

ESSAYS IN INTERNATIONAL FINANCE

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EXCHANGE-RATE RIGIDITY,  
INVESTMENT DISTORTIONS,  
AND THE FAILURE OF BRETTON WOODS

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INTERNATIONAL FINANCE SECTION

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Princeton, New Jersey

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PETER B. KENEN, *Director*  
*International Finance Section*

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## Exchange-Rate Rigidity, Investment Distortions, and the Failure of Bretton Woods

If postmortems on the international monetary system of the last two decades are now in order, the first obvious question is why it failed. The events of recent years suggest that this question can be put more precisely: Why were exchange rates so rigid when other adjustment mechanisms either did not work or had politically unacceptable implications for domestic economic policy? In particular, why did surplus countries resist revaluations so strenuously despite clear provisions in the IMF Articles of Agreement for parity changes in cases of fundamental disequilibrium? The Germans and Japanese vigorously opposed pressures to revalue long after it was apparent that their currencies were undervalued. More generally, exchange-rate adjustments have been put off until disruptive and occasionally destructive exchange crises virtually forced change.

The usual excuse for the avoidance of exchange-rate changes by surplus countries is the refurbished mercantilist argument that a revaluation would reduce output and employment, but this position appears to make little sense when allowance is made for feasible adjustments in fiscal and monetary policy. The reduction in aggregate demand resulting from the effects on the trade account of revaluation (or an upward float) can be offset quite simply by fiscal and monetary expansion. (The absorption principle is usually put in terms of the necessity for a tightening of fiscal and monetary policy to maintain a desired level of aggregate demand after a devaluation, but the same principle obviously holds for a revaluation.)

The desire of surplus countries to retain their undervalued exchange rates appears particularly surprising when it is remembered that a trade surplus represents a net export of resources, which reduces potential internal absorption for a fully employed economy. Since the aim of national economic policy is presumably to maximize the range of domestic consumption and investment possibilities open to an economy, why should countries go to such lengths to protect a surplus that ensures that the economy will use domestically less than it produces? It seems clear that domestic welfare would be improved by the increased private and/or public absorption that would result from the elimination of a payments surplus.

One major answer to this paradox lies in a seldom-discussed but impor-

tant distortion stemming from a payments surplus that is allowed to continue and grow for some time. That a surplus will continue for a considerable period is inherent in the IMF requirement that a fundamental disequilibrium exist before a parity change is made. Since it is impossible to distinguish between transitory and fundamental imbalances without data for a number of quarters, the IMF system has virtually guaranteed that an emerging surplus will not result in a quick change in the exchange rate. (Limited foreign-exchange reserves may compel somewhat more rapid actions by deficit countries—other than the United States, because of the reserve role of the dollar—so the arguments of this essay are not strictly symmetrical.)

### **Internal Distortion Resulting from Payments Disequilibrium**

A fully employed country with increasing aggregate demand generated by a growing trade surplus will typically apply restrictive monetary and fiscal policies to maintain its desired level of output in the face of growing payments strength. In recent years, attempts at full sterilization of payments surpluses have become almost universal as countries have acted to maintain target rates of inflation and unemployment despite payments swings. The implications of the orthodox adjustment system in which surpluses are eliminated by increases in aggregate demand and faster inflation have simply become unacceptable to national governments whose macroeconomic policies are directed primarily at domestic goals. (It should be noted that sterilization efforts are not always completely successful; a chronic surplus can still have some effect on aggregate demand and price levels. The Germans, for example, undoubtedly experienced more inflation than they desired as a result of their chronic surpluses during the 1960's, although their considerable efforts at sterilization were successful enough to protect Germany's surplus and produce the distortion described in this essay.)

A growing surplus that is accompanied by restrictive fiscal and monetary policies designed to produce an unchanged target for aggregate demand and output will have the effect of distorting a country's pattern of investment toward export and import-competitive goods and away from nontraded goods and services. A combination of downward fiscal and monetary pressure on wages and domestically determined prices and high externally determined prices for traded goods will increase profit rates in export and import-competing industries relative to yields in the rest of the economy. Private investment funds will flow into the production of traded goods rather than nontraded goods and services, and a tight fiscal policy will probably have the additional effect of reducing public expenditures on social-overhead capital.

This distortion of investment patterns in surplus countries depends crucially on the assumption that fiscal and monetary policy are used in order to come close, at least, to maintaining a desired level of aggregate demand despite a growing export surplus. If domestic economic policies are not adjusted to sterilize a growing surplus, the resulting general inflation of wages and domestically determined prices will quickly produce roughly equal rates of return in various sectors of the economy and end the distortion of investment toward traded goods. Expenditure levels for social-overhead capital would also be protected by a passive fiscal policy. The resulting inflation would then produce the classic automatic adjustment of the payments imbalance. In a world in which the domestic goal of aggregate demand stabilization is given clear priority over the adjustment of a payments surplus, however, fiscal and monetary policy can be expected instead to maintain previously determined levels of aggregate demand despite a surplus, and hence to protect that surplus and to create the previously described bias in investment patterns.

If exchange-rate adjustments were made relatively rapidly as payments imbalances developed, any temporary distortion of investment patterns would not become a serious problem. Only a small part of a country's capital stock would be affected. The length of time before an exchange-rate adjustment is made is important, because it is likely to be related to both the size of the final payments surplus and the extent to which the capital stock is affected by a given surplus.

The role of time in the distortion process is clearest when the imbalance is caused by an emerging difference in relative rates of inflation or by a trend in consumer tastes. In this case, the extent of the undervaluation, the surplus, and the resulting distortion of the capital stock all increase with time. Even when the imbalance is caused by a discontinuous shock to relative price levels or tastes, however, the period that is allowed to pass before an exchange-rate adjustment is made is important for the size of the distortion. Although the shock occurs within a brief period, the full response of the domestic capital stock to that change takes considerably longer. Because long-run demand and supply functions are more elastic than short-run functions, not only the size of the surplus that results from a given discontinuous change in relative prices, but also the capital intensity of the response, will increase with time. The short-term response of export firms to increased demand will typically be to combine more labor with existing plant and equipment, both because of doubts about the permanence of the increase in demand and because of the time required to put capital in place once a decision to do so has been made. Over the long run, firms will decide to make plant and equipment commitments as the permanence of the shift in demand becomes more cer-

tain, and, after a planning and construction lag, the capital stock will be enlarged.

For both these reasons, the extent of the distortion of a country's capital stock resulting from a payments surplus will increase over some period of time even if the disequilibrium is caused by a discontinuous shock; although the corresponding adjustment of the capital stock to such a change is itself finite, the change in the capital stock will take some years to complete. If the revaluations were made quickly in response to developing payments surpluses, this adjustment would be incomplete and the distortion of a nation's capital stock would consequently be minor. But the IMF system encourages rather long waits before exchange-rate changes are made, so that adjustments by firms to disequilibrium exchange rates will typically be completed, and the distortion of a country's capital stock is likely to be much more serious. In the case of a disequilibrium caused by a *trend* in relative prices or tastes, the argument that the resulting distortion of a country's capital stock worsens with time is obviously much stronger.

It is not difficult to think of currencies that have remained undervalued for a number of years; both Germany and Japan had payments surpluses virtually throughout the 1960's, and the Canadian dollar was quite clearly undervalued for at least the second half of the decade. In all these countries, an important part of the existing capital stock was put in place at times when investment decisions were significantly biased toward traded goods by a combination of exchange rates that undervalued the local currencies and macroeconomic policies that protected the domestic economies from most of the potential inflationary effects of payments surpluses.

It should be noted that the problem described above is roughly analogous to the situation of many underdeveloped countries that maintain overvalued exchange rates, thereby discouraging exports and encouraging imports. The resulting chronic balance-of-payments problems then lead to highly restrictive tariffs, quotas, and other controls on imports, which push investment back toward import substitution. The net effect of an exchange rate that significantly overvalues the local currency and of restrictions on imports sufficient to avoid unacceptable payments deficits is to distort investment away from export industries and toward import substitutes and nontraded goods. Exports are reduced by the exchange rate, imports by commercial policy, and the over-all volume of trade is significantly reduced. Since the potential export industries are those in which the underdeveloped country has a comparative advantage and in which its resources could therefore be used most productively, the loss in efficiency from this distortion is obvious. This combination of



exchange-rate and commercial policies pushes decidedly scarce capital in a direction exactly opposite to that which would most suit the economy.

### **Opposition to Exchange-Rate Adjustments**

The development of a seriously distorted private capital stock under a low fixed rate produces an important barrier to the policy decisions that are eventually required to adjust the payments surplus. By the time the fundamental nature of the payments imbalance is recognized, many large industries will have become heavily dependent on its continuation. Major investments in export and import-competitive industries will have been made that can remain profitable only if the undervaluation of the currency and the resulting payments surplus are maintained. In an open economy, these industries and the unions whose members work in them are likely to be politically powerful, and they will oppose with some vigor any move toward revaluation. Most producers of traded goods, especially those in operation before the development of the surplus, can be expected to survive the reduction in profit rates resulting from a revaluation and a return to payments equilibrium, but some of the newer and more marginal producers will quite reasonably fear being driven out of business by such a development. These firms are likely to argue that a revaluation sufficient to end a fundamental payments surplus represents a government decision that will drive them into bankruptcy, and they will fight long and hard against such a result. Even the stronger firms will expect their profit rates to be sharply reduced by a sizable revaluation and will consequently oppose any change in the exchange rate.

This opposition is likely to delay the decision to revalue an undervalued currency long after the fundamental nature of the disequilibrium has been recognized. To the extent that the surplus is caused by a trend in relative price levels or other factors affecting the trade balance, the effect of a delay in adjusting the exchange rate is to exacerbate the payments disequilibrium and the resulting distortion of investment decisions. Continuing tight fiscal and monetary policies are required to restrain aggregate demand to levels desired by the government despite a growing surplus; these produce wage rates and prices for nontraded goods that further encourage the flow of investment funds toward traded-goods industries, with their externally determined and relatively high prices.

Recent events in Germany, Japan, and Canada provide rather clear examples of this process. In all three countries, overdeveloped export and import-competitive industries have vigorously opposed revaluations or upward floats of undervalued currencies, and in the cases of Germany

and Japan they were successful in forestalling parity adjustments for some time. The 1969 German revaluation was reportedly put off until after an election in order to protect those in power from the wrath of export and import-competitive industries, and both the German and Japanese governments will probably face difficult political problems as economic adjustments to the new exchange rates take place.

### **Internal Adjustments to a New Parity**

By the time pressures from the deficit countries (such as the United States), speculative flows, and the monetary difficulties of sterilizing a continuing surplus finally force an exchange-rate change, tremendous internal microeconomic adjustments have become necessary for the economy to regain payments equilibrium. These adjustments are not eased by expansionary fiscal and monetary policies resulting from the government's understanding of the implications of the absorption model for a revaluation. The primary problem faced by the appreciating country is one of resource reallocation. It cannot be solved through policy tools that deal solely with aggregate demand.

The appreciation significantly reduces the demand for domestically produced traded goods, while the offsetting expansionary fiscal and monetary policy increases demand for a much broader range of goods and services. Although part of the policy-induced increase in aggregate demand will benefit traded-goods industries, a far larger part will probably affect service industries, construction, and a range of nontraded goods. There would be no sectoral shifts in aggregate demand only if (1) all goods and services were traded and (2) the proportions of marginal expenditures for each class of goods and services created by fiscal and monetary expansion matched the proportions of marginal reductions in purchases of each class of goods and services caused by an appreciation. But not all goods and services are traded, and a country's exports are typically far more concentrated than the range of goods for which demand will be created by fiscal and monetary expansion; thus, an appreciation accompanied by offsetting shifts in fiscal and monetary policy will have the *net* effect of sharply reducing the demand for exportables and some import substitutes and increasing the demand for a range of nontraded goods.

The output effects of these demand shifts would be relatively modest if the cross-elasticities of demand between traded goods and nontraded goods (and services) were high. Reductions in prices of traded goods resulting from the appreciation would then shift expenditures back from

services and nontraded goods to traded goods, leaving the output pattern of the economy largely unchanged. [It is possible that relative domestic prices of traded and nontraded goods would be unaffected by a small exchange-rate change if oligopolistic export firms were able to price-discriminate between domestic and foreign customers. This result is far more likely for changes in a flexible exchange rate than for discontinuous changes in an otherwise fixed parity (see Dunn, 1970).] But classes of goods as broad as traded goods and nontraded goods and services are very poor substitutes. The cross-elasticities are likely to be quite low, and sectoral shifts in output after an exchange-rate change are likely to be large. Appreciation caused reductions in the Canadian dollar prices of commodities whose world prices have not changed substantially (paper, lumber, and wheat, for example). These reductions, however, are not likely to produce a major shift in domestic expenditures away from the range of other goods and services making up a typical consumer budget. Certainly, the shifts in domestic consumption will be insufficient to maintain sectoral output patterns when exports are highly concentrated. It would be extremely unlikely, for example, that appreciation-induced reductions in the prices of the previously mentioned major Canadian exports would produce enough additional Canadian consumption of these goods to offset the effects of the recent exchange-rate change, and the same conclusion would appear to hold for the major exports of Japan and Germany. In summary, changes in relative prices resulting from an appreciation are not likely to protect the previous pattern of output of traded and nontraded goods and services, for two reasons—because the cross-elasticities of demand are low among such broad classes of highly imperfect substitutes, and because the increases in domestic consumption of exportables would have to be very large for a country whose exports are concentrated.

As a result, a country with an open economy that appreciates after a long-standing surplus will find that a large part of its industrial sector is designed to produce goods for which there are significantly reduced markets. Sizable amounts of plant and equipment (and human capital invested in skills) will have to be written off, both in surviving firms and in those leaving traded-goods industries. If the change in the exchange rate had been made sooner, when the surplus and the distortion of the economy toward the production of traded goods were smaller, the adjustment to the new exchange rate would be much less difficult and costly. The delay and the deepening of the resulting distortion mean that large amounts of capital and labor have to be moved from traded goods to nontraded goods and services. The social and human costs of

this movement are potentially huge, particularly because it is necessary to write off previous training in skill categories for which there is now a much smaller market.

These adjustment problems are worsened to the extent that traded-goods industries are concentrated in particular regions of a large country. Such areas face a regional balance-of-payments deficit as the country as a whole returns to equilibrium, and the payments-adjustment mechanism for regional-payments deficits is inherently painful.<sup>1</sup> Unless the central government provides regional transfer payments or adjustment assistance, the localized deficit produces a drain of funds out of the region and a painful adjustment via specie flow. To the extent that wage rates are set nationally through collective-bargaining standards, the adjustment process cannot work primarily through wages and prices but must instead depend on changes in output, incomes, and employment. The result is likely to be a sizable migration of labor from regions with such industrial concentrations to other areas where the expansionary fiscal and monetary policies encouraged by the appreciation are providing increased job opportunities.<sup>2</sup>

The U.S. experiences with large-scale migration from the rural South to the industrial North and Midwest, and from the rural Midwest to the Pacific Coast, have provided ample evidence that the personal and social costs of such processes can be extremely high. When migration is compelled by the decline of a regional industry, losses are imposed on those leaving owner-occupied homes, and people are forced to move under the worst possible circumstances. Those moving are usually poor, and they are moving away from an unacceptable situation rather than toward bright prospects elsewhere. This is hardly an efficient or humane adjustment mechanism, but it is a likely result of an appreciation if traded-goods industries are regionally concentrated and if the government's pol-

<sup>1</sup> Ingram (1962) has contended that the adjustment of regional balance-of-payments imbalances occurs largely or wholly through capital flows that respond to small interest-rate differentials. Commenting on earlier work by Ingram, Pfister (1960) has argued that a large part of the process operates through the effects of a drain of money from a deficit region on output and incomes, and hence on regional imports. Given the limited stocks of secondary reserves that can be sold by banks in deficit regions to offset deposit and reserve losses, and the likely tendency of equity investors to move funds out of rather than into deficit regions, Pfister's arguments seem compelling. Ingram (1960) admits in a reply to Pfister that income effects are part of the adjustment process for a deficit region. Whatever the details of the adjustment process among the regions of the United States, the recent experience of the Pacific Northwest hardly suggests that it is painless.

<sup>2</sup> Mundell (1961) has argued that a major part of the definition of an optimum currency area is that it be no larger than the area within which resources are easily mobile. His arguments suggest sizable regional-payments problems when currency areas are too large, because macroeconomic policies cannot be applied to the problems of a deficit region and the normal flow of labor and capital in and out of the region will not be sufficient to adjust the imbalance.

icy reaction to the adjustments required by the appreciation is wholly macroeconomic in nature.

### **Some Circumstantial Evidence for Canada**

The arguments of the previous pages do not lend themselves to rigorous empirical testing. They suggest that the maintenance of a fixed exchange rate that undervalues a currency will encourage growth in investment, profits, and output in the traded-goods sector of the economy relative to the rest of the economy. These results, however, could also be caused by changes in domestic tax policies, demand conditions in foreign markets, or tariff rates, and there is no method of abstracting from these extraneous forces to isolate the effects of the exchange rate.

An additional problem in an empirical study of this topic is that data are not available for output, profits, and investment that neatly divide an economy between the traded goods and nontraded goods and services sectors, and data must instead be found on individual traded-goods industries. Although output data by industry are available for most industrial countries, data on investment in plant and equipment and on rates of return on equity are scarce. Nevertheless, enough data are available for the Canadian experience to suggest strongly, if not to measure accurately, some of the effects of alternative exchange-rate regimes discussed above.

Canada was the primary renegade from the Bretton Woods orthodoxy of fixed parities during the 1950's and returned to that status in 1970. Both in October 1950 and in May 1970, Canada was faced with a strong fundamental balance-of-payments situation combined with heavy speculative inflows, which threatened the ability of the Bank of Canada to maintain control over the money supply if the parity was maintained. Rather than allow domestic monetary policy to be determined by the balance of payments or attempt to choose a new parity without much confidence that it would be an equilibrium rate, on both occasions the Canadian government allowed the exchange rate to float.

In the earlier of the two cases, Canada's experience with a flexible exchange rate was relatively successful until 1958. The currency appreciated from its 91-cent parity to 104 cents by 1952 and then fluctuated without a clear trend between 100 and 106 cents until 1960. Owing to a series of errors in Canadian monetary policy, the rate was considerably higher than the ideal for Canada between 1958 and 1960, and this worsened an already serious recession. An all-too-successful attempt was made to use both monetary policy and the exchange-stabilization fund to bring the rate down in 1961-62. The announcement by the government