

NBER WORKING PAPER SERIES

EXCHANGE RATE VOLATILITY AND MISALIGNMENT:  
EVALUATING SOME PROPOSALS FOR REFORM

Jacob A. Frenkel

Morris Goldstein

Working Paper No. 2894

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
March 1989

Earlier versions of this paper were presented at the symposium on "Financial Market Volatility," Jackson Hole, Wyoming, August 17-19, 1988, and at the conference in honor of Robert Triffin on "Evolution of International and Regional Monetary Systems," Brussels, Belgium, December 8-9, 1988. Thanks are due to Michael Dooley, Robert Flood, and Peter Isard for comments on an earlier draft. This paper is part of NBER's research programs in Economic Fluctuations and in International Studies. The views expressed are the authors alone and do not necessarily represent the views of the International Monetary Fund or the National Bureau of Economic Research.

EXCHANGE RATE VOLATILITY AND MISALIGNMENT:  
EVALUATING SOME PROPOSALS FOR REFORM

ABSTRACT

In this paper, we analyze several proposals for reducing the volatility and/or misalignment of key-currency exchange rates. The proposals examined are a system of target zones, the imposition of controls or taxes on international capital flows, and a strengthening of international coordination over economic policies. We also review key characteristics of the behavior of major-currency exchange rates over the period of floating rates and examine the various criteria or standards for drawing inferences about excess volatility and misalignment. In evaluating exchange rate volatility, attention is directed toward the influence of the exchange rate regime, to the behavior of fundamentals, to the volatility of both goods prices and other asset prices, to the costs of exchange rate volatility, and to the nature of shocks facing the economy. Turning to misalignment, we examine the strengths and weaknesses of the purchasing-power-parity approach, of the underlying balance approach, and of the sustainability approach. We argue that inferences about excess exchange rate volatility and misalignment are subject to wide margins of error and that the exchange rate experience of the past 15 years is subject to multiple interpretations.

Jacob A. Frenkel  
International Monetary Fund  
700 19th Street, NW  
Washington, DC 20431

Morris Goldstein  
International Monetary Fund  
700 19th Street, NW  
Washington, DC 20431

## I. Introduction

1. This paper analyzes several proposals for reducing the volatility and/or misalignment of key-currency exchange rates. The proposals examined are a system of target zones, the imposition of controls or taxes on international capital flows, and a strengthening of international coordination over economic policies. Our purpose is not to endorse one proposal and to dismiss others. For one thing, some of the proposals have common elements. For another, some features of each of the proposals are already present in the existing exchange rate system. Instead, we see evaluation of these proposals as a useful vehicle for identifying issues that merit attention in any serious examination of how the functioning of the international monetary system might be improved.

2. As the title implies, the proposals discussed here have been concerned with both volatility and misalignment of exchange rates. "Volatility" is interpreted as short-term fluctuations of nominal or real exchange rates about their longer-term trends, while "misalignment" refers to a significant deviation of the actual real exchange rate from its equilibrium level. Measures of volatility are usually motivated by the question of whether exchange rates have been too noisy. In contrast, estimates of misalignment typically focus on the issue of whether markets and/or authorities have set exchange rates at the wrong level, and if so, by how much.

3. The plan of the paper is as follows. To set the stage for the ensuing discussion of policy proposals, Section II reviews key

characteristics of the behavior of major-currency exchange rates over the period of floating rates. In addition, various criteria or standards for making inferences about excess volatility and misalignment are examined. Sections III-V summarize central features of the proposals for target zones, for restricting international capital flows, and for stronger economic policy coordination, respectively, and introduce several considerations about each proposal that bear heavily on its advisability and practicality.

## II. Facts and Inferences About Volatility and Misalignment

1. A logically prior step to framing proposals for improving the functioning of the exchange rate system is the determination of what's wrong with the existing system. Put in other words, one has to deal with John Connally's "if it ain't broke, don't fix it," before one gets to Will Rogers' "even if you're on the right track, you'll get run over if you just sit there." We first turn to volatility and then to misalignment.

2. The short-term behavior of major-currency exchange rates over the 1973-88 period can be compactly characterized by five features.

(a) First, exchange rate volatility has been much greater--perhaps on the order of five times as great--during the floating rate period than during the last two decades of the Bretton Woods era of adjustable par values. <sup>1/</sup>

---

<sup>1/</sup> The qualitative nature of this conclusion holds for nominal and real exchange rates, for bilateral and effective rates, and for daily, weekly, monthly, and quarterly data; see Crockett (1984).

(b) Second, there has not been a tendency for the short-run variability of exchange rates to decline over time. If anything, variability appears to have been marginally greater in the latter half of the floating rate period than in the first half; see Table 1. This would seem to belie the notion that variability was a transitional manifestation of adjusting to a new set of exchange arrangements.

(c) Third, the short-term variability of nominal exchange rates has been significantly greater than the variability of national price levels, resulting in large deviations from purchasing-power parities; that is, variability of real exchange rates has primarily reflected variability of nominal exchange rates.<sup>1/</sup>

(d) Fourth, most exchange rate changes during the period have been unexpected, as revealed both by market indicators of expected changes in exchange rates (such as interest rate differentials or the forward discount) <sup>2/</sup> and by survey data on exchange rate expectations. <sup>3/</sup> In general, the forward premium or discount has been a relatively quiet series that has explained little of the variability in actual exchange rates. <sup>4/</sup>

(e) Fifth, not only has the foreign exchange market been a weak predictor of exchange rate changes, there is also evidence that it has been a biased predictor. <sup>5/</sup>

---

<sup>1/</sup> Frenkel and Mussa (1980), Frenkel (1981a), and Mussa (1987).

<sup>2/</sup> Frenkel (1981b), Frenkel and Mussa (1980, 1985), and Mussa (1983).

<sup>3/</sup> Frankel and Froot (1987).

<sup>4/</sup> Levich (1985).

<sup>5/</sup> Tryon (1979), Hansen and Hodrick (1980), Frankel (1982), and Dooley and Shafer (1983).

Table 1. Short-Term Variability of Asset and/or Auction Prices, 1973-88

	Standard Deviation of		Average Absolute			
	Monthly Percentage Changes 1973-88	1981-88	Monthly Percentage Change 1973-88	1981-88		
1. Nominal effective exchange rate U.S. dollar <u>1/</u>	2.47	2.20	2.73	1.93	1.67	2.20
2. Real effective exchange rate U.S. dollar <u>2/</u>	2.56	2.27	2.86	2.04	1.79	2.31
3. Index of nominal U.S. equity prices <u>3/</u>	3.98	3.99	3.98	3.01	3.08	2.94
4. Index of real U.S. equity prices <u>4/</u>	4.07	4.04	4.05	3.03	3.11	2.95
5. Index of nominal interest rates <u>5/</u>	8.24	9.15	7.04	6.25	6.88	5.58
6. Index of real interest rates <u>6/</u>	113.93	157.47	14.99	48.01	82.27	11.06
7. Index of non-oil processing commodity prices <u>7/</u>	2.86	3.41	2.10	2.17	2.67	1.64

- 1/ Nominal effective exchange rate vis-a-vis currencies of other large industrial countries.  
2/ Nominal effective exchange rate deflated by consumer price indices.  
3/ Standard and Poor's 500 composite index.  
4/ Standard and Poor's 500 composite index, deflated by U.S. consumer price index.  
5/ LIBOR on 6 month U.S. dollar deposits.  
6/ LIBOR deflated by U.S. consumer price index.  
7/ Index of 31 non-oil primary-commodity prices, using world export weights and expressed in SDRs.

3. While all of this provides ample support for the claim that major-currency exchange rates have been volatile, surely the more interesting questions are whether they have been excessively volatile, and if so, why? Here, the answers are not so straightforward and require grappling with a host of still largely unresolved problems.

(a) To begin with, it is not obvious that the greater variability of exchange rates observed over the floating rate period derives principally from the exchange rate regime itself. 1/ It has been found, for example, that the time-series properties of exchange rates (both spot and forward) have on occasion been strikingly similar across time periods (e.g., 1962-67 and 1973-75) that span different exchange rate regimes. 2/ This naturally leads to the suggestion that the appropriate way to judge excess volatility is to relate exchange rate behavior to the behavior of underlying economic variables--that is, to "fundamentals"--rather than to the exchange rate regime. The rub however with this eminently sensible approach is that the results have proved to be quite sensitive to the specification of the underlying model. A good case in point is the recent study by West (1987). In studying the variability of the dollar/DM rate over the 1974-84 period, he finds that observed variability is inconsistent (i.e., excessive) with the fundamentals generated by a monetary model, if one assumes both that purchasing-power-parity (PPP) holds and that there are no shocks to the demand-for-money function. On the other hand, if one incorporates the empirically more plausible

---

1/ On the difficulties of attributing observed differences between the periods of fixed and floating rates to the exchange rate regime, see Goldstein (1980).

2/ Frenkel and Levich (1977).

assumptions of departures from PPP and of shocks to money demand, then observed variability is consistent with the model.

(b) The normative significance of the greater variability of nominal exchange rates vis--vis national price levels also hardly speaks for itself. After all, aggregate price indices are sticky, backward-looking variables that typically largely reflect past contracts, whereas nominal exchange rates are jumpy, auction prices that anticipate future events. Indeed, the case for exchange rate flexibility is precisely that you need enough "flex" in exchange rates to compensate for the excessive "fixity" of nominal wages and prices. 1/ Absent that flex, it would be more costly to generate the changes in real exchange rates needed to adjust to changes in real economic conditions.

This line of argument points directly toward the view that it is to other asset or auction prices--rather than to goods prices--that one should look for the appropriate standard of comparison for exchange rates. 2/ And the bottom line of such a comparison--as shown in Table 1--is that the short-term variability of nominal and real exchange rates during the floating rate period has been smaller than that of interest rates, or of indices of stock-market prices, or of indices of (non-oil) primary-commodity prices. 3/ One interpretation is that the floating rate period has been a turbulent one in which all asset prices have been volatile. A different one is that all asset prices have been too

---

1/ The relative fixity of national price levels vis--vis nominal exchange rates is also at the heart of explanations for "overshooting" of exchange rates in the short run in response to, say, unanticipated changes in monetary policy; see Dornbusch (1976a).

2/ Frenkel and Mussa (1980).

3/ See also Bergstrand (1983).



volatile during this period (but that judgment would have to rely on some other standard). 1/

(c) A third route to appraising exchange rate variability is to appeal to the costs or effects of this variability on the targets of policy (i.e., growth, consumption, inflation, an open trading system, etc.). This approach has a number of distinct strands.

One strand--quite popular during the first decade of floating--argues that highly variable and unpredictable exchange rates are costly because they inhibit the volume of international trade. Empirical evidence, however, has not been very cooperative. Specifically, it has generally proven difficult to identify a significant influence of short-term exchange rate variability or uncertainty on trade volumes, once the influence of other factors (i.e., real incomes, relative-traded goods prices) is held constant. 2/ Whether this reflects increasing availability and utilization of hedging mechanisms against exchange rate risk, or the adaptability of multinational corporations, or other factors, is not established.

A second more recent tack--best represented in Krugman (1988)--is that exchange rate fluctuations are excessive not because they matter so much but rather because they now matter so little. Krugman (1988) argues that the substantial sunk costs associated with entering a foreign market and the volatility of exchange rates have combined to render trade prices

---

1/ Shiller (1981).

2/ Crockett 1984; see however the findings of Cushman 1983 and De Grauwe 1988.

and volumes unresponsive to exchange rate fluctuations--in effect, "delinking" the real sector from floating rates.

In support of this thesis, Krugman notes that much less of the large depreciation of the dollar over 1985-87 has been "passed-through" into U.S. import prices than would be expected on the basis of earlier experience. He interprets this as demonstrating the dominance of "pricing-to-market" strategies by foreign producers--especially by Japanese exporters. 1/ A recent IMF study (1988), however, suggests that the unusual behavior of U.S. import prices during 1985-87 largely reflects "special" factors, particularly a decline in computer prices, the growing importance of computers in U.S. trade, and swings in commodity prices. Once these special factors are taken into account, recent import-price behavior does not emerge as much out of line with earlier experience. The apparent implications of the delinking hypothesis for trade-price elasticities of demand--namely, that such elasticities should be smaller during periods of high exchange rate variability, and that the price elasticity should be greater for "large" price changes (that overcome sunk costs) than for small changes--are likewise open to challenge. 2/ We are, for example, unaware of any significant decline in estimated price elasticities for industrial-country trade in moving from the Bretton Woods period to the period of floating rates. 3/ In a similar vein, we know of only one study

---

1/ See also Hooper and Mann (1987) on this topic.

2/ See Dixit (1988) for an analysis of the sunk cost model.

3/ See Goldstein and Khan (1985). In addition, we have compared estimates of trade volume price elasticities for each of the G-7 countries for the periods 1963-76 versus 1963-83, where the estimates are taken from the IMF World Trade Model. In three cases, the elasticity was lower in

(Goldstein and Khan (1976)) that tested the dependence of the price-elasticity on the magnitude of the relative price change and that study utilized data from the adjustable-peg period. 1/ We expect the "jury to be out" on the delinking thesis until more empirical evidence is in hand.

Yet a third strand of the costs-of-variability approach looks at the relative costs of alternative degrees of exchange rate variability in the face of different shocks to the system. Even if exchange rate fluctuations impose costs on the economy, one needs to compare them to the costs that would ensue under greater fixity of exchange rates, including those associated with greater variability of other prices (e.g., interest rates, non-traded goods prices, nominal wages, etc.). Costs are usually evaluated by reference to the (squared) deviation of output or consumption from its target value. Again, however, implications for the observed degree of exchange rate variability are far from clear cut. To make a long story short, the punch line of this literature is that the optimal degree of exchange rate flexibility depends on the nature of the shocks (e.g., monetary versus real, permanent versus transitory) and on the structural characteristics of the economy (e.g., the degree of real wage flexibility, the degree of capital mobility, etc.). 2/ When there are a variety of shocks, an intermediate

---

the more recent period; in one case there was no change; and in three cases, the elasticity was larger.

1/ Goldstein and Khan (1976) did not find evidence either that price elasticities were greater for large than for small price changes, or that the speed of adjustment of actual to desired trade volumes was faster for large price changes. To the extent, however, that exchange rate changes under floating are viewed as less "permanent" than those under Bretton Woods, one would not be able to generalize the findings to a floating rate regime.

2/ Aizenman and Frenkel (1985).

degree of flexibility is optimal--but there is no straightforward way of knowing whether this optimal degree of flexibility is less or more than that actually observed. Note also that this literature does not consider the case where shocks are generated or exacerbated by the foreign exchange market itself (say, via destabilizing speculation). 1/

(d) The fact that exchange rate changes have for the most part been unexpected during the floating rate period is often viewed as reinforcing the basic forward-looking nature of financial-asset prices. Analogous to the case of a security whose current price reflects the discounted value of future cash flows, an asset-market approach to exchange rate determination posits that the current spot exchange rate should depend on the current expectation of all the variables that drive exchange rates. From here it is only a short skip to the proposition that exchange rates will change only in response to unexpected movements in those driving variables, that is, to "news."

But it is not sufficient to know that news matters. We need to know what news matters. There have been some attempts in the literature to relate exchange rate changes to news about current account positions, cyclical income movements, and interest rate developments--and with some success. 2/ Yet this approach cannot help but be loosely grounded in the absence of a reliable model of exchange rate determination that spells out what news should matter. As is well known, this has proved elusive, as empirical work has found that structural exchange rate models have poor out-of-sample forecasting properties--no better than those of "naive

---

1/ Nurkse (1937).

2/ Dornbusch (1980), and Frenkel (1981b).

models"--and this even when market fundamentals have already been observed. 1/ This makes it difficult to ascertain which sources of news could be influenced in a stabilizing way by policy actions, and if so, by how much.

(e) More serious than the existence of frequent forecast errors is the finding that errors in forecasting changes in exchange rates are systematically biased. This is because the latter opens up the possibility that the foreign exchange market is an inefficient processor of information.

But we stress the word "possibility" because there is a serious problem of interpretation. All tests of market efficiency are joint tests of the model specifying equilibrium prices and of the hypothesis that the market efficiently processes information so as to set actual prices equal to equilibrium ones. 2/ Since there is no widely accepted model of equilibrium prices for exchange rates, we cannot tell whether the biased pattern of forecast errors is reflecting market efficiency or instead, whether we merely have specified the wrong model for that time period.

For this reason, there is little consensus in the profession about whether large and biased forecast errors for exchange rates changes reflect large, shifting risk premia; or "peso problems"; or a series of collapsing speculative bubbles; or time-varying coefficients on the fundamentals driving exchange rates; or some combination of these factors. 3/ Yet knowing why forecasts have systematically gone off track

---

1/ Meese and Rogoff (1983).

2/ Levich (1985).

3/ Isard (1987).

can be important not only for judging whether exchange rates are too noisy but also for knowing what to do about it. For example, if forecast errors reflected risk premia, and if risk premia were directly influenced by relative asset supplies, then there would be an enhanced potential role for sterilized exchange market interaction in influencing exchange rates--but there would be no presumption that the foreign exchange market was inefficient. On the other hand, if the culprit were speculative bubbles, then inefficiency would be indicated and the case for relying on market forces to set exchange rates would be weakened.

4. Moving from the short run to the medium to long term, there are a few additional characteristics of exchange rate behavior worthy of explicit mention.

(a) One is that real exchange rates of major currencies have been subject to pronounced medium-term swings. The real effective exchange rate of the U.S. dollar appreciated by more than 50 percent between 1980 and 1985, before falling by an roughly equivalent amount in the period to January of this year; see Chart 1. 1/ Between 1975 and 1976, the pound sterling fell by 20 percent in real effective terms, only to rise by nearly 75 percent between 1976 and 1981. There are many more examples.2/

(b) Accompanying--and many would say responsible for--these large swings in real exchange rates have been marked divergencies across countries in the macroeconomic policy mix. 3/ More specifically,

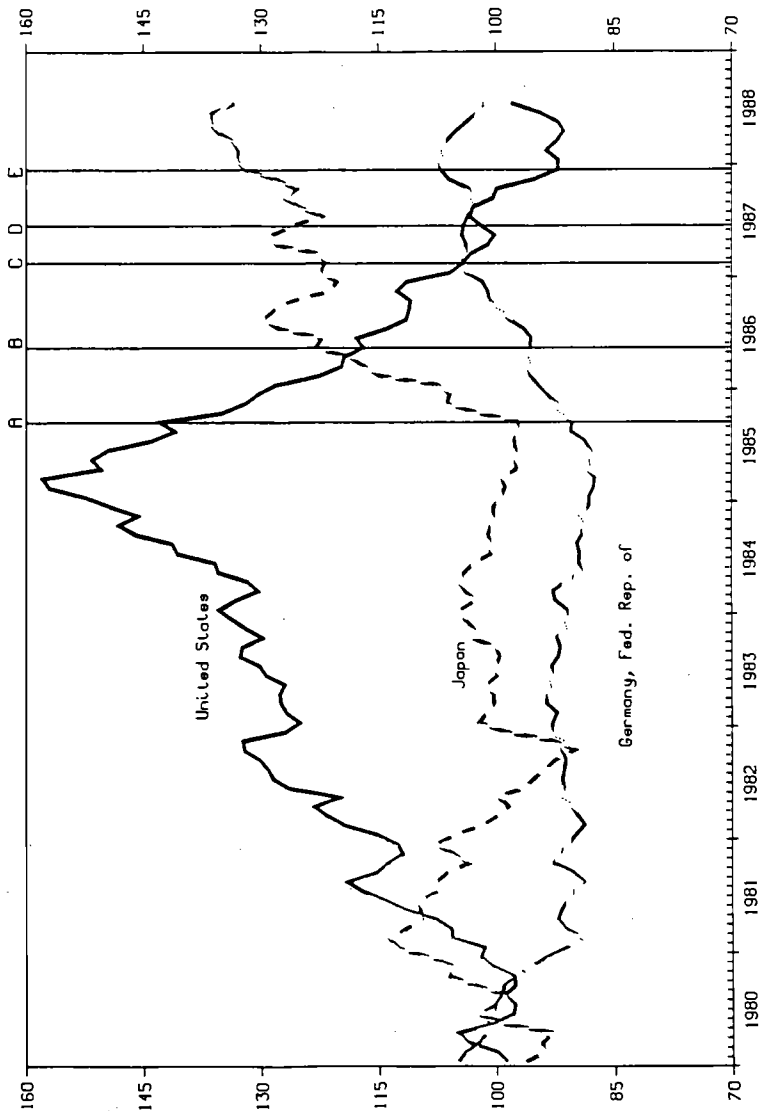
---

1/ The figures refer to real effective exchange rates based on normalized unit labor costs in manufacturing.

2/ Mussa (1987).

3/ Branson (1985).

Chart 1. Major Industrial Countries: Real Effective Exchange Rates, 1980 - 88 1/  
(1980 = 100)



- A. Plaza Agreement, September 22, 1985.
- B. Tokyo Economic Declaration, May 4-6, 1986.
- C. Louvre Accord, February 22, 1987.
- D. Venice Summit, June 8-10, 1987.
- E. Group of Seven Statement, December 22, 1987.
- 1/ Real effective exchange rates based on normalized unit labor costs in manufacturing.

during the 1981-85 period of dollar appreciation, fiscal policy in the United States was much more expansionary than that in either the Federal Republic of Germany or Japan; see Table 2. Also, the real exchange rate swings of the first half of the 1980s left in their wake huge current imbalances for the three largest industrial countries, which have only recently begun to narrow. Overlaid on all of this have been recurrent pressures for protectionism, particularly in the United States.

(c) This much is fact. Most observers go farther and argue that large and persistent misalignments of real exchange rates have also been part and parcel of the floating rate experience--and with costly consequences. To take a representative estimate, Williamson (1985) places the misalignments of the U.S. dollar and the Japanese yen as of end-1984 at 39 percent and 19 percent, respectively. Misalignments on the order of, say, 30-40 percent would be larger both than those estimated for countries who currently participate in the exchange rate mechanism of the EMS, 1/ and than those estimated for major currencies during the latter part of the Bretton Woods period.

5. As noted in the introduction, misalignment is simply a quantitative judgment about how far a given (real) exchange rate is out of line. Given the prominent place that misalignment occupies in the alleged flaws of the present system, it is instructive to review the leading methodologies that have been used to estimate it. Since many of the broad issues here are similar to those that arose in assessing

---

1/ De Grauwe and Verfaillie (1987).



volatility, we focus on specific elements that address the correct level of the exchange rate.

(a) Perhaps the most durable method of calculating the equilibrium exchange rate is the purchasing power parity (PPP) approach. In brief, if one can identify a base period when the country was in external balance, then the equilibrium value of the nominal exchange rate in the current period is the base-period value adjusted for the inter-country difference in inflation rates between the current and base period. 1/ Three problems have limited the usefulness of the PPP approach. First, it is not easy to find an equilibrium base period. For example, while Krugman (1985) regards 1980 as a reasonable base period for the dollar because the measured U.S. current account balance was near zero, Mussa (1985) does not because the real value of the dollar was then below the average level recorded in all but three of the past forty years. Second, when real disturbances that alter relative prices occur between the base and current period, it will be desirable to have a departure from PPP, in order to take these changes in real economic conditions into account. Three such factors are particularly relevant in the context of the 1970s and 1980s: (i) permanent changes in the terms of trade (including changes in the real price of oil), 2/ (ii) secular inter-country differences in labor productivity that are masked by aggregate price indices and that are biased--not just between tradable and non-tradable goods 3/ but also among tradable goods industries: 4/ and (iii)

---

1/ For a recent application of the PPP approach to the yen/dollar exchange rate, see McKinnon and Ohno (1988).

2/ McGuirk (1986).

3/ Balassa (1964).

shifts from net creditor to net debtor positions and vice versa. Suffice to say that the size of the necessary adjustments to PPP is subject to considerable dispute. Third, PPP does not seem to work, certainly not in the short run, and perhaps not in the long run either. 1/

(b) A second increasingly popular alternative is the so-called underlying balance approach. Here, the equilibrium exchange rate is defined as the rate that makes the "underlying" current account (i.e., the actual current account adjusted for temporary factors) equal to normal net capital flows over the next two to three years, given (i) anticipated real output and inflation paths, and (ii) the delayed effect of past exchange rate changes. The fly-in-the-ointment is how to calculate normal (net) capital flows. 2/ For one thing, the general-equilibrium nature of the exercise is daunting. For example, normal net capital flows for the United States are hard to define without reference to desired and/or likely saving versus investment trends in Europe, Japan, and in the developing world; yet those saving/investment trends, in turn, depend on demographic trends, tax laws, and even on the manner by which the existing debt problem of the developing countries is eventually resolved. 3/ Indeed, anything that has a nontransitory effect on the ex-ante savings/investment balance will affect the equilibrium exchange rate. There is also the sizable global current-account discrepancy to allocate among countries. 4/ In addition, since normal net capital flows is a flow

---

4/ Marston (1987), and Baldwin and Krugman (1987).

1/ Frenkel (1981a), Edison (1987), and Dornbusch and Frankel (1988).

2/ This is not to say that the underlying balance approach is without several significant attributes; see Goldstein (1984).

3/ Mussa (1985).

4/ IMF (1987).

rather than a stock concept, it does not lend itself easily to sustainability criteria. Finally, current account or balance of payments positions do not seem to explain actual exchange rate changes any better than other factors. In the end, we wonder how many economists would be willing to "go the stake" to defend a normal net capital inflow figure for the United States of, say, \$10 billion (as in Williamson (1985)) versus, say, an estimate of \$50-75 billion? Yet such a change in assumptions could have a large effect on one's estimate of misalignment.

(c) Next we come to what might be called the sustainability approach. The basic idea is: (i) to identify the market's implicit forecast for the future path of the exchange rate, based on the current exchange rate, interest rate differentials, and other data; and (ii) to assess the consequences of this forecast exchange rate path for the balance of payments and external indebtedness. 1/ If this exercise suggests that it will take "many" years before the debt-to-GNP ratio stabilizes, and that the eventual debt-to-GNP ratio will be "high" when it does, then the market's implicit exchange rate forecast is judged to be "unsustainable". 2/

This approach is less ambitious than the others in the sense that it seeks only to identify an unsustainable rate, and by implication, the likely future direction of exchange rate changes (that is, the sign of misalignment). To get an estimate of the equilibrium exchange rate, one would have to specify an equilibrium debt-to-GNP ratio and then solve the

---

1/ Krugman (1985).

2/ For an analysis of alternative concepts of sustainability, see Horne (1988).

model for the exchange rate that, ceteris paribus, would yield that outcome. Still, even in its less ambitious form, the conclusions can be quite sensitive to the assumptions made about the real interest rate paid on foreign debt; the real interest differential between home and foreign securities; the share of the initial current account imbalance that is due to reversible, temporary factors; and the effect of the debtor's "reputation" on the willingness of creditors to put a sizable share of their portfolio in further claims on that country. 1/ In addition, sustainability is not synonymous with optimality. An exchange rate path that yields a sustainable debt-to-GNP ratio could be undesirable because it implies an unsatisfactory outcome for other policy objectives, such as unemployment. 2/

(d) A less direct approach is not to estimate misalignment at all but rather infer its existence from its adverse effects--much in the same spirit as outlined earlier in connection with inferring excess volatility. Two such effects are most frequently cited as being induced by misalignment: (i) the generation of boom and bust cycles in tradable goods industries that leave unemployment in their wake; and (ii) the encouragement of protectionism.

Early work on the sectoral employment consequences of the 1981-85 dollar appreciation suffered from the post-hoc-propter-hoc fallacy. It took the sharp decline in the U.S. ratio of manufacturing employment to total non-agricultural employment in 1979-83 as a direct consequence of large overvaluation. Yet this same ratio declined in 1969-71 when the

---

1/ Mussa (1985).

2/ Nurkse (1945), and Frenkel (1987).

real exchange rate of the dollar was depreciating, and rose in 1984 when the dollar was appreciating sharply. In fact, this ratio has declined in all periods of recession since 1969. 1/ This suggests three caveats.

First, one has to control for other determinants of employment changes-- both cyclical and secular--before the independent effect of the real exchange rate on sectoral employment patterns can be isolated. Branson and Lowe (1987) have in fact recently done just that and estimate that the 1981-85 real appreciation of the dollar cost about one million jobs in U.S. manufacturing. Second, the link between the real exchange rate and the sector allocation of resources depends on the type of disturbance moving the real exchange rate. Restrictive monetary policy can induce both currency appreciation and manufacturing contraction, while an increase in foreign demand for manufacturing will elicit currency appreciation and manufacturing expansion. Third, even when one knows the independent contribution of the real exchange rate to the change in employment, the judgment still needs to be made if the costs would have been less under some alternative exchange rate regime.

The effects of misalignment on protectionism are subject to the same kinds of caveats. While it is hard to dispute Bergsten's (1988) claim that an overvalued currency is the best leading indicator of protectionist legislation, other factors--including long-lasting shifts in competitiveness with non-exchange-rate origins--also have played an important role.

---

1/ Obstfeld (1985).

6. We have trotted out these multiple criteria for inferring excess volatility and misalignment--and have highlighted the weaknesses of each of them--to make a point. But that point is not that "only God knows the equilibrium exchange rate," 1/ or that the market rate is always the right rate, or that economists will seldom be able to recognize unsustainability, or even that there is little scope for improving the present exchange rate system. It is instead that inferences about excess exchange rate volatility and misalignment are subject to wide margins of error and that the exchange rate experience of the past 15 years is subject to multiple interpretations. For that reason, reasonable men have legitimate grounds to differ--both on diagnosis and on prescription. With this in mind, we proceed to examine three proposals for improving the functioning of the exchange rate system.

### III. Target Zones

1. The G-10 has characterized target zones as an exchange rate system where the authorities "... define wide margins around an adjustable set of exchange rates devised to be consistent with a sustainable pattern of balances of payment." 2/ Unlike an adjustable peg system, there need not be a formal commitment to intervene in all circumstances to keep actual exchange rates within the zone. On the other hand, unlike a pure floating system, authorities are permitted to intervene and indeed, are typically encouraged "to take a view" on the

---

1/ Quote attributed to former Japanese Prime Minister Nakesone: see Haberler (1988).

2/ Crockett and Goldstein (1987).

desirable level of the exchange rate. Two features that distinguish target zones from managed floating in a broader sense are: (i) the establishment of a target zone for the exchange rate for some future period; and (ii) the greater influence of the exchange rate on the conduct of monetary policy so as to keep the actual rate within the zone.

It is possible to distinguish several variants of target zones.<sup>1/</sup> "Loud" zones, for example, entail public announcement of the zones, whereas "quiet zones" imply confidential disclosure in official circles (for reasons of exchange rate surveillance, joint intervention, and policy coordination). In a similar vein, "hard" zones would be characterized by a monetary policy that is geared to maintaining the exchange rate within a narrow and infrequently revised zone. "Soft" zones can be defined analogously. As with any hybrid exchange rate system, there is a spectrum along the fix-flex axis.

Three questions about target zones merit particular attention: (i) will they help to discipline errant fiscal policies; (ii) what policy instruments will be responsible for internal balance; and (iii) would wide and moving zones be capable of acting as a medium-term anchor for exchange rate expectations? <sup>2/</sup>

2. One of the strongest claims made for target zones by its supporters is that they will help to restore discipline and coordination to the conduct of macroeconomic policies. In light of the experience in the first half of the 1980s, the area where discipline and coordination

---

<sup>1/</sup> See Frenkel and Goldstein (1986).

<sup>2/</sup> Another key issue is now to calculate the equilibrium exchange rate, but that has been covered in Section II. For a more comprehensive examination of target zones, see Frenkel and Goldstein (1986).

the first half of the 1980s, the area where discipline and coordination are probably most sorely needed is fiscal policy; see Table 2. Here, advocates of target zones argue that: (i) a threatened breach of the zone--be it induced by errant fiscal or monetary policy. Another key issue is now to calculate the equilibrium exchange rate, but that has been will initiate a multilateral review of all that country's policies, with strong peer pressure for adjustment and coordination; and (ii) even if the authorities opt to alter the target zone rather than fiscal policy, the domestic political cost of repeated exchange rate adjustments will impart its own discipline. The influence of EMS considerations in helping to turn around French macroeconomic policy in 1983 is often cited as supporting evidence. 1/

Opponents base their skepticism on a number of grounds. One is the fact that the EMS--with its "harder" exchange rate commitments and higher political stakes--has not been able to produce fiscal policy convergence, to say nothing of its 11 exchange rate realignments. 2/ Second, if the target zone is defended by monetary policy, then the exchange rate can send a "false signal" that would actually exacerbate the fiscal problem. 3/ Specifically, a fiscal expansion that puts appreciating pressure on the exchange rate would prompt a loosening of monetary policy to keep the rate from leaving the zone. Feldstein (1988) conjectures that this--and not a cut in the budget deficit--would have indeed been the response if the United States had been operating under a target zone

---

1/ Sachs and Wyplosz (1986).

2/ Holtham et al. (1987).

3/ Frenkel and Goldstein (1988)



regime in the early 1980s. Third, fiscal policy--with its long lags and its implementation in the hands of legislatures--is often regarded as the most difficult policy to coordinate effectively on an international basis. 1/

It is probably no accident that whereas first-generation target-zone proposals spoke mainly of monetary policy, second-generation proposals have added a specific rule to rein in fiscal policy; contrast Williamson (1985) with Williamson and Miller (1987). In any case, we need to think more about if and how the exchange rate regime can discipline fiscal policy.

3. To the extent that monetary policy is the primary instrument assigned to keeping actual exchange rates within target zones, one has to ask what policy instruments will be responsible for internal balance? 2/ Consider the candidates.

The leading one is fiscal policy. But fiscal policy in most industrial countries is hardly flexible enough--rightly or wrongly--to be used for stabilization policy. It is instead geared to longer-term objectives, like reducing the share of government in economic activity or improving the efficiency of the tax system. A second candidate could be sterilized exchange market intervention. Yet whatever its usefulness in dampening short-term volatility or in sending a signal about policy

---

1/ Tanzi (1988).

2/ Note that there is nothing sacred about the traditional solution to the assignment problem. In fact, Genberg and Swoboda [1987] and Boughton [1988] argue that, under flexible rates, it would be better to assign fiscal policy to external balance and monetary policy to internal balance. This is because the expenditure-switching and expenditure-reducing effects on the current account offset each other with monetary policy, but reinforce each other with fiscal policy.

changes or policy commitment to markets, its influence on the level of the exchange rate over the medium to long term is highly suspect. 1/ Finally, Meade's (1984) candidate is labor market policy, specifically, greater wage flexibility to stabilize employment. The problem is that no one knows how to bring it about without a substantial reform of labor market institutions.

If other policy instruments are constrained, then monetary policy may face the prospect of having to wear two hats--one for external and one for internal balance. 2/ If that is asking too much, then one should ask how a target zone system can be structured to ease that dilemma.

4. Another key objective of target zones is to provide an anchor for (medium-term) exchange rate expectations, as a means of reducing both volatility and misalignment. The anchor is said to derive from two sources: the authorities' announced collective estimate of equilibrium exchange rates (under loud zones), and the information that the target zone implies about the future course of monetary policy in participating countries. In considering whether target zones can in fact establish an anchor, the following factors seem relevant.

First, there is the width of the target zone. Most analysts have suggested that zones should be wide to reflect our substantial uncertainty about the equilibrium central rate, to provide a buffer against transitory disturbances that don't alter the long-run equilibrium

---

1/ Jurgensen Report (1983).

2/ A good illustration of monetary policy faced with seemingly conflicting internal and external requirements is the U.K. situation in the first quarter of 1988, when there was both inflationary pressure and upward pressure on the exchange rate.

rate, and to provide better protection against one-way speculative bets. Williamson (1985) speaks of initial zones on the order of 10 percent on each side of the central rate. Krugman (1988) is even more cautious and suggests initial zones for the DM/\$ and yen/\$ rates of 1.5 to 2.0 and 100 to 150, respectively. In contrast, most adjustable peg systems (including the EMS) have operated with considerably arrower bands. A wide zone cannot of course provide a very precise anchor but it would help to identify very large misalignments; also, it is likely to prove more durable than a narrow zone.

A second factor is the frequency with which the zones are revised. The larger the size of inflation differentials, the more frequent the changes in real economic conditions, and the less flexible are other policy instruments, the better the case for frequent revisions. An offsetting concern is that frequent revision can endanger the credibility of the zones. But as the later years of Bretton Woods demonstrated, risks don't lie in only one direction: official exchange rate targets can also lose credibility when they are rigid in the face of fundamental changes.

A third--and to our mind--dominant factor for the anchor debate is the strength of the authorities commitment to the zone--as evidenced by their willingness to alter other policies to make their exchange rate forecasts come true. This is what should tip the balance between regressive and extrapolative expectations, and between target zones as an anchor and target zones as a one-way bet for speculators. But, as suggested earlier, this commitment to the exchange rate may not come cheaply. In fact, one selling point for quiet zones is that it makes it

easier for authorities to climb down from previous forecasts when conflicts with other objectives become too costly, or when economic conditions change.

Finally, if the anchor stems from the signal that target zones send about future policies, one might ask why it would not be preferable to announce the future course of policies themselves? One answer is that it may be easier to renege on a money supply target than an exchange rate target. 1/ Another is that the authorities may have superior information on the model linking exchange rates to policies. More food for thought.

#### IV. Restrictions and Taxes on International Capital Flows

1. One of the recurring themes in open economy macroeconomics is that policymakers who seek to simultaneously achieve independent monetary policy, fixed exchange rates, and free international capital markets will wind up frustrated: the best they can do is to achieve any two of the three. International monetary reform is basically about which two to pick. For the three largest industrial countries during the 1973-84 period, the odd man out was fixed exchange rates. In the EMS, there has been more of a mixed strategy but maintenance of capital controls by some members has allowed them to at least get closer to fixed rates and monetary policy independence. 2/ And in the EMS of 1992, the orphan is to be independent monetary policy.

---

1/ Canzoneri (1986).

2/ Giavazzi and Giovannini (1986).

Seen in this light, the case for throwing "sand in the wheels" of the international capital market--be it via direct controls or a Tobin (1978) worldwide round-tripping tax on foreign exchange--is the case against the alternatives. This suggests three important questions: (i) what is being foregone by opting for less monetary independence; (ii) when open capital markets and fixed rates are paired with monetary integration, how will real shocks be handled; and (iii) would attempts to restrict capital flows be effective in stabilizing exchange rates and what benefits of financial liberalization might be lost in the process?

2. It is countries with either relatively high or relatively low inflation rates that are typically most worried about reduced monetary independence. In the former, lower monetary independence is seen as handicapping efforts to reduce the cyclical component of unemployment. What's more, many high-inflation countries suffer from weak fiscal systems with relatively heavy reliance on the inflation tax. They are concerned that a lower inflation rate will reduce the revenue from seigniorage, run up against tax evasion in seeking to compensate for it by raising other taxes, and thus, complicate what are already difficult fiscal problems. 1/ Even if one argues--as we do--that a reduced take from the inflation tax would generate pressures to make corrective adjustments in the fiscal position that would be beneficial in the long run, there is a transition problem. 2/ In low-inflation countries, the concern is with price stability objectives and the preservation of hard

---

1/ Frenkel (1975), and Dornbusch (1988).

2/ Goldstein (1988).

- \_\_\_\_\_, and Jeffrey Frankel, "The Flexible Exchange Rate System: Experience and Alternatives," NBER Working Paper No. 2464, December 1987.
- Edison, Hall, "Purchasing Power Parity in the Long Run," Journal of Money, Credit and Banking (August 1987), pp. 376-87.
- Feldstein, Martin, "Distinguished Lecture on Economics in Government: Thinking about International Economic Coordination," The Journal of Economic Perspectives, Vol. 2, No. 2 (Spring 1988), pp. 3-13.
- Fischer, Stanley, "International Macroeconomic Policy Coordination," in M. Feldstein (ed.), International Economic Cooperation, University of Chicago Press, Chicago, Illinois, 1988, pp. 11-43.
- Folkerts-Landau, David and Donald Mathieson, "The Process of Innovation, Institutional Changes, and Regulatory Response in International Financial Markets," paper presented to AFI Conference on Restructuring Financial Markets, Washington, D.C., November 1987.
- Frankel, Jeffrey, "In Search of the Exchange Risk Premium," Journal of International Money and Finance (1982), pp. 255-74.
- \_\_\_\_\_, and Kenneth Froot, "Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations," American Economic Review (March 1987), pp. 133-53.
- \_\_\_\_\_, and K. Rockett, "International Macroeconomic Policy Coordination When Policy-Makers Disagree on the Model," NBER Working Paper No. 2059, November 1987.
- Frankel, Jacob A., "Current Problems of the International Monetary System: Reflections on European Monetary Integration," Weltwirtschaftliches Archiv (Tubingen), Vol. 3, No. 2 (1975), pp. 216-21.
- \_\_\_\_\_, "A Monetary Approach to the Exchange Rate: Doctrinal Aspects and Empirical Evidence," Scandinavian Journal of Economics (May 1976), pp. 200-24.
- \_\_\_\_\_, "The Collapse of Purchasing Power Parities during the 1970's," (1981a) European Economic Review (Amsterdam), Vol. 16 (May 1981), pp. 145-65.
- \_\_\_\_\_, (1981b) "Flexible Exchange Rates, Prices, and the Role of 'News': Lessons from the 1970s," Journal of Political Economy (June 1981), pp. 665-705.
- \_\_\_\_\_, "The International Monetary System: Should It Be Reformed?" American Economic Review (May 1987), pp. 205-10.

(a) One is whether speculation in the foreign exchange market is stabilizing or destabilizing. Proposals that tax or regulate capital flows take as a point of departure that there is too much speculation. But that view is not universally shared. McKinnon (1976), for example, also decries the short-run volatility of exchange rates, but attributes it to too little (stabilizing) speculation. Indeed, early advocates of floating rates built much of their case on the proposition that speculation would be stabilizing. 1/ Suffice to say that faith in that proposition has been undermined by at least two developments: first, the development of models of rational speculative bubbles that show that profitable speculation can be destabilizing; 2/ and second, episodes of exchange rate movements that seem to be unrelated--or even counter--to fundamentals. 3/ Still, "episodes" are not the same as "usually" and even those episodes--as suggested in Section II--are subject to multiple interpretation. 4/

(b) A second key question is whether it is appropriate to draw a priori distinctions between "productive" and "unproductive" capital flows, by reference, say, to the length of the round trip. The Tobin tax, for example, is designed to penalize short-term flows more than long-term ones. If it were possible to so separate the wheat from the chaff, then one might get the best of both worlds--more exchange rate stability

---

1/ Friedman (1953).

2/ Blanchard (1985).

3/ Solomon (1986).

4/ Mussa (1985), for example, dismisses much of the findings of speculative bubbles because their underlying theories lack well-defined limits on the behavior of exchange rates.

and capital flowing to its most productive use. But we see a potential for throwing out the baby with the bath water. A country, for example, that wants for legitimate reasons to engineer a capital inflow would have to raise its interest rate much more than otherwise to overcome the effects of the tax, thereby increasing variability of interest rates. Good speculators who see through the "J curve" could be casualties of the tax, with adverse implications for stability of the market. Short-term flows can help to discipline bad policies just as they can upset good ones.

(c) Feasibility of implementation is another important consideration. This is particularly relevant for proposals that require worldwide implementation to be effective. Given the progressive globalization of capital markets, there is always an incentive for some area--and it need not be a large one--to capture a larger share of the world's business by not imposing the tax, i.e., by engaging in what has come to be known as "regulatory arbitrage." Clearly, if the taxes or restrictions only change the geographical location of speculation but not its volume, or nature, little will be gained.

(d) Finally, in view of the continuing trend toward liberalization of capital markets, it is relevant to factor in the benefits that might be given up by halting or reversing that trend. These benefits include lower spreads between lending and deposit rates, increased returns to savers, a lower cost of capital to firms, and better hedging instruments against a variety of risks. 1/ Also, one cannot dismiss the possibility

---

1/ Folkerts-Landau and Mathieson (1987).



that restrictions on capital flows will weaken the support for "outward-looking" policies more generally and spread to other areas, especially the foreign trade sector. This would ironically run directly counter to the original aim of these capital-flow proposals, namely, to protect the real sector from the financial one.

#### V. Stronger Institutional Coordination of Economic Policies

1. International coordination means different things to different people. A broad definition, due to Wallich (1984), is "... a significant modification of national policies in recognition of international economic interdependence." 1/ A narrower but more ambitious concept, taken from Bryant [1988], is "... jointly designed, mutual adjustments of policy actions." 2/ In most discussions of coordination, it is assumed that explicit bargaining occurs and that governments agree to behave differently than in the absence of the agreement.

The basic rationale for coordination is that economic policy actions, especially those of larger countries, create quantitatively significant spillover effects or externalities for other countries, and that a global optimum requires that such externalities be taken into account in the decision-making calculus. Coordination is simply a facilitating mechanism for externalizing these externalities. 3/ The influence that large countries can exercise over their real exchange rates, the role of "public goods" in the resolution of inconsistencies among policy targets,

---

1/ Wallich (1984), p. 85.

2/ Bryant (1988), p.5.

3/ Frenkel, Goldstein and Masson (1988).

and the potential for joint action to be more effective in reaching objectives (e.g., by overcoming individual balance of payments constraints)--have all been identified as reasons why it can be optimal to depart from independent decentralized policy making in the world economy. 1/

2. The recent upsurge of interest in coordination derives, however, not so much from any reappraisal of the theoretical case for it as from the march of events over the past three years. The implicit contract that governed the first dozen years of floating was one that called for each country to adopt stable policies at the national level, with the expectation that exchange rate stability would emerge as an important by-product. By the fall of 1985, it was apparent that such stability was not forthcoming: there had been several years of undisciplined and uncoordinated national policies, huge current account imbalances had emerged, and there was a sizable misalignment of the dollar with attendant protectionist pressures. The response--which began in earnest with the Plaza Agreement of September 5, 1988 and has evolved since then through the Tokyo Economic Summit, the Louvre Accord, the Venice Economic Summit, a few episodes of coordinated reductions in interest rates, the Toronto Economic Summit, and a series of meetings of both the G-7 and the IMF Interim Committee--was the ongoing process of stronger international coordination of economic policies.

3. As suggested in Section II, the literature has identified two potential sources of misalignment and excess volatility: bad policies

---

1/ Cooper (1987), and Frenkel, Goldstein and Masson (1988).

and market inefficiencies. Successive coordination agreements have attempted to deal with both sources by specifying policy commitments for each participant, by expressing a concerted view on the existing pattern of exchange rates (albeit stopping short of loud target zones), and by pledging closer cooperation on exchange market intervention policy. The approach is a judgmental--rather than rule-based--one. 1/

The process of coordination is assisted by a set of economic indicators that includes GNP and domestic demand growth, inflation, trade and current account positions, monetary conditions, fiscal balances, exchange rates, and a basket of primary-commodity prices. 2/ Three issues are particularly relevant for assessing the practice and the desirability of enhanced coordination: 3/ (i) should coordination be a regular, on-going process that encompasses a wide range of policies, or would an episodic, narrower approach be preferable; (ii) how can the interests of those not sitting at the table be represented; and (iii) are the gains to coordination likely to be worth the effort?

---

1/ In this sense, the gold standard with its automatic specie flow mechanism, the adjustable peg system with its clear implications for the subordination of domestic monetary policy to the exchange rate (except during fundamental disequilibria), the EMS with its parity grid and divergence indicator, target zone proposals with their trigger for coordination discussions whenever the actual exchange rate threatens to breach the zone, and pure floating with its complete prohibition on all official intervention in the exchange market--all can be considered less discretionary than the present system.

2/ These indicators are employed to help gauge the international implications of domestic policy changes, to spot likely inconsistencies among policy objectives--both within and across countries; to monitor whether short-term developments are "on-track" in terms of longer-term objectives; and as early-warning signals of emerging global inflationary or deflationary trends.

3/ For more comprehensive appraisals of coordination, see Frenkel, Goldstein, and Masson (1988), Artis and Ostry (1986), and Fischer (1987).

4. One position is that, given the constraints, true coordination cannot be expected to be more than an episodic, regime-preserving effort. Dini (1988), for example, has recently argued that international considerations still play only a small role in policymaking, and that only at times of crisis is a common interest in coordinated action clearly recognized. Some might even go farther and argue that the reservoir of international compromise should be conserved for situations when there is a high probability of a policy deal and when failure to reach an agreement would carry a high cost.

A different view--which we support--is that both the likelihood and effectiveness of coordination will be enhanced when it is a regular, on-going process and for at least three reasons. First, the potential for multiperiod bargaining expands the opportunities for policy bargains (by facilitating, for example, phasing of policy measures). Second, as suggested in the game-theoretic literature, the existence of repeated bargaining strengthens the role of reputational considerations in coordination. In contrast, when coordination is a once-and-for-all or episodic exercise, there is a higher risk that agreed policies will never be implemented because of the temptation to renege on earlier policy commitments when it later becomes advantageous to do so. Third, once coordination is established as a routine on-going process, there is apt to be more freedom of policy maneuver for all participants than when negotiations are conducted in a crisis atmosphere and when disagreements--which after all are inevitable--may be inappropriately seen as signalling the collapse of coordination itself.

Enough for when to coordinate. Next one needs to ask what to coordinate. 1/ The case for supporting a wide-ranging, multi-issue approach to coordination is that it increases the probability of concluding some policy bargains that benefit all parties, that favorable spillover effects are generated across negotiating issues, and that improved economic performance today depends as much on trade and structural policies as on exchange rate and demand policies. The defense of a narrower approach to coordination rests on the arguments that negotiation costs rise rapidly with the spread of issues under consideration; that prospects for implementation of agreements dim as the number of jurisdictional spheres expands (i.e., finance ministers can negotiate agreements but fiscal policy is typically the responsibility of legislatures; trade policy is handled by trade ministries; and monetary policy is the province of independent central banks); and that heated disputes on some issues (such as the stance of monetary and fiscal policies) can frustrate the chance for agreements in other areas (like defense and foreign assistance) where coordination might be more fruitful.

In view of these conflicting considerations, it is hard to fault present institutional practices on the range of coordination. Those practices entail high-frequency coordination on narrow issues in a multitude of fora (such as the International Monetary Fund (IMF), the Organization of Economic Cooperation and Development (OECD), the Bank for

---

1/ A related issue to whether to coordinate around a single indicator (like the exchange rate) or around a set of indicators (as in the ongoing G-7 coordination exercise); see Frenkel, Goldstein, and Masson (1988).

International Settlements (BIS), and the General Agreement of Tariffs and Trade (GATT)); less frequent (say, biannual) and wider coordination at a higher level in more limited fora (such as the IMF's Interim Committee, or the Group of Seven major industrial countries); and even less frequent (annual), wider-yet coordination at the highest level (heads of state and of governments at the economic summits). Thus, there are occasional opportunities for multi-issue bargaining, but without the exponential increase in negotiation costs that might ensue if this were the order of the day. All things considered, probably not a bad compromise.

5. Since it is the policies of the largest countries that generate the greatest externalities, and since the costs of negotiation may increase significantly with the number of players, there are some economic reasons for favoring a relatively small coordinating group. Yet pointing in the opposite direction is the consideration that a small group could conclude policy agreements which are beneficial to the direct participants--but which are not satisfactory to those countries not sitting at the coordination table.

In this context, it is worth mentioning two features of recent coordination efforts by the G-7. One of them, proposed at the Venice Economic Summit of 1987 and incorporated in subsequent coordination meetings, is the addition of aggregate indicators for the Group of Seven as a whole to the list of individual-country indicators. Aggregate indicators for the group may include such variables as the growth rate of real GNP and of domestic demand, the interest rate, the current account position, and the real exchange rate. A strong motivation for such aggregate indicators is that they can be helpful in gauging the impact of

G-7 coordination agreements and actions among the G-7 on the rest-of-the-world, with particular reference to the developing countries. For example, it has been estimated that each 1 percent change in real GNP in the industrial countries is associated, ceteris paribus, with approximately a 3 per cent change (in the same direction) of export earnings in developing countries. Similarly, a 1 percent change in "world" interest rates implies roughly a \$3-4 billion change in net interest payments by capital-importing developing countries.

A second notable feature is that the Managing Director of the Fund participates in these G-7 coordination meetings. Since the Fund's membership includes not only the larger industrial countries but also the smaller industrial countries, as well as most of the developing countries, one rationale for the Managing Director's participation is that it provides a systemic perspective and evaluation on proposed policy agreements--while still keeping the meeting small enough for administrative efficiency.

6. No one should assume that it is straightforward to achieve effective coordination of economic policies, or that the coordination process by itself somehow reduces the importance of sound policies at the national level.

It is only realistic to acknowledge that there are at least three troublesome barriers to coordination. First, international policy bargains that involve shared objectives can be frustrated if some policy instruments are treated as objectives in themselves. Schultze (1988), for example, offers the view that it would have been difficult to have reached a bargain on target zones for exchange rates in the early 1980s

given President Reagan's twin commitments to increased defense spending and cutting taxes. In some other countries, the constraints on policy instruments may lie in different areas--including structural policies--but the implications are the same. Second, there can at times be sharp disagreements among countries about the effects that policy changes have on policy targets. In some cases, these differences may extend beyond the size to even the sign of various policy-impact multipliers. The harder it is to agree on how the world works, the harder it is to reach agreement on a jointly designed set of policies. Third, the compromise of growth and inflation objectives that emerges after difficult domestic bargaining may leave little room for further compromise on demand measures at the international level. 1/ As an example of how coordination can take place around an inappropriate set of policies, 2/ Feldstein (1988) points to the potential risk that a coordinated attempt to stabilize a pattern of nominal or real exchange rates could result in an excessive global rate of inflation. The proposals put forward by U.S. Treasury Secretary Baker and U.K. Chancellor Lawson, at the 1987 Annual Meetings of the Fund and the World Bank, for a commodity price basket indicator as a potential "early-warning" signal of emerging aggregate price developments, attempt to meet such a concern. 3/

7. Finally, there is the bottom line: will coordination actually be worth the effort? In this connection, some of the recent empirical

---

1/ Polak (1981).

2/ Also see Rogoff (1985) on a related point.

3/ On the possible use of commodity-price indicators in the conduct of monetary policy, see Heller (1987).



literature on the effects of coordination has yielded two controversial findings. One is that the gains from coordination are likely to be "small" for the larger countries. 1/ The second is that welfare effects can even be negative if countries coordinate using the "wrong" model of the world economy.2/ In our view, these findings should not be used as an indictment of coordination--for at least five reasons. First, a comparison of optimal uncoordinated with optimal coordinated policies may not be generalizable to the more relevant comparison of suboptimal uncoordinated with supoptimal coordinated policies. In particular, the link between pressures for protectionism on the one hand, and recession and exchange rates on the other, could result in quite a different "counterfactual" (i.e., what would happen in the absence of coordination) from that assumed in these studies. 3/ Second, some of the gains from coordination may be unobservable (unwritten pledges to alter policies in the (future), or difficult to separate from less ambitious forms of cooperation (exchange of information across countries), or extend beyond the realm of macroeconomic policy (joint measures to combat terrorism, to harmonize international fare schedules for air travel, and so on). Third, a judgment that gains from coordination are small presupposes some standard of comparison. Would the gains from international coordination be small relative to the gains from coordination of policies across different economic agencies within a national government? Fourth, empirical estimates of gains from coordination have typically compared

---

1/ Oudiz and Sachs (1987).

2/ Frankel and Rockett (1987).

3/ Schulze (1987) and Bryant (1987).

policies that do not exploit the incentive governments have to adhere to agreements in order to enhance their reputation for consistency. A comparison of "reputational" policies shows larger gains. 1/ Fifth, the danger that coordination may reduce welfare because policymakers use the wrong model(s) is greatest if they ignore model uncertainty. If, however, policymakers recognize that they do not know the true model and take this uncertainty into account, policy may be set in a more cautious fashion, with positive effects on the gains from coordination. 2/ When all is said and done, we think Tobin's (1987) recent assessment of coordination puts the issue in proper perspective:

"Coordination of macroeconomic policies is certainly not easy; maybe it is impossible. But in its absence, I suspect nationalistic solutions will be sought--trade barriers, capital controls, and dual exchange-rate systems. War among nations with these weapons is likely to be mutually destructive. Eventually, they too, would evoke agitation for international coordination." 3/

---

1/ Currie et al. (1987).

2/ Ghosh and Masson (1988).

3/ Tobin (1987), p. 68.

## References

- Aizenman, Joshua, and Jacob A. Frenkel, "Aspects of the Optimal Management of Exchange Rates," Journal of International Economics (November 1982), pp. 231-56.
- Artis, Michael, and Sylvia Ostry, International Economic Policy Coordination, Chatham House Papers, No. 30, Royal Institute of International Affairs (London: Routledge and Kegan Paul, 1986).
- Balassa, Bela, "The Purchasing Power Parity Doctrine: A Reappraisal," Journal of Political Economy, 1964, pp. 584-96.
- Baldwin, Richard, and Paul Krugman, "The Persistence of the U.S. Trade Deficit," Brookings Papers on Economic Activity, 2 (1987), pp. 1-43.
- Bergsten, Fred, and John Williamson, on "Exchange Rates and Trade Policy" in William Cline (ed.), Trade Policy in the 1980s (Institute for International Economics, Washington, D.C., 1983).
- Bergstrand, Jeffrey, "Is Exchange Rate Volatility 'Excessive'?" New England Economic Review (September/October 1983), pp. 5-14.
- Blanchard, Olivier, "Speculative Bubbles, Crashes, and Rational Expectations," Economics Letters (No. 4, 1979), pp. 387-89.
- Boughton, James M., "Policy Assignment Strategies with Somewhat Flexible Exchange Rates," International Monetary Fund Working Paper, 1988, forthcoming.
- Branson, William, "Causes of Appreciation and Volatility of the Dollar," The U.S. Dollar--Recent Developments, Outlook, and Policy Options, Federal Reserve Bank of Kansas City, 1985, pp. 33-52.
- , and James Love, "U.S. Manufacturing and the Real Exchange Rate," Paper presented to NBER Conference on Misalignment of Exchange Rates, May 1987.
- Bryant, Ralph, "International Coordination of Economic Policies: An Interim Stocktaking," in International Monetary Cooperation: Essays in Honor of Henry Wallich, Essays in International Finance (No. 169, December 1987), International Finance Section, Princeton University.
- Canzoneri, Mathew, "Monetary Policy Games and the Role of Private Information," American Economic Review (December 1985), pp. 1056-70.
- Cooper, Richard, "International Economic Cooperation: Is It Desirable? Is it Likely?," lecture presented at International Monetary Fund, October 1987.

- Crockett, Andrew, Exchange Rate Volatility and World Trade, IMF Occasional Paper No. 28 (Washington: International Monetary Fund, June 1984).
- , and Morris Goldstein, Strengthening the International Monetary System, IMF Occasional Paper No. 50 (Washington: International Monetary Fund, February 1987).
- Currie, David, Paul Levine, and Nicholas Vidalis, "Cooperative and Non-Cooperative Rules for Monetary and Fiscal Policy in an Empirical Two-Bloc Model," in Bryant and Portes (1987).
- Cushman, David, "The Effects of Real Exchange Rate Risk on International Trade," Journal of International Economics (August 1983), pp. 44-63.
- De Grauwe, Paul, "Exchange Rate Variability and the Slowdown in Growth of International Trade," Staff Papers, International Monetary Fund (Washington), Vol. 35 (March 1988), pp. 63-84.
- , and Guy Verfaelle, "Exchange Rate Variability, Misalignment, and the European Monetary System," paper presented to NBER Conference on Misalignment of Exchange Rates, May 1987.
- Dini, Lamberto, "Cooperation and Conflict in Monetary and Trade Policies," International Management and Development Institute, U.S.-European Top Management Roundtable, Milan, February 19, 1988.
- Dixit, Avinash, "Entry and Exit Decisions of a Firm Under Fluctuating Exchange Rates," unpublished, Princeton University, 1987.
- Dooley, Michael and Jeffrey Shafer, "Analysis of Short-Run Exchange Rate Behavior: March 1973 to November 1981," in D. Bigman and T. Taya (eds.), Exchange Rate and Trade Instability (Ballenger, Cambridge, 1983).
- Dornbusch, Rudiger (1976a), "Expectations and Exchange Rate Dynamics," Journal of Political Economy (December 1976), pp. 1161-74.
- (1976b), "The Theory of Flexible Exchange Rate Regimes and Macroeconomic Policy," Scandinavian Journal of Economics (May 1976), The Brookings Institution (Washington), pp. 255-75.
- , "Exchange Rate Economics: Where Do We Stand?" Brookings Paper on Economic Activity (No. 1, 1980), pp. 145-85.
- , "Money and Finance in European Integration," European Free Trade Association, Geneva, January 1988, pp. 9-22.

- , and Jeffrey Frankel, "The Flexible Exchange Rate System: Experience and Alternatives," NBER Working Paper No. 2464, December 1987.
- Edison, Hali, "Purchasing Power Parity in the Long Run," Journal of Money, Credit and Banking (August 1987), pp. 376-87.
- Feldstein, Martin, "Distinguished Lecture on Economics in Government: Thinking about International Economic Coordination," The Journal of Economic Perspectives, Vol. 2, No. 2 (Spring 1988), pp. 3-13.
- Fischer, Stanley, "International Macroeconomic Policy Coordination," in M. Feldstein (ed.), International Economic Cooperation, University of Chicago Press, Chicago, Illinois, 1988, pp. 11-43.
- Folkerts-Landau, David and Donald Mathieson, "The Process of Innovation, Institutional Changes, and Regulatory Response in International Financial Markets," paper presented to AEI Conference on Restructuring Financial Markets, Washington, D.C., November 1987.
- Frankel, Jeffrey, "In Search of the Exchange Risk Premium," Journal of International Money and Finance (1982), pp. 255-74.
- , and Kenneth Froot, "Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations," American Economic Review (March 1987), pp. 133-53).
- , and K. Rockett, "International Macroeconomic Policy Coordination When Policy-Makers Disagree on the Model," NBER Working Paper No. 2059, November 1987.
- Frenkel, Jacob A., "Current Problems of the International Monetary System: Reflections on European Monetary Integration," Weltwirtschaftliches Archiv (Tubingen), Vol. 3, No. 2 (1975), pp. 216-21.
- , "A Monetary Approach to the Exchange Rate: Doctrinal Aspects and Empirical Evidence," Scandinavian Journal of Economics (May 1976), pp. 200-24.
- , "The Collapse of Purchasing Power Parities during the 1970's," (1981a) European Economic Review (Amsterdam), Vol. 16 (May 1981), pp. 145-65.
- (1981b), "Flexible Exchange Rates, Prices, and the Role of 'News': Lessons from the 1970s," Journal of Political Economy (June 1981), pp. 665-705.
- , "The International Monetary System: Should It Be Reformed?," American Economic Review (May 1987), pp. 205-10.

- \_\_\_\_\_, and Richard Levich, "Transactions Costs and Interest Arbitrage: Tranquil Versus Turbulent Periods," Journal of Political Economy (1986), pp. 1209-226.
- \_\_\_\_\_, and Morris Goldstein, "A Guide to Target Zones," Staff Papers, International Monetary Fund (Washington), Vol. 33 (December 1986), pp. 633-70.
- \_\_\_\_\_, and Morris Goldstein, "The International Monetary System: Developments and Prospects," Cato Journal (Fall 1988, forthcoming).
- \_\_\_\_\_, Morris Goldstein, and Paul Masson, "International Coordination of Economic Policies: Scope, Methods, and Effects," in Wilfred Guth (ed.), International Coordination of Economic Policies (IMF, Washington, D.C., 1988).
- \_\_\_\_\_, and Michael Mussa, "The Efficiency of Foreign Exchange Markets and Measures of Turbulence," American Economic Review (May 1980), pp. 374-81.
- \_\_\_\_\_, and Michael Mussa, "Asset Markets, Exchange Rates and the Balance of Payments," Chapter 14 in Ronald Jones and Peter Kenen (eds.), Handbook of International Economics, II, North-Holland, Amsterdam, 1985, pp. 679-747.
- Friedman, Milton, "The Case for Flexible Exchange Rates," in Essays in Positive Economics (Chicago, University of Chicago Press, 1953), pp. 157-203.
- Genberg, Hans, and Alexander Swoboda, "The Current Account and the Policy Mix Under Flexible Exchange Rates," International Monetary Fund Working Paper No. 87/70, October 1987.
- Ghosh, Atish R., and Paul R. Masson, "International Policy Coordination in a World with Model Uncertainty," Staff Papers, International Monetary Fund (Washington), Vol. 35 (June 1988), pp. 230-58.
- Giavazzi, Francesco, and Alberto Giovannini, "The EMS and the Dollar," Economic Policy (April 1986), pp. 455-73.
- Goldstein, Morris, "Have Flexible Exchange Rates Handicapped Macroeconomic Policy?," Special Papers in International Economics No. 14, Princeton University (Princeton, New Jersey: Princeton University Press, June 1980).
- \_\_\_\_\_, The Exchange Rate System: Lessons of the Past and Options for the Future, IMF Occasional Paper No. 30 (Washington: International Monetary Fund, June 1984).
- \_\_\_\_\_, "Money and Finance in European Integration: A Comment on Dornbusch," European Free Trade Association, Geneva, January 1988.

- , and Mohsin Khan, "Income and Price Effects in Foreign Trade," Chap. 20 in Handbook of International Economics, II, ed. by Ronald Jones and Peter Kenen (Amsterdam: North-Holland, 1985, pp. 1041-105).
- and ——, "Large Versus Small Price Changes and the Demand for Imports," Staff Papers, International Monetary Fund (Washington), Vol. XXIII (March 1976), pp. 200-25.
- Hansen, Lars, and Robert Hodrick, "Forward Exchange Rates as Optimal Predictors of Future Spot Rates," Journal of Political Economy (August 1980), pp. 329-53.
- Haberler, Gottfried, "Recent Developments in Historical Perspective," Asussenwirtschaft, Heft IV, 1987, pp. 373-85.
- Heller, H. Robert, Address before the International Economic Working Group in Washington, D.C., March 24, 1987.
- Holtham, Gerald, Giles Keating, and Peter Spencer, EMS: Advance or Face Retreat (Credit Suisse First Boston Ltd.: London, 1987).
- Hooper, Peter, and Catherine Mann. "The U.S. External Deficit: Causes and Persistence," Board of Governors of the Federal Reserve System, unpublished, 1987.
- Horne, Jocelyn, "Criteria of External Sustainability," IMF Working Paper No. 88/60, July 1988.
- International Monetary Fund, Report on the World Current Account Discrepancy, IMF, Washington, D.C., September 1987.
- , "The Recent Behavior of U.S. Trade Prices," North-American Division, Western Hemisphere Department, unpublished July 1988.
- Isard, Peter, "Lessons from Empirical Models of Exchange Rates," Staff Papers, International Monetary Fund (Washington), Vol. 34 (March 1987), pp. 1-28.
- Jurgensen, . . . , Report of the Working Group on Exchange Market Intervention, Washington, U.S. Treasury, 1983.
- Krugman, Paul, "Is the Strong Dollar Sustainable?" The U.S. Dollar - Recent Developments, Outlook, and Policy Options, Federal Reserve Bank of Kansas City, 1985, pp. 103-32.
- , "Exchange Rate Instability," Robbins Lectures, London School of Economics, January 1988.
- Levich, Richard, "Empirical Studies of Exchange Rates," Chapter 19 in Ronald Jones and Peter Kenen, Handbook of International Economics, Volume 2 (North-Holland, Amsterdam, 1985), pp. 979-1040.

- Marston, Richard, "Real Exchange Rates and Productivity Growth in the United States and Japan," NBER Working Paper No. 1922, Cambridge, May 1986.
- McGuirk, Anne, "Oil Price Changes and Real Exchange Rate Movements Among Industrial Countries," Staff Papers, International Monetary Fund (Washington), Vol. 30 (December 1983), pp. 843-84.
- McKinnon, Ronald, "Floating Exchange Rates 1973-74: The Emperor's New Clothes," Carnegie-Rochester Conference Series on Public Policy (No. 3, 1976), pp. 79-114.
- , and Kenichi Ohno, "Purchasing Power Parity as a Monetary Standard," Presented at Conference on Future of the International Monetary System, York University, June 1988.
- Meade, James, "New Keynesian Bretton Woods," Three Banks Review (June 1984), pp. 8-25.
- Meese, Richard and Kenneth Rogoff, "Empirical Exchange Rate Models of the Seventies: Do They Fit Out of Sample?" Journal of International Economics, February 1983, pp. 3-24.
- Mundell, Robert, "International Trade and Factor Mobility," American Economic Review (June 1957), pp. 321-35.
- , "The Appropriate Use of Fiscal and Monetary Policy for Internal and External Balance," Staff Papers, International Monetary Fund (Washington), Vol. 29 (March 1982), pp. 70-78.
- Mussa, Michael, "The Exchange Rate, the Balance of Payments, and Monetary Policy Under a Regime of Controlled Floating," Scandinavian Journal of Economics (May 1976), pp. 229-48.
- , "Commentary on 'Is the Strong Dollar Sustainable?'" in The U.S. Dollar--Recent Developments, Outlook, and Policy Options, Federal Reserve Bank, Kansas City, 1985, pp. 103-32.
- , "Empirical Regularities in the Behavior of the Foreign Exchange Market," in Theory, Policy, Institutions..., papers from the Carnegie-Rochester Conference on Public Policy (North-Holland, Amsterdam, 1983), pp. 165-312.
- , "Nominal Exchange Rate Regimes and the Behavior of the Real Exchange Rates: Evidence and Implications," Proceedings of the Carnegie-Rochester Conference Series 1987.
- Nurkse, Regnar, Conditions of International Monetary Equilibrium, Essays in International Finance, No. 4, Princeton University (Princeton, New Jersey: Princeton University Press, 1945).



- , International Currency Experience in the Anterior Period (Geneva, League of Nations, 1937), reprinted by Arno Press, 1966.
- Obstfeld, Maurice, "Floating Exchange Rates: Performance and Prospects," Brookings Papers on Economic Activity: 2 (1985), The Brookings Institution (Washington), pp. 369-450.
- Oudiz, Gilles, and Jeffrey D. Sachs, "Macroeconomic Policy Coordination among the Industrial Economies," Brookings Papers on Economic Activity: 1 (1984), The Brookings Institution (Washington), pp. 1-75.
- Polak, Jacques J., Coordination of National Economic Policies, Group of Thirty, Occasional Paper No. 7 (New York, Group of Thirty, 1981).
- Rogoff, Kenneth, "Can International Monetary Policy Cooperation be Counterproductive?" Journal of International Economics (Amsterdam), Vol. 18 (May 1985), pp. 199-217.
- Sachs, Jeffrey D., and Charles Wyplosz, "The Economic Consequences of President Mitterand," Economic Policy (April 1986), pp. 261-305.
- Schultze, Charles, "Prepared Remarks: Macroeconomic Policy," in Martin Feldstein, ed., International Economic Cooperation, Chicago: University of Chicago Press, 1988.
- Shiller, Robert, "Do Stock Prices Make Too Much To Be Justified By Subsequent Changes in Dividends?" American Economic Review (June 1981), pp. 421-36.
- Tobin, James, "A Proposal for International Monetary Reform," Eastern Economic Journal (July 1978).
- , "Agenda for International Coordination of Macroeconomic Policies," in International Monetary Cooperation: Essays in Honor of Henry Wallich, Essays in International Finance, No. 169 (December 1987), pp. 61-69.
- Tryon, Ralph, "Testing for Rational Expectations in Foreign Exchange Markets," International Finance Discussion Paper No. 139, Board of Governors of the Federal Reserve System, 1979.
- Wallich, Henry C., "Institutional Cooperation in the World Economy," in Jacob A. Frenkel and Michael Mussa, eds., The World Economic System: Performance and Prospects (Dover, Massachusetts: Auburn House, 1984), pp. 85-99.
- West, Kenneth, "A Standard Monetary Model and the Variability of the Deutschmark-Dollar Exchange Rate," Journal of International Economics, August 1987, pp. 57-76.

Williamson, John, The Exchange Rate System, Institute for International Economics, Policy Analyses in International Economics, No. 5 (1983; second edition, 1985).

———, and Marcus H. Miller, Targets and Indicators: A Blueprint for the International Coordination of Economic Policy, Institute for International Economics, Policy Analyses in International Economics No. 22 (September 1987).