

ESSAYS IN INTERNATIONAL FINANCE

No. 97, February 1973

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

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INTERNATIONAL FINANCE SECTION

DEPARTMENT OF ECONOMICS

PRINCETON UNIVERSITY

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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.¹ 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.²

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-

¹ 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.

² 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

of its intention to force the rate down encouraged a speculative rush away from the Canadian dollar, and it fell far more sharply than the government desired. In May 1962 the government established a parity of 92.5 cents, which was far below the average level during the 1950's.

Although there was considerable feeling that 92.5 cents was too low and there was some increase in foreign-exchange reserves from 1963 to 1965, real pressure on the parity did not develop until 1970. The low fixed parity had its predictable effects on Canadian trade, however, and the current account strengthened quite steadily and by a total of almost \$2.3 billion between 1966 and 1970.³ Canadian foreign-exchange reserves did not increase rapidly, because monetary policy and occasional regulations were used to limit capital inflows; this was part of an agreement with the United States that Canada would not run a surplus in her official-settlements balance-of-payments accounts in exchange for an exemption from U.S. restrictions on capital outflows. (For a discussion of the 1963 agreement under which Canada agreed to limit foreign-exchange reserves to a ceiling of U.S. \$2.7 billion in exchange for an exemption from the U.S. balance-of-payments program, see Dunn, 1971.) As a result, the relatively stable level of Canada's foreign-exchange reserves in the late 1960's did not represent the country's fundamental payments position, which was better suggested by the rapidly improving current account.

In early 1970, the contradictions and problems of maintaining a parity that undervalued the Canadian dollar became more obvious, and the Bank of Canada was again faced with the threat of losing control over the money supply as speculative inflows increased. The 92.5-cent parity was abandoned on June 1, 1970, and the rate rapidly rose to about 98 cents. It has since risen to just over 100 cents, despite what appear to have been considerable efforts by those managing the exchange-stabilization account to hold it down; Canadian foreign-exchange reserves increased by about \$850 million in 1971, so this has hardly been a "clean" float.

The fact that the Canadian dollar floated at over 100 cents in the 1950's and in recent months suggests that 92.5 cents was not an equilibrium rate for any significant period of time during the 1960's. If the rate had not been fixed at 92.5 cents in 1962 after the unfortunate attempts

³ The 1965 Canada-U.S. automotive agreement caused an important part of Canada's export growth. Under the agreement, tariffs were ended for auto-producing firms moving cars and parts across the border, allowing a rationalization of production arrangements by U.S. firms operating plants in Canada. Although there was a commitment by the firms to increase production in Canada, they vastly exceeded the requirements of this commitment. The advantage of investing and producing in Canada as a result of the 92.5-cent parity was probably a major factor in their decision to shift so much production to Canada. For a detailed discussion of the operations of the agreement, see Beigie (1970).

at manipulation and if the Bank of Canada's monetary policy had been directed solely at domestic goals throughout the 1960's, it seems quite unlikely that the rate would have fallen even close to 92.5 cents during the 1960's, although it might have fallen to the mid- or high 90's in the early 1960's before returning to more than 100 cents late in the decade.

Canada's experiences since 1950 provide a rather clear contrast between the two situations described earlier in the paper—a low, nonequilibrium parity vs. an equilibrium or market-determined exchange rate—and a comparison of the 1951-61 and 1963-69 periods should illustrate some of the earlier conclusions. (The years 1950, 1962, and 1970 are not included in these comparisons, because each contained periods of both fixed and flexible exchange rates.) In addition, the upward float of 1970-72 should show a return to some of the conditions of the 1950's, although not enough data are available yet to show its full effects.

In the following pages, the limited data available for Canada will be presented in the form of comparisons between the performance of traded-goods industries in 1951-61 and in 1963-69 relative to the economy as a whole. For example, the rate of growth of investment in the paper industry in 1963-69 relative to 1951-61 can be compared with the rates of growth of all investment in Canada in 1963-69 relative to 1951-61. The purpose of this and similar comparisons is to indicate how traded-goods industries performed under a low fixed rate relative to a higher floating rate compared with the Canadian economy as a whole. Higher rates of growth of output, investment, and profits in 1963-69 than in 1951-61 relative to the economy as a whole, while not decisive, would suggest the distortion or subsidy effects of a low fixed exchange rate.

Whenever possible, a comparison is also made between the performance of a Canadian industry in 1963-69 relative to 1951-61 and the performance of the same U.S. industry in the same periods. The purpose is to use the competing U.S. industry as a benchmark and hence to indicate the extent to which the Canadian industry performed better in 1963-69 relative to 1951-61 than the same U.S. industry.

Exports. Canadian exports as a whole (exclusive of automobiles and parts) grew at an average annual rate of 5.1 per cent in 1951-61 and 10.7 per cent in 1963-69, which suggests a considerable acceleration during the period of the 92.5-cent parity (data are from the *Canadian Statistical Review*). Exports by the United States grew at an average annual rate of 4.4 per cent in 1951-61 and 9.2 per cent in 1963-69 (data are from the statistical appendix of the *Economic Report of the President*). Thus in 1951-61 the average annual rate of growth of Canadian exports exceeded that of the United States by 0.7 per cent, but in 1963-69 this difference increased to 1.5 per cent, which suggests a significant

improvement in Canada's relative position. It should be noted that these comparisons exclude automobiles and parts, exports of which were increased sharply by the 1965 trade agreement between Canada and the United States; if these products were not excluded, the Canadian gains in 1963-69 relative to the United States would be considerably greater. Although a number of factors could have caused this improvement in Canada's performance, these results are what would be expected from an undervalued fixed exchange rate; when combined with other circumstantial evidence, they lend support to the argument that Canada's low parity had the effect of subsidizing or encouraging exports in 1963-69.

Output. The data available for the output of specific industries in Canada and the United States are somewhat better than those for the investment levels and profit rates that appear in the following sections. Table 1 indicates the extent to which a few Canadian traded-goods industries grew faster in the 1963-69 period than in 1953-61 when compared with the United States. (The years 1951 and 1952 are not included, because the statistical series from which the data are drawn begins in 1953.)

TABLE 1
RATES OF GROWTH OF OUTPUT OF CERTAIN TRADED-GOODS INDUSTRIES IN CANADA
AND THE UNITED STATES, 1953-61 AND 1963-69

| <i>Industry</i> | <i>1953-61</i> | <i>1963-69</i> | <i>Change</i> |
|--------------------------------|----------------|------------------|---------------|
| Newsprint: | | | |
| Canada | 2.0 | 5.7 | +3.7 |
| United States | 11.5 | 7.8 | -3.7 |
| Mechanical wood pulp: | | | |
| Canada | 6.4 | 10.7 | +4.3 |
| United States | 7.2 | 8.0 | +0.8 |
| Nonmechanical wood pulp: | | | |
| Canada | 1.8 | 5.5 | +3.7 |
| United States | 3.4 | 4.2 | +0.8 |
| Lumber: | | | |
| Canada | 1.6 | 3.0 | +1.4 |
| United States | -1.4 | 0.5 | +1.9 |
| Aluminum: | | | |
| Canada | 2.6 | 8.3 | +5.7 |
| United States | 4.8 | 10.8 | +6.0 |
| Distilled alcoholic beverages: | | | |
| Canada | 7.7 | 11.9 | +4.2 |
| United States | 1.7 | 4.6 | +2.9 |
| Copper: | | | |
| Canada | 9.4 | 8.0 ^a | -1.4 |
| United States | 2.2 | 0.1 ^a | -2.1 |

^a The period covered is 1963-68 rather than 1963-69 because of a strike in the Canadian industry in 1969 that distorted the results for that year.

SOURCE: United Nations (1968).

In the case of newsprint, one of Canada's most important exports, the average rate of growth of Canadian output increased by 3.7 per cent in the period of a low fixed parity, while the rate of growth of U.S. output fell by 3.7 per cent. The rate of growth of Canadian output of the two varieties of wood pulp, which are also major Canadian exports, increased by 4.3 and 3.7 per cent, while the rate of growth of U.S. output increased by only 0.8 per cent in each case. The same conclusion holds for distilled alcoholic beverages, where the growth of Canadian output accelerated by 4.2 per cent compared with only 2.9 per cent in the United States. In the case of copper, a decline in the Canadian rate of growth of output of 1.4 per cent in 1963-68 was exceeded by a U.S. decline of 2.1 per cent. In all these markets, the output positions of the Canadian industries relative to their U.S. competitors were stronger under a low fixed parity than under a higher floating rate. Only two industries—lumber and aluminum—were exceptions, and here the improvements in the U.S. positions were small. In lumber, the average rate of increase of output of the U.S. industry increased by 1.9 per cent in 1963-69, while that of the Canadian industry increased by only 1.4 per cent. (The Canadian industry grew considerably faster than the U.S. industry in 1963-69, but the U.S. industry had a negative rate of growth in 1961-63, making the U.S. position appear relatively stronger.) The aluminum industry grew more rapidly in the United States than in Canada in both the 1950's and the 1960's, and the rate of growth of the industries in both countries accelerated in the 1963-69 period. Although the U.S. acceleration was more rapid, the difference was very small.

In summary, the rates of growth of Canadian output were more rapid in 1963-69 than in 1951-61 in six of the seven traded-goods industries for which data are available, and in five of the seven the change in the Canadian rate of growth in 1963-69 over 1951-61 compares favorably with that in the United States.

Investment. The limited investment data (from *Private and Public Investment in Canada*) indicate that the imposition of the 92.5-cent parity in 1962 produced a significant shift in Canadian investment away from the nonbusiness sector (government, housing, and nonprofit institutions) and toward the business sector in general and manufacturing in particular. The average level of *all* Canadian investment rose by 91 per cent between 1951-61 and 1963-69, but investment in the business sector rose by 130 per cent. Average investment levels in the nonbusiness sector rose by only 51 per cent, and the difference between 130 per cent and 51 per cent suggests a major shift in the distribution of the Canadian capital stock in the 1963-69 period. Average investment in Canadian manufacturing rose by 110 per cent between 1951-61 and 1963-69, com-

pared with 83 per cent in the United States, again suggesting the incentive effects of a low fixed exchange rate on investment in the traded-goods sector of the economy.

Turning briefly to individual industries, the average level of Canadian investment in the paper industry rose by 152 per cent between 1951-61 and 1963-69, and this rate of growth significantly exceeds that for investment in the Canadian economy as a whole, the business sector, or the manufacturing sector. The same comparison for the wood-products industry shows an increase of 142 per cent in the average level of investment, which is also above that for the economy as a whole or the business or manufacturing sectors. Unfortunately, owing to a 1962 change in the industrial classification used for Canadian statistics, these are the only two industries for which consistent investment data exist for the 1950-70 period. Investment data for the United States (from *Plant and Equipment Expenditures of U.S. Business*) are available for the paper industry, but not for wood products, and show a 117 per cent increase in 1963-69 compared with 1951-61. The 152 per cent increase for the Canadian industry is considerably higher than that for the United States, again suggesting the incentive effects of the low parity for the Canadian dollar in 1963-69.

These investment data are fragmentary, but they do indicate that the growth of Canadian business and manufacturing investment accelerated in 1963-69 relative to the economy as a whole, and that the two traded-goods industries for which data are available showed particularly large increases.

Profits. Thanks to Wood Gundy and Company of Toronto, rates of return on equity are available for two important Canadian export industries, alcoholic beverages, and pulp and paper. When these are compared with U.S. profit rates (from *Quarterly Financial Report for Manufacturing*), the two industries give different results. In the case of alcoholic beverages, the Canadian rate of return on equity increased by 3.5 per cent (from 13.7 to 17.2 per cent) between 1957-61 and 1963-69, while the profit rate of the U.S. industry increased by 2.2 per cent (7.4 to 9.6 per cent) between the same two periods. In the case of the pulp and paper industry, however, the Canadian average rate of return on equity declined by 0.8 per cent (7.8 to 7.0 per cent) between 1957-61 and 1963-69, while the U.S. yield increased by 1.1 per cent (8.5 to 9.6 per cent). According to press reports, the decline in the Canadian profit rate—despite a change in the exchange rate that should have encouraged higher profits—was the result of particularly heavy plant and equipment expenditures in the mid-1960's, which produced large amounts of excess capacity.

A somewhat more useful comparison is possible over the period in which Canada returned to a higher floating exchange rate (see Table 2).

TABLE 2
CANADIAN RATES OF RETURN ON EQUITY, 1968 AND 1971

| <i>Sector</i> | <i>1968</i> | <i>1971</i> | <i>Change</i> |
|---------------------------|-------------|-------------|---------------|
| All industries | 10.0 | 9.4 | -0.6 |
| All manufacturing | 10.4 | 9.6 | -0.8 |
| Paper and allied products | 7.6 | 3.2 | -4.4 |
| Metal mines | 13.6 | 9.2 | -4.4 |

SOURCE: Wood Gundy and Company, Toronto.

Although profit rates for the business sector as a whole and for manufacturing industries declined by less than 1 per cent, yields in two major export industries declined by over 4 per cent. The sharp decline in profit rates in the two export industries relative to the economy as a whole would be expected after the abandonment of a low fixed parity in favor of a higher floating exchange rate. The financial press reported rapid declines in profits for a number of major Canadian export firms in late 1970 and 1971-72, and the declines were generally blamed on the upward float (see, for example, Kipling and Little, 1971). As one financial analyst put it, "The Canadian Dollar floats like a butterfly, but from a profits point of view, it stings like a bee" (*Financial Post*, April 3, 1971, p. 3).

To summarize, our data indicate that a number of Canadian export industries grew more rapidly in the 1963-69 era of a low fixed parity than in the 1951-61 period of a higher float, and that these increased rates of growth exceeded those occurring in the United States at the same time. Fragmentary data on investment expenditures suggest that the 92.5-cent parity of the 1960's had the effect of subsidizing or encouraging investment in traded-goods industries relative to investment elsewhere in the economy. Although the available data on profit rates do not make many comparisons possible, it appears that the upward float of 1970-72 brought profit rates down sharply in some traded-goods industries.

Thus the low parity of 1962-70 apparently had the effect of distorting investment decisions and output in Canada toward the traded-goods sector relative to the rest of the economy. The appreciation of the Canadian dollar after the decision to return to a floating rate on June 1, 1970, reduced the profitability of past investments in the traded-goods sector by ending the subsidy the low parity had provided. The blame for the

reportedly severe problems of some traded-goods industries in Canada during the past two years does not lie with the floating exchange rate, however, but instead with the 92.5-cent parity of 1962-70, which apparently encouraged excessive rates of investment and output.

Conclusions

Two major policy implications emerge. First, countries appreciating in order to deal with sizable and entrenched surpluses must recognize the microeconomic aspect of the necessary adjustments to their new exchange rates; they must act to ease the transitional problems faced by traded-goods industries, by their employees, and by regions with concentrations of these industries. Tax and transfer mechanisms can be used both to aid individuals and firms through their adjustments and to attract new industries to particularly affected regions. Variable tax rates or subsidies can be used to encourage the movement of jobs into regions with concentrations of traded-goods industries rather than the movement of people out. Most of the initial impact of the expansionary fiscal policy needed to maintain aggregate demand after the appreciation can be concentrated in these regions, not only to ease the problems there but also to avoid creating excessive demand pressures in regions largely unaffected by the appreciation because of an orientation toward nontraded goods and services.⁴

The Canadian experience with flexible exchange rates during the last eighteen months suggests the implications of a failure to recognize the microeconomic aspects of the adjustment to a new exchange rate. As a result of the 1970 decision to abandon the fixed parity of U.S. 92.5 cents, and of the appreciation of the Canadian dollar to the U.S. 98- to 102-cent range, a number of major export industries and regions such as British Columbia, with heavy concentrations of these industries, were seriously injured. Some Canadians favoring a quick return to a parity then argued that flexible exchange rates actually provided no increase in the national independence of Canadian monetary policy, because the Bank of Canada was compelled to maintain an undesirably expansionary monetary policy

⁴ A good deal of research would be required to identify and measure the net sectoral impacts of an exchange-rate change accompanied by offsetting macroeconomic policy shifts if the microeconomic policy adjustments suggested here are to be effective. A major implication of this essay is that such research is needed for those economies now adjusting to new and significantly different exchange rates. The international-trade equations of existing econometric models of the major industrial economies ought to provide some of the necessary information, particularly where considerable disaggregation exists. Input-output tables might then become useful in tracing the final effects. The sectoral impacts of the offsetting fiscal and monetary shifts obviously vary with the almost limitless range of possible policy packages, but the same econometric models of the major industrial economies ought to provide some information for particular sets of policy changes.

to hold the exchange rate down and thereby provide some limited protection for important export industries. The needs of particular sectors of the economy were to be dealt with through a monetary policy that was not in the interests of the economy as a whole, and the adoption of flexible exchange rates was blamed for the problem. It has even been suggested that this situation provides a parallel to the Meade conflict cases in which macroeconomic policies are pulled in opposite directions by the needs of the balance of payments and the domestic economy. Those arguing that the salvation of the paper industry and of British Columbia are to be found in an otherwise undesirably expansionary monetary policy are applying a macroeconomic policy tool to a microeconomic problem, and the results are almost certain to be unfortunate. Canada needs an adjustment-assistance program to aid in the necessary movement of new industries into particularly hard-hit regions. Inflating the whole economy is hardly a reasonable way to deal with the problems of particular industries and regions. Flexible exchange rates do, in fact, provide increased independence for national monetary policy *if* microeconomic problems are recognized for what they are and approached with the appropriate policy tools.⁵

The second and equally important implication of the previous argument is that any replacement for the Bretton Woods system must encourage (or require) small and frequent exchange-rate changes as payments disequilibria develop. Payments imbalances must not be allowed to continue long enough and become large enough to distort significantly the capital stocks of national economies and thereby create strong vested interests in the continuation of the imbalances. If small exchange-rate changes are made relatively often in response to payments shifts, existing traded-goods industries will not be seriously disturbed, and distortions in patterns of current investment will be so modest and so short in duration that national capital stocks will not be significantly out of line.

Any one of a number of exchange-rate systems might provide the necessary flexibility, including a clean float or a combination of significantly wider bands and presumptive rules for parity changes. The purpose of this essay is not to argue for a particular replacement for the Bretton

⁵ Recent econometric research (see Helliwell, 1972) suggests that a floating exchange rate does not provide Canada with as much protection from the effects of shifts in U.S. monetary policy as theory would lead one to expect. It remains true, however, that Canadian monetary policy is not restricted by a balance-of-payments constraint under flexible exchange rates, and hence that it can adjust to offset internal or external shocks (such as shifts in U.S. monetary policy) without unacceptable balance-of-payments implications. Flexible exchange rates do not isolate the Canadian economy (and hence Canadian monetary policy) from events in the United States, but they do eliminate the necessity of choosing between a desired level of aggregate demand and balance-of-payments equilibrium as goals of monetary policy.

Woods system, but instead merely to suggest that whatever system is devised must not have its predecessor's destructive bias toward exchange-rate rigidity.

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