-side doctrine has led the United States into a dramatic fiscal loosening. After 1979 all major countries moved towards tighter monetary policies; but until mid-1982 the United States was more determined in this respect than most others. Indeed, despite the fiscal stimulus the United States managed to have a deeper recession than the rest of the industrial world.

The impacts of this divergence in policies on the world economy in general and on U.S. trade in particular have been dramatic. But there is a good deal of disagreement about just what these impacts are, and about the appropriate response. The purpose of this paper is to lay out a framework for thinking about the effects of this kind of policy divergence, and to suggest some tentative conclusions about the current situation.

Readers should be forewarned that this is a "low-tech" paper. It neither sets out an econometric model nor develops a theoretical approach based on careful analysis of microfoundations. Instead, the empirical content, such as it is, consists of rough exploratory data analysis, while the theoretical analysis is in the Mundell-Fleming tradition of small-scale, *ad hoc* modeling. The justification for this crudity is of course that it has the compensating advantage of flexibility. We are now in an international macroeconomic situation which is quite different from anything previously experienced. In time the theory and econometric work necessary for a detailed and rigorous treatment of this situation will be done (although by that time the situation will have shifted again—generals are not alone in their tendency to be ready to fight the lost war). In the meantime, however, there is a place for ad-hockery and first-cut analysis.

The paper is in four parts. The first part is background: an account of the divergent trends in fiscal and monetary policy and of the macroeconomic and financial developments which have accompanied these trends. The second part lays out a framework for analysis. It suggests that a slightly modified version of the Mundell-Fleming or "IS-LM-BP" model is a useful way to think about recent developments. The third part of the paper addresses the problem of the strong dollar from a U.S. point of view: should the United States do something to drive the dollar down to where it belongs?

*Associate Professor of Management and Economics, The Massachusetts Institute of Technology.

Finally, the last part turns to the issue of macroeconomic interdependence and international coordination of policies.

I. Background: Monetary and Fiscal Policies in Industrial Countries

The inflationary impact of the oil shock of 1979 forced the governments of industrial countries to make a hard choice. There were (and are) only three logically consistent ways to approach a situation of uncomfortably high inflation. The first is to learn to live with it, by indexing most long-term economic arrangements to more stable measures of value. The second is to try to legislate inflation down through some kind of incomes policy. The third is to reduce inflation by creating excess capacity in the economy.

In 1979 and 1980 there was virtually a consensus that only the last choice was workable. A policy of monetary (and initially fiscal) restraint was instituted with bipartisan support in the United States and similar if generally less dramatic steps were taken in most other major countries. The three-year global recession which followed can be viewed in broad outline, if not in detail, as a choice in which a remarkably wide cross-section of leaders in the industrial world concurred.

From 1981 onward, however, it became clear that the U.S. policy *mix* was diverging from that in the rest of the industrial world. Fiscal policy, though initially tightened, shifted increasingly towards stimulus, while monetary policy was more strongly disinflationary in the United States than elsewhere.

A. *Fiscal policy*

During the 1970s the United States actually ran much closer to a balanced budget than other industrial countries. Table 1 shows a comparison of budget deficits as a share of GDP for the United States and for six other large industrial countries. Over the 1974–80 period the United States was

Table 1
Fiscal Policy: Actual Budget Balances, as % of GDP

	1974-81 average	1981	1982	1983*	1984*
United States	−.4	−1.0	−3.8	−4.4	−3.9
Japan	−3.6	−4.0	−4.1	−3.4	−2.5
Germany	−3.2	4.0	−3.9	−3.7	−3.1
France	−.8	−1.9	−2.6	−3.4	−3.3
United Kingdom	3.8	−2.5	−2.0	−2.5	−2.5
Italy	9.4	11.7	12.0	−11.6	12.4
Canada	−1.6	−1.2	−5.3	−6.5	−5.7
Non-U.S. average	−3.5	−4.0	−4.4	−4.4	−4.0

*OECD forecasts

Source: Organization for Economic Cooperation and Development

clearly much less inclined towards deficit finance than the rest (although some of the deficits, such as Italy's, are exaggerated by inflation). It is arguable that the United States, with the lowest savings rate among the seven countries, needed to run a smaller deficit; but in any case the effect of divergent attitudes towards fiscal deficits after 1981 soon eliminated the difference. U.S. deficits grew sharply as a share of GDP, while they levelled off elsewhere.

The rise in the U.S. budget deficit was in part, of course, the result of the recession in this country. At the same time, however, recession was also tending to increase deficits abroad, so that the stability of foreign deficits actually reflected a substantial reduction in "full-employment" or "structural" deficits. Table 2 reports the OECD's estimates of those changes in budget balances not resulting from cyclical movements. Although the indicated U.S. fiscal loosening is considerably smaller than that in Table 1, there is a considerable fiscal tightening elsewhere. The *relative* movement in U.S. fiscal policy remains very large, some 4½ percent of GNP from 1981 to 1984.

Table 2
Fiscal Policy: Discretionary Changes in Budget Balance (net of cyclical factors)

	1981	1982	1983*	1984*
United States	1.0	−1.1	−0.6	−0.1
Japan	0.6	0.1	1.4	1.4
Germany	0.2	1.5	1.3	1.0
France	−1.1	0.2	0	1.2
United Kingdom	2.8	1.8	0	−.3
Italy	−2.4	1.2	1.9	0.4
Canada	1.6	0.4	−0.8	0.9
Non-U.S. average	.3	1.0	0.8	0.9

*OECD forecasts

Source: See Table 1.

B. *Monetary policy and income*

From 1980 through mid-1982 this country followed a more disinflationary monetary policy than other countries by any measure. The substantial loosening of our monetary policy since then has not fully made up the difference; it remains to be seen whether, as many expect, U.S. monetary policy will again tighten in the future.

The preceding paragraph was written as if the tightness of monetary policy were something easily measured. In fact, there are a number of possible measurements. In Part II of this paper I will propose a measure which will doubtless annoy most people. For the moment, however, it will suffice to look at the more conventional measures. Table 3 shows growth rates of M1 in the United States and other major industrial countries. The table sug-

Table 3
Monetary Policy: M1 Growth

	1980	1981	1982	Recent*
United States	9.0	5.2	4.8	14.5
Japan	.8	3.7	7.1	−.1
Germany	2.4	0.9	3.2	19.1
France	8.0	12.3	14.8	5.1
United Kingdom	4.5	10.2	8.2	12.8
Italy	15.9	11.1	12.8	16.2
Canada	3.9	3.0	0.8	14.2
Non-U.S. average	4.5	6.1	7.8	9.1

gests a much more dramatic deceleration in this country than elsewhere until the summer of 1982, then a reversal. It is interesting to note the low recent money growth in France and Japan, both of which have (for different reasons) been strongly concerned about their exchange rates.

Differential monetary policies have had an effect on income growth which more than outweighs the effect of differential fiscal policies. Table 4 shows that the recession in the United States produced a greater shortfall of growth from its previous average than that elsewhere. If 1979 is taken to represent a year of more or less normal output, and the trend from 1973–1979 is taken as an estimate of trend growth, the U.S. GDP gap in 1982 was 7.5 percent, vs. 4.2 percent for other large industrial countries. (These numbers would be larger if we used end-of-year figures rather than annual averages).

Table 4
Real GDP Growth

	1973-79	1980	1981	1982	1983*
United States	2.6	−0.3	2.3	−1.7	3.0
Japan	3.6	4.9	4.0	3.0	3.3
Germany	2.4	1.9	0.2	−1.1	0.5
France	3.1	1.1	0.2	1.7	−0.5
United Kingdom	1.4	−2.0	−2.0	1.2	1.8
Italy	2.6	3.9	−0.2	−0.3	−0.5
Canada	3.3	0.5	3.8	−4.8	2.0
Non-U.S. average	2.9	2.3	1.4	0.8	1.4

*OECD forecasts

C. *Interest rates and exchange rates*

Through mid-1982, the United States experienced a substantially greater increase in real short-term interest rates than other countries. The increase represented a combination of higher nominal interest rates and lower inflation, and can be explained as the result of more severe disinflationary monetary policy in this country than elsewhere.

Through mid-1982 there seemed to be a close association between the real interest differential and the dollar's exchange rate. The extraordinary rise in the dollar from its low point in 1980 to mid-1982 could in effect be explained by an equally extraordinary rise in U.S. real interest rates, not fully matched by other countries.

Events in the second half of 1982, however, caused some doubts to emerge about whether policy divergence in itself was enough to explain the dollar's strength. The reversal of U.S. monetary policy in the summer of 1982 brought about a considerable drop in interest rates; yet the dollar not only remained strong but actually rose further. This led some observers to conclude that such factors as political uncertainty, rather than purely economic factors, were the crucial determinants of the dollar's strength.

A more careful look at the evidence suggests, however, that the extent to which the exchange rate was defying economic forces in late 1982 has been exaggerated. Table 5 presents a comparison, developed by the OECD, of interest rate *changes* from June to December 1982. There are two important points. First, the decline in U.S. interest rates was partly matched by a decline in interest rates elsewhere, so that the interest rate *differential* did not narrow as much as a look at U.S. rates alone would suggest.

Table 5
Changes in Interest Rates, end-June to end-December, 1982

	Short-Term	Long-Term
United States	−5.4	−3.3
Japan	−.2	−.6
Germany	−2.9	−1.9
France	−2.8	−.6
United Kingdom	−2.6	−2.3
Italy	−1.4	−.7
Canada	−4.2	−4.2
Non-U.S. average	−1.9	−1.4

Second, the interest differential on long-term securities narrowed much less than that on short-term assets. This presumably reflected the belief of the markets—a belief which turned out to be justified—that the decline in U.S. short-term rates was a temporary phenomenon.

It is argued in the appendix to this paper that the relevant interest differential for exchange rate determination is a differential on real, long-term rates. What Table 5 shows is that despite the perception of a major decline in U.S. interest rates in the second half of 1982, the long-term nominal differential fell by less than 2 percentage points. The question then becomes whether changes in relative inflation expectations offset this decline. None of the ways in which we attempt to measure inflationary expectations is very satisfactory. My personal impression is that the second half of 1982 was marked in this country by a revolution of falling expectations about inflation, as the true depth of the recession became apparent. If this is a correct

perception, it may well be that the second half of 1982 actually saw a *rise* in the relevant interest differential between this country and other industrial countries.

This is hardly a conclusive discussion. The point is that it remains a viable working hypothesis that the strength of the dollar has basically reflected the divergence in macroeconomic policies between the United States and other industrial countries, rather than other exogenous factors.

D. *U.S. external balances*

The end result of the divergence in macroeconomic policies between the United States and other industrial countries is a surge in U.S. external deficits, both on merchandise trade and on the current account. In 1982, despite the strength of the dollar, these deficits increased only modestly. This was partly because the full effects of the exchange rate on trade take time to be felt. It was also importantly due to the greater depth of the recession in this country than elsewhere, which had the effect of masking the U.S. loss of competitiveness. As the U.S. economy recovers, most observers now expect record trade and current account deficits this year, unprecedented deficits next year.

II. A Framework for Analysis

In the last decade international macroeconomic theory has become an increasingly sophisticated field. The simple extensions of the IS-LM model developed by Mundell and Fleming have been followed by models which emphasize price dynamics, intertemporal optimization, and portfolio behavior under uncertainty. These newer models have yielded valuable insights. Yet bread-and-butter analysis of international macroeconomics continues to rely heavily on the older approach. For the purposes of understanding the current international situation the Mundell-Fleming model remains a useful starting point. The most important modification required is, I will argue, in our specification of the behavior of the monetary authorities rather than of private agents.

A. *The Mundell-Fleming model*

The basic Mundell-Fleming model is an IS-LM framework to which a rudimentary international sector has been appended. Trade flows depend on the exchange rate and income, capital flows on the interest differential. The exchange rate adjusts so as to insure a balanced flow of payments.

There are many expositions of the Mundell-Fleming model, and it need not be restated here.[1] The only important thing at this point is to recall the main conclusions about the effects of monetary and fiscal policy with a floating exchange rate.

[1]A relatively modern exposition is given in Dornbusch and Krugman (1976).

Monetary policy: A monetary expansion leads to a lower interest rate, a capital outflow, and depreciation of the expanding country's currency. To accommodate the capital outflow the currency must depreciate so much that the trade balance actually improves, so that monetary expansion by one country actually has a contractionary effect on demand in the rest of the world.

Fiscal policy: A fiscal expansion raises the interest rate and leads to a capital inflow. Whether the currency appreciates or depreciates depends on how sensitive capital flows are to interest differentials. In either case, the counterpart of the capital inflow is a worsening of the trade balance which transmits part of the increase in demand to the rest of the world.

Few sensible observers would quarrel with the argument that monetary expansion at least temporarily lowers interest rates and leads to currency depreciation, though the perverse effect of monetary expansion on demand abroad may raise some doubts. More controversial, however, are the effects of fiscal policy. In the Mundell-Fleming model the effect of fiscal expansion on the exchange rate is ambiguous, while the effect on foreign income is clearly positive. In recent discussions of international issues, however, unqualified assertions have been made that U.S. fiscal deficits raise the value of the dollar. At the same time, many observers have claimed that U.S. fiscal deficits actually have a *contractionary* effect on the rest of the world.

These views do not by and large represent judgments about parameter values or differences of opinion about the appropriate macroeconomic model. What they reflect instead is a view about the proper characterization of monetary policy. The traditional Mundell-Fleming analysis of fiscal policy asks what happens when fiscal policy is changed, holding the money supply constant. This is a reasonable question, but in the present context it is not very relevant. To discuss the effects of fiscal policy it is necessary to ask how the monetary authorities will actually react—and this will probably not involve holding the money supply constant.

B. *Restating monetary and fiscal policy: the IS-PV Model*

Neither in this country nor in others have the monetary authorities held strictly to aggregate targets. Instead, they have modified their targets whenever that has seemed necessary to achieve desired macroeconomic results in terms of growth and inflation. A number of observers have called for an explicit acknowledgement of this position, and have called for targeting not of M1 or M2 but of MV—that is, of nominal GNP.

Central banks have resisted any such explicit targeting. Nonetheless, it may be reasonable as a first cut to hypothesize that monetary authorities are in effect attempting to peg nominal GNP. They are not, of course, fully successful in this, but the error seems to be uncorrelated with other policies. The Federal Reserve is at the time of writing tightening its policies to offset a strong fiscal stimulus. They may do too little, allowing an undesirably fast recovery; or they may do too much, causing the recovery to stall. But the point is that if fiscal policy were less stimulative, the Fed would feel less need to tighten, and the net effect on the *expected* pace of recovery would be ambiguous.

Beyond its rough realism, adopting the working assumption of nominal income targeting by the monetary authorities has two useful features. First, it simplifies the analysis of fiscal policy. Second, it helps clarify the discussion of exchange rate policy by making natural the distinction between questions of the *level* of output and questions of its *composition*.

Consider, then, the Mundell-Fleming model where the monetary authorities engage in nominal income targeting. The effect is to replace the conventional upward-sloping LM curve with a vertical monetary authority response function, which I will call the PV curve.[2] Income is determined by the central bank; given this level of income, fiscal policy can only shift the composition of output by altering the interest rate. In effect we restore the classical full-employment view of fiscal policy even for situations when the economy is not at full employment.

What are the international trade implications of fiscal policy? Figure 1 illustrates the simple story which results. Two countries are shown, with IS curves drawn for a given exchange rate. We assume that at that initial exchange rate, external payments are in balance.

An expansionary fiscal policy in country A has the initial effect of pushing up the IS curve in that country. The resulting increase in interest rates would, however, lead to a balance of payments surplus at the initial exchange rate. Thus country A's currency appreciates. The appreciation acts directly to offset the interest differential, while at the same time acting to narrow that differential. Because A's goods have become less competitive, A's IS curve shifts down while B's shifts up.

Thus the effect of a fiscal expansion in one country is unambiguously to cause an exchange rate appreciation and also to raise interest rates both at home and in the rest of the world.

What about the assertion that U.S. fiscal deficits actually have a contractionary effect in the rest of the world? This should be understood as a statement about policy reaction functions. In the case illustrated in Figure 1, country A's fiscal expansion did not affect GNP in the rest of the world; but it did lead to a depreciation of country B's currency. Suppose that country B does not want to have a depreciating currency, perhaps because of the inflationary impact. Then to limit the fall in its currency country B must either (i) match A's fiscal expansion, or (ii) tighten its monetary policy. If fiscal policy is inflexible, monetary policy must do the job. The result is illustrated in Figure 2. The initial effect of A's fiscal expansion is to push up its IS curve; as A's currency appreciates, its IS curve shifts back down and *both* the IS and PV curves shift back in B. Thus given the hypothesized monetary authority reaction functions, concerned with nominal GNP in one country and the exchange rate elsewhere, a fiscal expansion in one country actually can lead to a contraction abroad.

Is this scenario reasonable? I would argue that it is for at least one major country, Japan. Japan is unwilling to see the yen depreciate for fear of provoking a protectionist response in the United States. At the same time,

[2]For Paul Volcker.

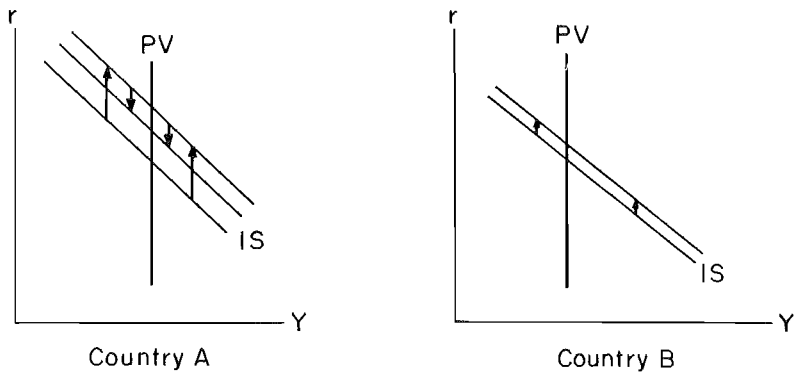

Figure 1

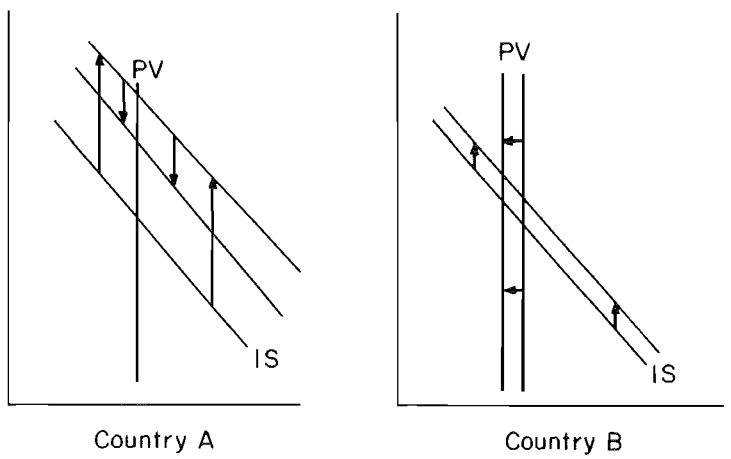

Figure 2

Japan is committed for domestic reasons to a policy of reducing budget deficits. The result is that when U.S. fiscal deficits drive up interest rates, Japan must respond by slowing money growth. In a sense which must be carefully stated but is nonetheless real, U.S. fiscal stimulus probably has a contractionary effect on activity in Japan.

C. *Dynamics and expectations*

To apply the simple framework just described to real-world phenomena it is necessary to make some allowance for the complications introduced by dynamics and expectations. Some of these issues, like the role played by lags in the adjustment of trade flows to the exchange rate, are not very controversial. But there has been some confusion over the appropriate treatment of expectations both of inflation and of future interest rates.

One view, associated particularly with the Council of Economic Advisers (see for example, the *Economic Report of the President* for 1983) is that the relevant interest rates for exchange rate determination are *real, long-term* rates. This view gests that anticipations of future fiscal deficits, by raising long-term rates, can tend to keep the current exchange rate high. The CEA view has, however, been challenged by many observers, who point out two aspects of actual international capital movements which seem to contradict this view. First, investors deciding in which country to place their money are deciding between two financial assets, rather than making a choice between financial and real assets, so that it seems unclear why *real* yields should matter. Second, the most volatile international investment is in short-term securities, so that it seems unclear why *long-term* yields should be emphasized.

These observations are valid, but do not necessarily contradict the CEA view. Even if investors do not care about real returns or invest in long-term instruments in a speculative market, it is still appropriate to focus on the long-term real interest differential.

A formal statement of the argument is given in the appendix. The intuitive sense behind the statement may be helped by making two points. First, high interest rates will not make for a strong currency if they are simply an offset to high inflation, suggesting that it is the real interest rate which matters—not because investors are choosing between real and financial assets, but because high inflation will be reflected other things equal in a depreciating currency, reducing the domestic financial yield measured in foreign currency. Second, an interest rate increase which is perceived as very temporary will have less effect on the exchange rate than one which is expected to persist. This suggests that what matters is a weighted average of expected future interest rates—in effect, a long-term rate. The reason is not because investors plan to buy and hold, but because the expected future course of interest rates affects the expected future course of the exchange rate—which is relevant even to short-term investors.

The emphasis on real long-term rates as determinants of the exchange rate should be interpreted, then, as shorthand for a view of the exchange market as one in which investors attempt to look forward to future funda-

mentals. The main objection to this view would be to question whether the markets are really that rational.

III. Policy Responses to the Strong Dollar

The first two parts of this paper have laid out some suggestive data and a simple theoretical framework on which to hang those data. The message is by and large a conventional one: actual and expected tight monetary and loose fiscal policy in the United States have led to a strong dollar and a massive U.S. trade deficit; the efforts of other countries to support their currencies in the face of the U.S. policy mix may have caused a deeper recession outside this country than would otherwise have been the case.

The next question is what to do about it. It is commonly stated that the dollar is overvalued. It is certainly unusually strong, and probably stronger than it would be given an optimal set of policies. The simple statement that the dollar is overvalued, however, seems to suggest that any policy which brings the dollar down is desirable. This is a dubious conclusion. A strong case can be made for the argument that in a *conditional* sense the strong dollar is desirable—that unless fundamental macroeconomic policies, especially fiscal policy, are changed, using other policies to reduce the value of the dollar will not be a good idea. There is also a contrary case, but it is a surprisingly shaky one.

A. *Effects of the strong dollar*

As a backdrop to our discussion of policy, it is useful to review the major effects of a strong dollar. These basically fall into four categories: the direct effect on U.S. competitiveness; on inflation; on aggregate demand and employment; and on interest rates and investment.

1. *Competitiveness*

This is not the place for a detailed discussion of econometric estimates of the impact of the exchange rate on U.S. trade. The point which is clear from most estimates is a straightforward one: essentially *all* of the actual and anticipated deterioration in U.S. external balances can be attributed to the strength of the dollar. Cyclical factors are important determinants of trade, but have so far acted to mask the effects of the strong dollar (because of the relatively deep U.S. recession) rather than to add to these effects. The expectation of growing U.S. deficits arises partly from the prospect that U.S. recovery will remove this mask, partly from lagged effects of the exchange rate. Other factors, such as the LDC debt crisis and the drop in oil prices, have been relatively small and largely offsetting. As for the alleged effects of foreign trade and industrial policies, these have had no discernible effects.

2. *Inflation*

Exchange rate appreciation leads to lower prices for imports and other tradable goods, thereby providing an anti-inflationary bonus. To the extent

that wages are explicitly or implicitly indexed this disinflationary impact can spread to the economy as a whole. The massive appreciation of the dollar since 1980 has clearly been a significant factor in the moderation of U.S. inflation.

As Buiter and Miller (1982) have emphasized, however, this is only a transitory gain. In the long run, as the exchange rate returns to purchasing power parity, the inflation gains from exchange rate appreciation must be paid back. Indeed, a full analysis shows that they must be paid back with interest.[3]

Despite their transitory nature, however, the inflationary consequences of exchange rate changes play a crucial role in generating international macroeconomic interdependence, as discussed in Part IV of this paper.

3. *Aggregate demand and employment*

When we approach the question of the aggregate demand effects of the strong dollar we enter a controversial area. The *direct* impact of the strong dollar, via its effect on net exports, is of course to depress demand and employment. One's estimate of the *full* effect, however, depends on one's model of the economy and especially on one's model of the behavior of the monetary authorities.

My view should already be clear from the discussion in Part II of the paper. The Federal Reserve can, I would argue, usefully be viewed as attempting to peg GNP (if not too successfully). This implies that a decline in net exports will be met with a decline in interest rates which leads to offsetting increases in other components of demand. To a first approximation, the strong dollar thus has no effect on demand on employment.

4. *Interest rates and investment*

If one accepts the "PV curve" view of monetary policy, the consequences for one's view of the interest and investment impact of the strong dollar are clear. The strength of the dollar leads to lower interest rates and higher investment than would otherwise be the case. In the current context, the strength of the dollar helps limit the "crowding out" caused by the combination of loose fiscal and tight monetary policies.

One way of stating this is in terms of the adjustment shown in Figure 1. There, after fiscal expansion pushes country A's IS curve to the right, exchange rate appreciation pushes it partway back to the left. The result is a lower interest rate and, implicitly, higher investment than would have been the case had the exchange rate adjustment somehow been prevented.

Alternatively, the argument can be stated in terms of the savings-investment identity. Definitionally, U.S. investment equals private sector

[3]A country which experiences a temporary exchange rate appreciation will have a worse current account and therefore end up with less net claims on foreigners than would otherwise have been the case. Because of this, it will eventually have lower net income from investments, and will thus ultimately have to have a *lower* real exchange rate than if it had never had the initial appreciation.

savings, less the government budget deficit, plus the current account deficit. In other words, the external deficit has as its counterpart a net capital inflow. This capital inflow allows a higher level of investment to be sustained for a given level of the government deficit than would otherwise be the case. In this sense, foreign capital inflow can be said to be financing part of the budget deficit—whether foreigners actually buy Treasury offerings or not.

These two ways of stating the point are equivalent, although they can be made to sound different. The important point is that the argument that the strong dollar helps sustain investment is not an outlandish concept, but a straightforward conclusion from a conventional framework.

B. *Policy options*

Given these effects of the strong dollar, what should be done? There are three serious options: tighter fiscal policy, looser monetary policy, and capital controls. There is also a nonserious option, exchange market intervention.

1. *Fiscal policy*

Given our assumptions about monetary policy, a tighter U.S. fiscal policy would lead to lower interest rates, a lower dollar, and (with some lag) an improved U.S. external position. In terms of the savings-investment identity, the reduction in government dissaving would be reflected in increases both in domestic investment and in net foreign investment.

This is a desirable outcome by almost anyone's accounting. It is not, however, something likely to happen soon. In any case, to favor a tighter fiscal policy, which would have a lower dollar as one of its consequences, is not at all the same thing as simply favoring a lower dollar.

2. *Monetary policy*

A looser monetary policy would clearly help drive down the dollar. The question is whether the looser policy is desirable. This depends basically on how fast you want to disinflate, and whether you like the pace the Federal Reserve has chosen. Last fall, it was relatively easy to advocate looser money; at the time of writing, with the economy growing rapidly, the case is less clear. Whatever one's views on the subject, they do not (or should not) depend primarily on the exchange rate. As is the case with fiscal policy, advocating a looser monetary policy, which would weaken the dollar, is not the same as simply advocating a lower dollar.

3. *Capital controls*

If one is neither able to tighten fiscal policy, nor willing to loosen monetary policy, the only practicable way to bring down the dollar is probably with capital controls—either capital import controls by the United States or capital export controls by other countries. And some influential commenta-

tors, such as Bergsten (1982) and Dornbusch (1982) have in fact advocated such controls.

There would certainly be administrative problems and microeconomic costs associated with controls, but these are not the central issue. It is probably possible to devise capital controls which would succeed in lowering the dollar. The key question is whether one wants a lower dollar, *given current monetary and fiscal policies.*

It is crucial to pose the question this way, rather than to ask in general terms whether the dollar is overvalued. If the dollar is somehow brought down without changing the underlying macroeconomic policies which brought it up, there must be a tradeoff. In particular, a weaker dollar must—as we have already seen — mean higher interest rates and lower investment.

To put it baldly, is a (say) $30 billion improvement in the trade balance worth a $30 billion reduction investment?[4] Conventional growth analysis will almost surely say that it is not. The social return on domestic investment is probably higher than on foreign investment even in normal times, because of the tax wedge. Furthermore, in the mid-1980s the crowding out of investment by budget deficits will probably mean that only relatively high return investments would have been undertaken in any case.

To make the case for capital controls one has to argue that too much of the crowding out of investment by the U.S. budget deficit is falling on net foreign investment, too little on domestic investment. If world capital markets were perfectly integrated, one would expect a fiscal deficit anywhere to crowd out investment equally around the world. Since the United States accounts for only about 40 percent of the OECD's GNP, and less of its investment, this would imply a current account deficit of at least 60 percent of the U.S. budget deficit—much more than we have observed so far or than anyone is currently forecasting. This leaves unclear by what standard the actual capital inflow may be judged as being too large.

This is not to say that no arguments can be made for trying to bring the dollar down. Several arguments are discussed below. First, however, it is necessary to treat briefly the question of exchange market intervention.

4. *Exchange market intervention*

Instead of using capital controls to bring the dollar down, we could attempt to use exchange market intervention. As long as such intervention is "sterilized"—that is, not allowed to affect monetary policy—it will have two problems. First, it will probably be ineffective. Second, if it is effective, it will have the same doubtfully desirable macro effects as capital controls.

The effectiveness of sterilized intervention has been the subject of a great deal of empirical work, as well as of an international summit-related study. The evidence is not as tight as one might wish, but in general there is little reason to believe that sterilized intervention can do much beyond limited smoothing of the exchange rate.

[4]This is actually not quite fair. To the extent that savings respond to interest rates, part of the trade balance improvement could come at the expense of consumption.

More to the point, the macroeconomic effects of intervention if it works are the same as those of capital controls: to lower the dollar while raising interest rates, and thus to trade off an improved trade balance for lower investment. It is useful in this context to think of intervention as an officially sponsored capital outflow which is being used to offset private capital inflows; the net effect is as if a restriction were simply placed on the net inflow.

If it could work, intervention might be preferable to capital controls because it is cleaner in its microeconomic effects, and because it is easier to shut off. But in macroeconomic terms, it is no different.

C. *The Case for a Weaker Dollar*

I have made rather strongly the case that weakening the dollar through means other than getting our monetary-fiscal house in order is not a desirable thing. Some contrary arguments, however, deserve to be briefly mentioned.

1. *Adjustment costs*

The strength of the dollar causes resources to move out of exporting and import-competing sectors. When the dollar declines, these resources will come back. The adjustments will have a real cost; if markets fail to perceive the temporary nature of the shift, resources will be wasted in unnecessary movement between sectors. By stabilizing the dollar these costs might be avoided.

There are two problems with this argument. First, it presumes that markets are excessively short-sighted—a shaky foundation on which to base policy. Second, it assumes that stabilizing the exchange rate would reduce total adjustment; in fact, while adjustment by tradable sectors would be less, adjustment by other interest-sensitive sectors such as construction would actually have to be larger.

2. *Permanent loss of competitiveness*

Many businessmen and policymakers are concerned that a sort of ratchet effect may occur in international competition: that once markets have been lost through a period of currency overvaluation, they will not be regained when the currency returns to its normal level. This cannot be true in quite the sense that it is often stated; the United States cannot permanently lose its competitiveness in everything. But there may be a valid point here: in a world where dynamic scale economies are important, as they surely are for many U.S. exports, a period of unusual strength for a country's currency may have to be followed by a period of unusual weakness as the country is obliged to reestablish market positions.

3. *Political considerations*

The most important argument for doing something about the dollar is not really an economic one. It is the argument that the strength of the dol-

lar, by feeding protectionism, will lead to an irreversible breakup of the liberal trading system. A large trade deficit may be preferable to a cut in investment on purely economic grounds, but the political repercussions from the trade deficit will be more severe and last longer.

This is a powerful and respectable argument. It should, however, be made clearly and honestly, with full admission of the economic consequences. Accepting a basically undesirable policy in order to appease dangerous political forces may be good political economy; but one should be clear that is the proposal, and not go back to find reasons why the policy was good economics, too.

IV. The Scope for International Cooperation

The message of this paper so far has been that the U.S. trade deficit is part of a general crowding out of investment by tight monetary and loose fiscal policies. Without a change in these policies, there is not a compelling case—except perhaps a political one—for doing anything specifically to improve the U.S. external balance. And since monetary policy has been reasonably flexible in the last year, it is fiscal policy which is cast as the villain.

The perspective so far has, however, been a strongly U.S. centered one. One naturally wonders whether, even given the problem of U.S. fiscal policy, there is not some scope for improved results through international cooperation on monetary policies.

In this final section of the paper I will briefly sketch out a crude analysis of the possibilities for international cooperation on monetary policy. This analysis suggests that if it were not for the U.S. fiscal problem, there would be scope for coordination; but that the U.S. fiscal problem makes monetary coordination a doubtful proposition.

A. *The Interdependence of Monetary Policies: Conventional Analysis*

There is a view of international monetary interdependence which has been "in the air" in many recent discussions and has been formalized in an important recent paper by Sachs (1983). The key element in this view is the way that tight money, by inducing exchange rate appreciation, can be used to "export" inflation. In the simplest analysis, this leads countries to pursue disinflationary strategies which are individually rational but collectively too severe.

To do this analysis right requires careful distinctions between stocks and flows, and also careful treatment of dynamic issues.[5] For the purposes of this paper it is enough to do the analysis wrong but quickly.

1. *International monetary reaction functions*

Consider a world of two countries A and B, choosing levels of their nominal incomes Y_A and Y_B. We assume that the countries are attempting

[5]The most important dynamic issue is the point, alluded to in Part III of the paper, that the inflation gains from appreciation must be given back. Sachs shows that this does not eliminate the interdependence, though it probably reduces it.

to work down inherited inflation, and are thus in a position where both unemployment and inflation are uncomfortably high.

From the point of view of A's monetary authority, a monetary expansion abroad is helpful because it leads to a depreciation of B's currency and thus a fall in import prices. So we can, as in Figure 3, draw a set of indifference curves in Y_A, Y_B space. If A takes B's monetary policy as given, we can draw a reaction function like AA through the bottoms of these indifference curves. In a typical model, e.g., a linear-quadratic setup, the reaction function will be upward sloping: the more expansionary B's policy, the more expansionary A's will be. We can also derive a similar schedule for B. If the countries act noncooperatively, equilibrium will be where the schedules cross.

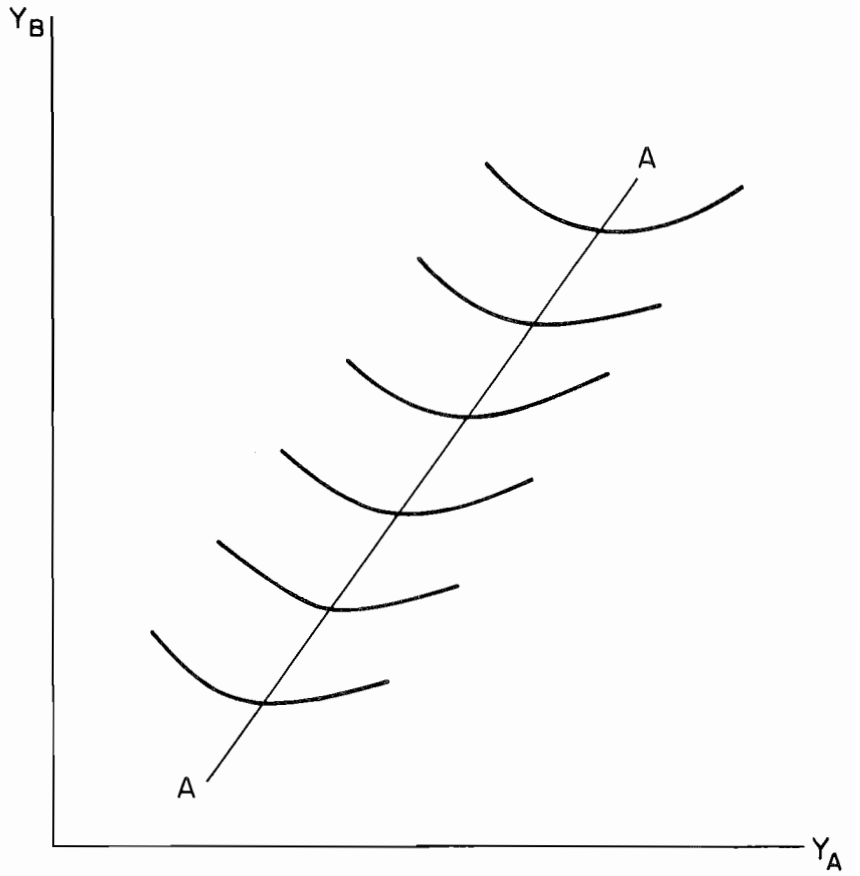

Figure 3

2. *The scope for cooperation*

In this simple view, there are clear mutual gains even without cooperation if one country takes on a leadership role. Figure 4 illustrates the situation. AA and BB are the reaction functions, $I_A I_A$ and $I_B I_B$ the indifference curves corresponding to the noncooperative outcome. Any point in the shaded area is preferable to the noncooperative outcome for both countries. Since this area lies to the northeast of the noncooperative point, this says that in the absence of cooperation, monetary policy ends up being too tight.

The logic of this result is clear. Each country is tempted to pursue an excessively tight monetary policy because of the possibility of exporting inflation to the other,—or, more charitably, neither country is able to pursue a looser monetary policy without importing inflation via currency depreciation.

It is also worth noting that if one country recognizes the interdependence of macro policies, it can unilaterally take on a leadership role to the benefit of *both* countries. For example, it can by adopting a looser policy move to a point such as S, which is not an optimum but is still unambiguously better than the noncooperative outcome.

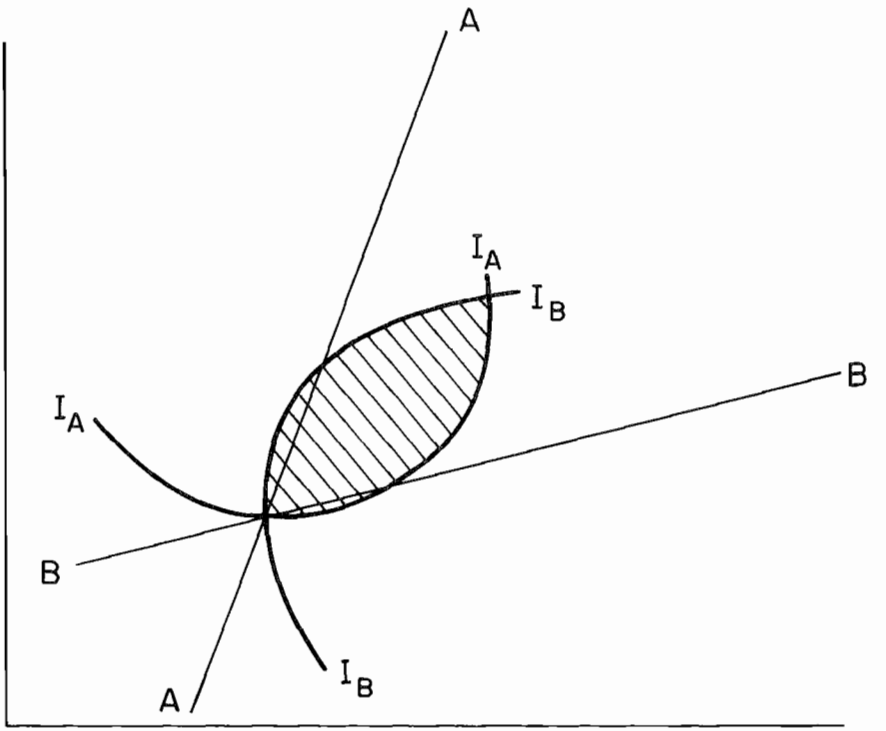

Figure 4

This analysis seems to provide a clear case for at least some coordinated monetary expansion. Unfortunately, thanks to the problem of U.S. fiscal policy, the situation is not so clear-cut.

B. *The Current Dilemma*

The reason why the simple analysis of international monetary interdependence is not too helpful in the current situation is that the United States has a mixed and perhaps perverse interest in foreign monetary policy. Because of expansionary U.S. fiscal policy, a monetary policy which the Federal Reserve regards as suitably anti-inflationary is associated with an unusually strong dollar. Instead of being constrained in monetary expansion by concern that the dollar will depreciate, the U.S. monetary authorities may actually be constrained in pursuing disinflationary policies by concerns about the strong dollar. For this reason, it is unclear whether this country would prefer to see looser or tighter monetary policies abroad.

Without pushing this too hard, it is worth examining the consequences if, because of an out-of-control fiscal policy, a country would actually prefer to see tight money abroad. Figure 5 illustrates the situation. Country A's indifference curves are now reversed in orientation. The zone of mutual improvement now lies *southeast* of the noncooperative solution. In other words, to strike a deal the United States would have to offer a more expansionary domestic monetary policy in return for tighter money abroad. In effect, this would be a cooperative, *unsterilized* intervention to bring down the dollar.

Note also that a sophisticated United States taking other countries' monetary reactions into account, would be inclined to follow a tighter monetary policy than otherwise, as indicated by point S. What is happening is that this country feels freer to disinflate because it knows that the induced reactions of other countries will dampen the resulting rise in the dollar. Unfortunately, U.S. sophistication about international repercussions here leads to a situation in which other countries end up worse off.

It is probably a mistake to push this analysis any further. The United States does not in fact have a clear-cut desire for tighter monetary policies abroad. Nor does it have a clear-cut desire for foreign monetary expansion. Because of its expansionary fiscal policy, this country has an ambiguous and uncertain attitude toward foreign monetary policies.

It is hard to see much realistic possibility for monetary coordination in this situation. Coordination would essentially amount to a trade, each country giving the others something they want. The United States has something other countries want—monetary expansion—but it cannot make a trade because it does not know what it wants.

V. Conclusions

The divergence in monetary and fiscal policies between the United States and other advanced countries has led to an unusually strong dollar and the prospect of huge U.S. external deficits.

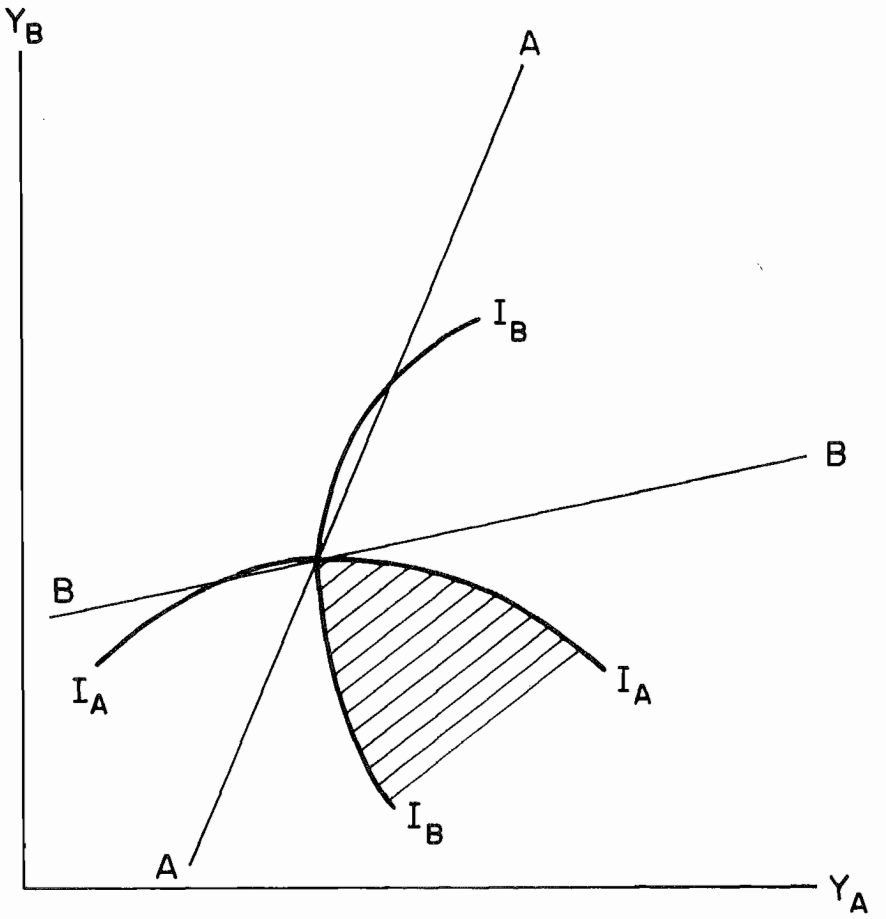

Figure 5

Of the various policy responses which might bring the dollar down, none except tighter fiscal policy seems very appealing, and that seems politically impossible. Looser money might be inflationary, while capital controls would raise interest rates and crowd out investment. The prospects for international cooperation on monetary policies, a reasonable proposal in normal circumstances, are vitiated by the effects of divergent fiscal policies.

Appendix: Interest Rates and The Exchange Rate

The purpose of this appendix is to make algebraically the point that if investors are forward-looking, the exchange rate should depend on the differential in real, long-term interest rates.

Consider the following stripped down statement of the relationship between interest rates and the exchange rate:

$$(A.1) \qquad e_t + p_t - p_t^* = \alpha + \beta\,[i_t - i_t^* + {}_te_{t+1} - e_t]$$

where e_t = log of the exchange rate

${}_te_{t+1}$ = log of the exchange rate expected at time t to prevail at $t+1$

p_t, p_t^* = logs of domestic and foreign price levels

i_t, i_t^* = domestic and foreign interest rates

As observers have urged, this equation relates the current real exchange rate to the differential in expected *nominal, short-term* returns.

Yet if investors use expectations of future fundamentals in forming their views, (A.1) can be shown to yield a relationship between the exchange rate and *real, long-term* interest rates.

Let us define

$$(A.2) \qquad \tilde{e}_t = e_t + p_t - p_t^*$$

the real exchange rate; and

$$(A.3) \qquad r_t = i_t - {}_tp_{t+1} + p_t$$

the real interest rate. Then we can rewrite (A.1) as

$$(A.4) \qquad e_t = \frac{\alpha}{\beta + 1} + \frac{\beta}{\alpha + 1}\,[r_t - r_t^* + {}_t\tilde{e}_{t+1}]$$

so that the real exchange rate depends on real returns and the expected *future* real exchange rate. But if investors have consistent expectations about interest rates, we can rewrite once more to get

$$(A.5) \qquad \tilde{e}_t = \frac{\alpha}{\beta + 1} + \frac{\beta}{\beta + 1} \sum_{j=0}^{\infty} \left(\frac{\beta}{\beta + 1}\right) [{}_tr_{t+j} - {}_tr^*_{t+j}]$$

The current exchange rate thus depends on a weighted average of current and future real interest differentials. If the current exchange rate is sensitive to the yield differential—i.e., β is large—the weight on future differentials will be large, and in effect the relevant rate will be a long-term rate.

REFERENCES

Bergsten, C. Fred. 1982. "What to do About the US-Japan Economic Problem," *Foreign Affairs,* vol. 60, no.5 (Summer).

Buiter, W.H. and M. Miller. 1982. "Real Exchange Rate Overshooting and the Output Cost of Bringing Down Inflation, "*European Economic Review*, 18, #112 (May/June).

Dornbusch, R. 1983. "Flexible Exchange Rates and Interdependence," IMF *Staff Papers,* May.

_____ and P. Krugman. 1976. "Flexible Exchange Rates in the Short Run," *Brookings Papers on Economic Activity,* 3.

Sachs, J. 1983. "International Policy Coordination in a Dynamic Macro- economic Model," NBER Working Paper #1166.

Discussion

Richard N. Cooper*

Krugman has presented us with an ingenious, wide-ranging paper on open economy macroeconomics. His strategy is to put us into an analytical straitjacket, and then to tell us that we should be grateful for being able still to wiggle our hands. My strategy will first be to offer some comments on Krugman's analysis within his straitjacket, and then to suggest that we should not be satisfied to stay within the straitjacket. I conclude with some observations about the future course of monetary and fiscal policy.

With nominal income held constant, Krugman suggests that budget deficits crowd out private investment via higher long-term interest rates, and that the deterioration of the current account brought about by an appreciation of the dollar offers partial relief to this crowding out, by importing real resources from abroad. Without the deterioration of the current account, he argues, interest rates would be even higher and the crowding out would be even greater. This has a very classical ring to it. The magnitudes however are important to keep in mind. Some preliminary work by Earle and Summers suggest that in the U.S. economy crowding out by budget deficits has a much lower impact on business investment than is usually implied in qualitative discussions of this issue. In particular, they find that a Federal deficit of $1.00 reduces business investment by only $.20—and investment in business equipment would decline by only about two-thirds of that. The rest of the adjustment comes from an increase in private savings ($.20), an increase in foreign savings ($.25—this is the effect that Krugman emphasizes—, an increase in state and local government surpluses ($.10), and a reduction in investment in residential structures ($.25). Thus it is very far from the mark to suggest that government deficits will reduce business investment by anything close to one to one, as is often implied.[1] Even if we were to eliminate the increase in foreign savings, the impact on business would be less than a third of the government deficit, and the impact on equipment investment would be less than $.20 on the dollar.

But even this relatively small effect neglects the fact that business investment—and particularly the composition of business investment—is not merely influenced by interest rates, in the context of fixed total nominal demand, but is also influenced by the exchange rate, a factor which Krugman fails to take into account. Balance of payments adjustment theory emphasizes the impact of changes in real exchange rates on new investment. A currency depreciation encourages investment in the export- and import-competing industries, in anticipation of or in response to larger orders from home and abroad. Currency appreciation discourages investment in the entire tradable sector if stiff import competition is expected to last for the indefinite

*Maurits C. Boas Professor of International Economics, Harvard University.

[1]These results are broadly consistent with the large model simulations shown in Richard Kopcke's paper at this conference, Tables 4 and 5.

future. Incorporating this effect within Krugman's framework implies that we end up encouraging investment in commercial and residential structures (the nontradable sector) and discouraging investment—I would even be prepared to argue that investment could decline sharply—in the tradable sectors. In short, the relief that Krugman sees coming through the exchange rate implies a shift in the composition of investment from equipment to structures that runs strongly against the tilt that we have built into our tax structure, which is designed to encourage investment in equipment relative to structures and residences, presumably on the assumption that that is a good way to encourage business firms to adopt best practice techniques of production in a technologically progressive environment.

Thus a dollar that is expected to remain strong will discourage investment in most tradable sectors of the economy and may as well reduce the quality of total investment. The sharp decline in investment and output in manufacturing induced by stiff import competition, in addition, would evoke strong protectionist responses by important segments of the American economy. My greatest concern about the present configuration of macroeconomic policy, which Krugman acknowledges as legitimate, is that it will result in undermining the liberal trade system.

A key feature of Krugman's argument is that long-term interest rates—which are influenced by expected future budget deficits—affect the exchange rate. He dazzles us with two pages of algebra where two sentences of prose would do: so long as expectations of tomorrow's values affect today's values, and so on into the future, the indefinite future influences present values. As with crowding out, however, the key question concerns the magnitude of the influence of expectations of distant future values on today's values. I would conjecture that the cone of uncertainty surrounding these expectations widens considerably as one projects into the future, and that as a consequence the weights associated with distant expected future values on today's values fall very sharply. Thus while we can concede that long-term interest rates have *some* impact on current exchange rates, relatively short-term interest rates (and other factors) have a far greater influence. Uncertainty about budget deficits in the more distant future may well raise long-term interest rates; it is less clear why it should raise the current exchange rate of the dollar.

This brings us to Krugman's assumption about monetary policy, which plays a central role in his analysis. Krugman adopts an open economy IS-LM framework, with the added assumption that the Federal Reserve targets increases in nominal income, so that for any given period nominal income must be taken as fixed. This target for the Federal Reserve has become increasingly popular among economists. But as far as I can tell, it has not yet in fact become the target of the Federal Reserve; and in my view it is not desirable that it should become the Fed's target.

U.S. GNP rose by 8.8 percent in 1980, 12.2 percent in 1981, and 4.0 percent in 1982. This does not give the appearance of a steady growth in nominal income. If the Fed does target the growth in nominal income, it is either extraordinarily inept in reaching the target, or else it changes the target markedly from year to year, suggesting that the target is not in fact fixed in anything

but a quite short run. The growth in M3 has been much steadier during this period.

Moreover, it is highly undesirable that the growth in nominal income should be targeted. Such a target would require that any autonomous increase in prices lead to a depression of output. I recognize that some economists are inclined to deny that autonomous increases in the price level can ever take place. That however is to put analysis before observation. We have observed sharp increases in world oil prices twice in the past decade, resulting in a deterioration in the nation's terms of trade. Price increases can also come about through changes in domestic policy. For example, deregulation of natural gas prices under existing contract arrangements would lead to a marked (even if nonsustainable) increase in prices, as would the introduction of a national value-added tax. It would be highly undesirable if such changes in policy would lead, through Federal Reserve action, to a recession. Holding the price level constant in the face of such disturbances can be done only by depressing other prices enough to offset the prices that have increased, and in our economy that can be done only by depressing output for a period. Sometimes that may be the best course of action, but at others it will not be.

One attraction of the notion that the Federal Reserve should target nominal income is that it would put business managers and labor union leaders on notice that the Federal Reserve will not accommodate the private decisions that they make on wages and prices. If the Federal Reserve holds a steady course with respect to nominal income, it is argued, the choice between price level and employment would then be left up to those at the bargaining table. It is sometimes suggested that this strategy, in a rough and ready way, was used successfully by West Germany to restrain wage settlements. Whereas in a context of national wage bargaining a nominal GNP target for the central bank might conceivably influence the wage bargains that were actually struck, that is highly unlikely in a system as decentralized as that of the United States. No single party has any incentive to hold *his* wages or prices to the level implied by the national target at full employment. In a system of decentralized wage and price setting, a noninflationary environment can be maintained only through some combination of wage and price guidelines (perhaps reinforced by tax or other incentives) and/or a degree of labor market slack sufficient to keep wages and prices from rising in the face of autonomous disturbances to the price level. The problem is complicated even further by virtue of the fact that unions seek to help their most senior members, whose interests lie in higher real wages, even if it means higher unemployment for others—at least up to the point at which the existence of the union itself is threatened. (The United Steel Workers and the United Automobile Workers pressed for ever higher wages despite the discipline of stiff import competition.) So this potential attraction of a nominal GNP target is not likely to work in the United States, although it could conceivably be effective in countries with a high degree of unionization and national wage bargaining.

What then should be done? The logical prescription to come out of Krugman's analysis, augmented by the compositional effects on investment I

have already discussed, is that we should work very hard to reduce Federal budget deficits. I favor that. On Krugman's analysis, a substantial reduction in future budget deficits should have a substantial effect on long-term interest rates and on the exchange rate. I suspect the effects on both, and especially on the exchange rate, would be relatively small. Long-term interest rates are not likely to fall markedly so long as short-term interest rates are as high as they have been. Monetary policy has been extraordinarily tight in recent years, given the weak state of the economy, and that tightness has been reflected in high nominal and real short-term interest rates and in a strong dollar.

To point out that monetary policy has been extraordinarily tight is not the same as suggesting that there is a simple solution to current problems. Monetary policy was tightened and kept tight to reduce actual and expected inflation; and it has succeeded, albeit at the cost of a deep, long, and wasteful depression in output below the economy's capacity to produce.

The Fed must be ever watchful of rekindling inflationary expectations, which could undo some of the costly gains that have been achieved. Can the Fed pursue easier monetary policy without rekindling inflationary expectations? I do not know, but I believe the Fed should be constantly probing on the side of expansion. We are now experiencing the enormous cost of having persuaded the financial community that a perfectly respectable long-run equilibrium theory appropriate for the stationary state of the economics textbook is also appropriate for the quarter-to-quarter or even the week-to-week management of an actual economy. Keynes in his grave can take satisfaction at another powerful illustration of his statement concerning the influence of ideas, good or bad, on men of affairs. It is up to the academic community to begin the process of reeducation. But in the meantime the Fed must take these jumpy and misguided expectational effects into account.

One way to probe on the side of expansion is to engage in exchange market intervention, a course that Krugman discards much too hastily. Krugman notwithstanding, intervention in the right setting can have an influence on exchange rates. First, as he points out, unsterilized intervention is really monetary policy. Unsterilized purchases of foreign currencies by the Fed would increase the money supply, but the announcement of an intention to reduce a dollar that is too strong might well be received quite differently (and more favorably) by financial markets than would just another weekly increase in the money supply.

Even sterilized intervention can have some effect on exchange rates, however—partly by altering the composition of dollar and nondollar assets in private hands around the world, but much more by signaling that the U.S. authorities are not indifferent to the exchange rate and are prepared to take steps to influence it. Given the central role of the dollar in the world financial system, any such intervention should be undertaken in close collaboration with other leading countries, including the orchestration of the announcement effects. But in markets that are as heavily influenced by expectations as Krugman avers, skillfully handled intervention could become an important supplement to monetary and fiscal policy.

Discussion

Otto Eckstein*

The paper by Paul Krugman possesses an exceptional clarity and comprehensiveness. It is a very useful contribution. But it is also a very discouraging paper, and I disagree with its basic premise.

Krugman accepts the standard argument on the effect of our current fiscal policy on our international trade position, an argument most prominently associated with his recent boss, Martin Feldstein. He accepts the desirability of bringing the dollar to a more realistic level. But he then argues that it is questionable whether any of the means that are available to accomplish this goal will be of net benefit if the fiscal policy is taken as given. A lower dollar, with no other changes, would reduce the trade deficit, but if nominal GNP is given by a monetary policy targeted on this aggregate, this reduction would raise interest rates and would reduce investment by a similar amount. This follows from the identity of national income accounting: with Y, C and G given, a change in X—M must produce an equal change in I (though actually C would also be cut by higher interest and exchange rates, switching some of the burden away from investment, and it is doubtful that monetary policy is targeting Y). It turns out that the IS-PV model reduces to a simple form of the "absorption" approach.

Where the paper goes astray is in its acceptance of the political inevitability of the budget deficit. That deficit is what this conference is all about, and the paper was to deal with the implications of that deficit. Qualitatively, his arguments are fine, but quantitatively he leaves us with the impression that it is not all that serious a matter, and that if the budget deficit is beyond repair, then the dollar should probably be left alone.

To reach those conclusions requires a more precise assessment of the damage that the current value of the dollar is doing to the long-run development of the American economy. So let me pose the following four questions and provide some admittedly preliminary quantitative answers.

1) To what extent is the budget deficit the cause of high real long-term interest rates?
2) To what extent are the high real long-term interest rates the cause of the high value of the dollar?
3) How much damage is the high value of the dollar doing to our trade performance?
4) How serious is the trade deficit to the nation's long-run economic development?

My answers to these questions are generally more alarmist than Krugman's, though on some matters of detail my reading of the facts leads me to a somewhat weaker position.

*Paul M. Warburg Professor of Economics, Harvard University and Chairman of Data Resources, Inc.

The Budget Deficit and Interest Rates

The simplest of modern equations for interest rates explains the yield on a 10-year government bond by means of an adaptive price expectations variable with a decay rate of .21 and with the ratio of the monetary base to GNP as a measure of policy pressure. It shows an unexplained variation of 300 basis points in 1981–82, though it is nearly back on track, I believe temporarily, this year. I take this 300 basis point deviation as the upper limit of the effect of prospective budget deficits on interest rates. This explanation of the extraordinary interest rate bulge competes with others, including various measures of risk such as the increased variability of bond prices which created larger risk premia, the variability of the money supply and of the inflation rate.

The effect of the budget deficits on interest rates could be seen most clearly in the closing months of 1982, when the second $100 billion of deficit was discovered: the actual inflation record was improving dramatically and the forecasts of inflation were coming down by one to two points, yet interest rates refused to decline any further. A conservative estimate of the effect of the discovery of the prospective $200 billion deficit is an increase of interest rates of 150 basis points. The rest of the real interest rate level of 5 percent to 6 percent is probably due to other factors, the higher risk premia created by the adoption of a monetarist regime, and long-term fears of inflation.

Interest Rates and the Dollar

According to purchasing power parity calculations or international comparisons of unit labor costs, the dollar is overvalued by 20 percent to 25 percent. Why is the market keeping it so expensive? There are two possible explanations: the differential in real interest rates, and the phenomenon of "flight capital." Of the two factors, interest rates seem to be the dominant one, at least as indicated by the small differential between the yields on U.S. dollars and Eurodollars.

Combining the two hypotheses, the budget deficit must be acknowledged to be a major—but not the sole—explanation of the overvalued dollar. Real interest rates would be higher than normal even without a budget deficit and would raise the dollar. But a significant share of the overvaluation must be traced to the budget.

The "Overvalued" Dollar and U.S. Trade Performance

The merchandise trade deficit averaged about $26 billion in the years 1977 to 1981, rose to $32 billion last year, is headed for $54 billion this year, and is expected to fall in the $70 to $100 billion range in 1984. A recent DRI study by Sara Johnson[1] confirms that the dollar's appreciation was a major contributing factor, explaining about half of the trade deficit in 1982 and

[1]Sara Johnson, "The Cost of a Strong Dollar," *The Data Resources Review of the U.S. Economy,* July 1983 pp. 1.29-1.32.

most of it in early 1983. This is a weaker statement than the assertion by Krugman, however, who feels that "essentially all of the actual and anticipated deterioration in U.S. external balances can be attributed to the strength of the dollar." Further, the deficits of the late 1970s occurred when the dollar was relatively cheap, and were probably due to the stronger cyclical recovery of the United States. More significantly, the prospective $70 to $100 billion deficits are due to a combination of a strong dollar, a relatively stronger cyclical development of our economy, and a structural deterioration of our international competitive position. To be sure, an exchange rate even lower than the rates of the late 1970s might have overcome the structural deterioration, but most analysts considered those rates already too low, and our allies were protesting bitterly about them.

If the numerical analysis focuses on the goods and services or current account balances, including the surge of interest income, then all of the recent deterioration can be attributed to the exchange rate and international disparities of cyclical strength. But the prospective current account deficit of $50 to $70 billion still cannot be explained by these "temporary" factors. It is due to structural factors, particularly the flood of dollars received as interest and on capital account, and the loss of competitive position.

The Dollar and Trade Performance

Does a large trade deficit matter? Krugman recognizes that dynamic economies to scale can create permanent losses and that the expensive dollar does create adjustment costs. But he advances these points with little urgency and much qualification.

On this point, too, I would part company from the Krugman (CEA?) point of view. Dynamic economies to scale are the decisive factor in determining who will provide the world with airplanes, computers, machinery, and many other products, and they make a major contribution to the success of such industries as automobiles and steel. The United States has already suffered vast losses because of the checkered history of the dollar and the weak international trade policies of the last 30 years.

In summary, then, while Krugman's paper is an exceptionally lucid application of open-economy macroeconomics to the problem of the budget deficit and its impact on the trade balance, I find myself in disagreement on two fundamental points: first, the budget problem will not keep; every month without a serious attempt to reduce the deficit costs our economy dearly in high interest rates, lost capital formation, an overvalued dollar, and permanent losses in our international trade position. The message of this conference should be: "let's deal with the budget problem quickly and strongly because it is seriously damaging our economic future."

Second, while I share Krugman's belief that the budget deficit is a major influence on our trade position, I do not believe that it is the only cause of it. Interest rates would be high anyway, and the dollar expensive. Even allowing for cyclical disparities among countries, there is a structural trade problem, created by 30 years of monetary, fiscal and trade policies. These problems must also be dealt with in forthright fashion if the U.S. economy is to recapture its growth potential.