

BIS WORKING PAPERS
No 3 - July 1980

EXCHANGE RATES AND BALANCE-OF-PAYMENTS ADJUSTMENT -
GENERAL PRINCIPLES AND SOME RECENT EXPERIENCES

by William A. Allen

BANK FOR INTERNATIONAL SETTLEMENTS
Monetary and Economic Department
BASLE

C O N T E N T S

	<u>Page</u>
I. Introduction	1
II. Principles of balance-of-payments adjustment policies	3
<i>Exchange rate changes</i>	3
<i>Trade controls versus exchange rate changes</i>	12
<i>Demand management versus exchange rate changes</i> ..	14
III. Some recent instances of the working of exchange rate changes in balance-of-payments adjustment	19
<i>United States</i>	20
<i>Japan</i>	23
<i>Germany</i>	25
<i>United Kingdom</i>	28
<i>Italy</i>	31
<i>Canada</i>	33
<i>Summary and Conclusions</i>	36
IV. Conclusions	38
Appendix	39
Footnotes	46

EXCHANGE RATES AND BALANCE-OF-PAYMENTS ADJUSTMENT -
GENERAL PRINCIPLES AND SOME RECENT EXPERIENCES

by William A. Allen*

I. Introduction

It was expected by some that the widespread adoption of flexible exchange rates would banish balance-of-payments problems from the agenda of economic policy. Indeed, in a system where there was no official intervention in foreign exchange markets at all, there could be no such problems, because imbalances that might have occurred would be taken care of by market-induced exchange rate changes. It is clear, after several years of experience with floating, that this is not the case, and that balance-of-payments problems can still exist. The purposes of this paper are, first to go over the well-tilled ground of the principles of balance-of-payments adjustment, trying to interpret these principles in ways relevant to current conditions; and second to discuss some recent cases in which balance-of-payments adjustment policies have been used.

The discussion that follows is couched largely in terms of current-account imbalances. This is not to suggest that purely capital-account imbalances do not matter, but rather that different remedies are appropriate for them. This is a controversial point of view, since the monetary approach to the balance of payments does not distinguish between the current and capital accounts of the balance of payments. But this strand of monetarism is founded on the assumption that the demand functions for the various national monies are stable and predictable - an assumption which is hardly tenable, except by the most optimistic, after the experiences of the 1970s.¹

To set the paper in perspective, it is worth noting that adjustment of one country's current balance implies opposite adjustments of the balances of other countries. In general, industrial countries have a preference for surpluses. For many years, under the international

* For footnotes, please see page 46

monetary system forged at Bretton Woods, this preference did not hinder the smooth running of the system, for a number of reasons. Firstly, development needs dictated that developing countries should run deficits which partly counterbalanced the desired surpluses of the industrial countries. Secondly, the United States' policy of "benign neglect" meant that the US was willing to act as a shock absorber for the rest of the system. In particular, dollars held by monetary authorities outside the United States were convertible into gold at a fixed price. Thirdly, exports of newly-mined gold which were bought by national monetary authorities for their reserves were included in the current-account balance-of-payments statistics of the exporting countries but not in those of the importing countries, so that a global current-account surplus was possible.

The Bretton Woods system finally broke down in 1971 when the dollar was formally declared inconvertible into gold. However, much more important for current-account balances of payments were the huge rises in oil prices in 1973-74 and the associated large, unavoidable and apparently enduring surpluses of the OPEC countries. These surpluses destroyed the equilibrium which had emerged between the industrial countries' surpluses and the developing countries' deficits, and heightened the risk of a mutually-defeating scramble to avoid deficits. That said, many of the current payments imbalances that emerged after 1974 were nevertheless not primarily attributable to higher oil prices. It is to the problems posed by imbalances of this sort that the present paper is addressed.

II. Principles of balance-of-payments adjustment policies

Unless there is significant unemployment of productive resources, removing a current external deficit means reducing total domestic spending. The choice of policy instrument boils down to finding the least disruptive way of achieving the reduction. Similarly, removing a surplus means increasing total domestic spending - but because surpluses present less pressing and difficult problems than deficits, they are paid less attention in this section than are deficits.

It has been traditional to distinguish between expenditure-switching and expenditure-reducing policies as means of removing balance-of-payments deficits (an analogous classification can be applied to policies for removing surpluses). Expenditure-switching policies attempt to rearrange patterns of production and spending so as to eliminate the imbalance, without any change in the aggregate level of domestic production. Expenditure-reducing policies simply involve a cutback in domestic demand, in the expectation that imports will be thereby restrained, and, perhaps, exports stimulated. Some increase in unemployment of resources or, in the surplus case, in inflationary pressure, is regarded as part of the cost of the policy. Briefly, the usual analysis is that if the deficit owes its existence to the fact that domestic absorption of goods exceeds the productive capacity of the domestic economy, then expenditure reduction, with the concomitant rise in unemployment of resources (but from a position of "over-full" employment), was inevitable; but if the deficit coincided with under-employment of productive resources, then expenditure switching could clear the deficit with no necessary fall in domestic output. However, it should be noted that cases seldom arise where, in the opinion of the government, a deficit coincides with over-full employment or a surplus with excess unemployment.

This section first discusses the operation of exchange rate changes as an adjustment device, and then goes on to compare them with alternative policies.

Exchange rate changes

In the present environment, whether or not exchange rate changes are regarded as a policy instrument is a matter for the choice

of the monetary authorities. Within the European Monetary System, there is clearly the possibility of parity changes which are to some extent discretionary. In the United States, up to 1st November 1978, the external value of the dollar was regarded as a matter of indifference to the authorities, who intervened only when markets became acutely disorderly. Other countries, such as Sweden in 1977 and Norway in 1978, have managed to devalue their currencies (in both cases from a position of membership of the European "snake" arrangement), and the exchange rates of the Swedish krona and the Norwegian krone are now set by reference to the value of "baskets" of foreign currencies.

The attitude of the authorities to the exchange rate may have some effect on the reactions of the economy to exchange rate changes. But it is possible to discuss the effects of exchange rate changes in general terms, and to indicate where the attitude of the authorities might make a difference.

It is assumed in the analysis that follows that exchange rate changes are accompanied by demand-management measures sufficient to maintain unchanged the aggregate level of output. This means deflation of domestic demand in deficit cases, stimulation in surplus cases. The assumption is made partly for ease of exposition, but in deficit cases it may also be realistic in present circumstances. This is because governments now attach much more importance than hitherto to reducing inflation, so that they are less likely to be willing to accommodate possibly inflationary increases in the pressure of demand on domestic resources.

The analysis can conveniently start from the observation that the effects of currency depreciation must be divided among the following:

1. a reduction of the prices of exports and import-substitutes in relation to the prices of competing goods produced in other countries;
2. a rise in the domestic-currency prices of exports and other internationally-tradable goods in relation to costs and the prices of non-tradable goods;
3. a rise in all domestic-currency prices and costs.

This observation, of course, works in reverse in cases of currency appreciation.

To the extent that the response is of type 3, no adjustment of the current balance of payments is to be expected.² To the extent that it is of types 1 or 2, an incentive to adjustment is provided. Type 1 changes provide a fairly obvious incentive: the demand for exports is stimulated by a cut in their foreign currency price. Moreover, domestic-currency import prices will rise and this will dampen the demand for imports. If adjustment is to be achieved, the domestic economy must have sufficient spare capacity to meet the additional demand for exports and import-substitutes, and deflation of aggregate demand may be needed to create this spare capacity.

Type 2 changes operate more obviously through a re-orientation of the domestic economy. The rise in the prices of tradable goods relative to costs provides a profit stimulus to their increased production and at the same time discourages their domestic consumption, so that the trade balance is thereby improved. Demand deflation may again be required to prevent the development of undue pressure on the productive resources left in the non-tradable goods industries.

The main potential obstacle to successful currency depreciation is that it may be impossible to secure price changes which provide incentives to adjustment, i.e. there is a danger of purely inflationary (type 3) response. This amounts to saying that it is likely to be difficult to achieve reductions in real spending in the domestic economy. The considerations involved in the choice between different methods of reducing spending are discussed in the section below which compares demand management and exchange rate changes as adjustment devices. As a preliminary, however, tables 1 and 2 survey some of the relative price changes that have accompanied recent exchange rate changes.

Table 1 deals with currency depreciations. Where the period of depreciation includes 1973, which was the peak of the last cyclical boom, the pre and post-1973 periods are separated. Although some of the figures are likely to be rather inaccurate, the general impressions they create are of some interest.

In only two cases of depreciation was the absolute level of pre-tax real wages reduced. In the United Kingdom, pre-tax real wages fell by 2.5 per cent. in five years, a change which, spread over such a long period, may have been small enough to be below the threshold

Table 1

Some effects of recent exchange rate depreciations

	(A)	(B)	(C)	(D)	(E)	(F)
Country	Period	Percentage change in effective exchange rate index ¹	Percentage change in pre-tax real wages ²	Percentage change in productivity ³	Percentage change in relative unit labour costs ⁴	Percentage change in relative export unit values ⁴
Italy	1972-73	- 8.9	+ 10.9	+ 5.8	- 4.6	- 6.7
Italy	1973-78	- 37.8	+ 21.4	+ 16.3	- 9.0	- 4.5
UK	1972-73	- 9.5	+ 4.1	+ 5.4	- 12.2	- 7.5
UK	1973-77	- 28.0	- 2.5	+ 1.5	+ 9.6	+ 4.0
USA	1977-79	- 11.3	- 1.0	- 1.0	- 7.2	- 4.0
Canada	1975-79	- 16.2	+ 6.4	+ 2.8	- 14.0	- 10.4
Sweden	1976-78	- 10.0	- 6.0	+ 0.7	- 13.1	- 8.4

1. Source: IMF International Financial Statistics.

2. Wages divided by consumer prices. Source as in (1).

3. GDP per employed civilian. Sources: GDP: IMF International Financial Statistics; Employment: OECD Labour Force Statistics 1966-77, and quarterly supplements. In some cases national sources were consulted as well.

4. Manufacturing only. Source as in (1).

of perception of falling income.³ In Sweden, they fell by 6 per cent. in the two years 1976-78, but even this fall did not quite reverse the increase in real wages between 1975 and 1976. Thus the table suggests the conclusion that in recent years currency depreciation has not led to real pre-tax wage reductions.

Nevertheless, some of the episodes covered in the table resulted in quite substantial reductions in relative unit labour costs, indicating that depreciation succeeded in securing some relative cost advantage by restraining increases in real wages. In the case of Canada, this success may perhaps be ascribed to sluggishness in the response of the entire domestic cost and price structure to currency depreciation, perhaps resulting from past exchange rate stability, whilst in Sweden, as mentioned above, there was a reduction, albeit exceptional, in real wages. In the case of the United States, the sheer smallness of the external sector of the economy in relation to the domestic sector means that domestic costs are not very responsive to external influences. In both Italy and the United Kingdom in 1972-73 there was substantial productivity growth along with currency depreciation, and in both cases relative unit labour costs fell. From 1973 onwards, however, the experiences of these countries differed. Productivity grew fast in Italy between 1973 and 1978, and there was scope for both increases in real wages and a reduction in relative unit labour costs. By contrast, in the United Kingdom between 1973 and 1977, productivity grew very slowly. The difficulty of securing any sizable reduction in real wages meant that in spite of an effective depreciation of the pound of 28 per cent., there was a considerable increase in relative unit labour costs.

The other point of interest in table 1 relates to the distinction between responses of type 1 (reduction in relative export prices) and type 2 (profit stimulus to domestic production of tradable goods). Column F shows in each case how large the type 1 response has been. The size of the type 2 response cannot be observed directly from the available statistics. However, the difference between the figures in columns E and F of the table gives an indication of changes in the profitability of exporting industries relative to exporting industries in other countries, and movements in this may in turn give an indication of changes in the profitability of industries producing internationally-tradable goods

relative to industries in the same country producing non-tradable goods. In every instance shown in the table but one, the change in relative export prices is smaller than the change in relative unit labour costs, but in the same direction. Thus, it appears likely in the cases and the time-spans considered, there were responses of both type 1 and type 2.

Some statistics relating to countries whose currencies have recently appreciated are shown in table 2. A point of interest is that an examination of columns D, E and F reveals that in three out of four cases, consumer prices rose by more than might have been expected given the changes in unit labour costs and import prices. This means that corporations increased their profit margins on domestic sales by using their market power to withhold some of the benefit accruing from currency appreciation from consumers. The figures in the table also leave open the possibility, at least in some countries, that import prices following currency appreciation were higher than might have been expected. The figures in column C show the change in the import price index of all industrial countries expressed in domestic currencies, and they may be compared with the figures in column D. In Switzerland, the actual fall in import prices was significantly smaller than the reduction shown in column C, and in the United Kingdom the actual rise was significantly bigger than the hypothetical one. While it is possible that these discrepancies simply reflected differences between the composition of these countries' imports and the average of industrial countries, it remains plausible that some of the benefits of the appreciations of the Swiss franc and the pound were appropriated by foreign exporters who maintained the Swiss franc or sterling prices of their exports instead of reducing them when those currencies appreciated, or at least did not reduce them to the full extent of the currency appreciation.

The behaviour of relative manufactured export prices, shown in column H, is also of some interest. In Germany and Japan, exporters held their prices down despite the rise in real wages (column G), and presumably suffered a reduction in profits (however, in both these countries profits on domestic sales benefited, as mentioned above). By contrast, in Switzerland and the United Kingdom relative manufactured export prices rose quite sharply. Real wages changed only a little in Switzerland, but in Japan and the United Kingdom they went up by quite

Table 2

Some effects of recent exchange rate appreciations

Country	(A) Period	(B) Percentage change in effective exchange ¹ rate index ¹	(C) Percentage change in industrial countries' import prices, expressed in domestic currency ²	(D) Percentage change in import prices	(E) Percentage change in unit labour costs ³	(F) Percentage change in consumer prices ⁴	(G) Percentage change in real wages ⁵	(H) Percentage change in relative export unit values ⁶
Germany	1977-79	+ 13.3	+ 2.4	+ 5.6	+ 6.1	+ 6.9	+ 4.3	+ 0.9
Switzerland	1977-79	+ 29.7	- 10.2	- 5.4	+ 6.5	+ 4.7	+ 1.3	+ 8.7
Japan	1976-79	+ 28.3	+ 6.1	+ 3.7	+ 8.7	+ 16.2	+ 6.5	+ 1.3
United Kingdom	1977-79	+ 9.1	+ 4.3	+ 13.1	+ 36.5	+ 22.8	+ 7.5	+ 13.5

1. Source: IMF, International Financial Statistics.

2. Computed from industrial countries' import prices expressed in US dollars, and exchange rates against the US dollar. Source as in (1).

3. Wages divided by productivity. Sources: wages as in (1); productivity as in footnote (3) to table 1.

4. In domestic currency. Source as in (1).

5. Wages divided by consumer prices. Source as in (1).

6. Manufactured goods only. Source as in (1).

large amounts. What is most important, though, is that in none of these cases was currency appreciation met by a general reduction of money costs and prices; it was possible in every instance to find some group or other willing to accept an increase in real income.

A general hypothesis that might be advanced, and with which the evidence briefly surveyed here is consistent, is that currency appreciations succeed in engendering price responses which provide incentives for adjustment. However, depreciations can be counted on to succeed in this object only if sharp reductions in pre-tax real wages are not required.⁴ Even if the required price responses do occur, however, reliable and quick adjustment is by no means assured. Adjustment may come in either of two ways - shifts in demand towards products which have become relatively cheaper; and shifts in production to products which have become more profitable.⁵ These will be discussed in turn.

In the cases of many primary products, changes in exchange rates do not provoke discrepancies between different countries' export prices; rather, there is a single world price. However, exchange rate changes can nevertheless cause shifts in production and consumption patterns by changing the relative profitability of producing, and the relative cost of consuming, tradable and non-tradable goods. In the field of manufactured goods and services, depreciations and appreciations can lead at least to temporary changes in the relative prices of similar items produced in different countries. Shifts in demand in response to these relative price changes contribute to the desired adjustment in international payments.

Experience has shown, however, that, at least in the important case of manufactured goods, these demand responses materialise only very gradually, although over a longer period they can be very strong indeed.⁶ This is perhaps not surprising, for several reasons. Even manufactured goods which ostensibly serve the same purpose are usually different in some respects, and these differences may mean that there are costs in switching from one source of supply to another. This is most easily seen in the cases of goods which are inputs to industrial processes, and in the case of consumer goods and services there may be psychic costs ("brand loyalty"). These costs provide an incentive to delay any switch until it is clear that the price change is going to be permanent.

By the same token producers will be reluctant to increase the resources devoted to selling and after-sales service abroad until they are sure that extra demand will be forthcoming. Many goods and services are bought under long-term contracts, which cannot be broken without penalty; and in any case information about price changes diffuses only gradually.

In the cases where adjustment requires shifts in production, the reasons for delays in response are even stronger. Fresh investment is likely to be required, both in plant and equipment, and in re-training of the labour force. Firms producing goods which are no longer profitable may delay going into liquidation or re-orienting their production in the hope that their profitability will be restored, and the expansion of production of newly profitable items will likewise proceed cautiously. Caution is likely to be particularly marked in cases of depreciation, where there is a danger that the advantage conferred by the exchange rate change may simply be wiped out by subsequent inflation.

These response delays have serious consequences for exchange rate policy. Firstly, they give rise to the "J-curve" problem - an exchange rate change initially aggravates a country's imbalance, because the effect on the current balance of the terms-of-trade change initially outweighs the stabilising changes in the volumes of imports and exports. Secondly, exchange rate policy is ruled out as a counter-cyclical device to help stabilise output, on the grounds that the lags it involves are too long. The probable influences in the behaviour of both demanders and suppliers suggest that step changes under a fixed-rate system, or within an arrangement such as the European Monetary System, which are normally regarded as irreversible, may have quicker effects than equal-sized changes in flexible rates, which carry with them the possibility of reversal.

Besides the trade account, the investment income account of the current balance of payments is susceptible to the influence of exchange rate changes. In a country (like the United States) whose external assets are largely real or, if financial, denominated in foreign currencies, but whose external liabilities are mainly financial liabilities denominated in domestic currency, currency depreciation has a large, quick, and beneficial effect on the current balance. Of course, this beneficial effect will be partly offset in the long-term capital account by larger re-investment of earnings on direct investment abroad.

Trade controls versus exchange rate changes

Trade controls include, for present purposes, import quotas, and tariffs and subsidies on imports and/or exports. Such devices may be used for a number of alternative reasons. Perhaps the most obvious is to conserve foreign exchange in a national emergency. In less dire circumstances, they may be used for tactical reasons by their withdrawal being made conditional on certain policy changes by governments of other countries. The classic example of this latter practice is the 10 per cent. temporary import surcharge imposed by the United States in 1971 simultaneously with the suspension of the convertibility of the dollar into gold at the fixed price of \$35 per ounce, with the intention of spurring progress towards a satisfactory currency realignment. Trade controls are widely used as a cheap means of assisting individual industries which are in difficulties: cases of this sort have increased in number in recent years. However, the use of trade controls for purposes such as those that have been mentioned is beyond the scope of this paper; it is their possible contribution to balance-of-payments adjustment which alone is of concern.

There is a fundamental distinction between tariffs/subsidies and quotas in that the former operate through the price system, whereas the latter do not. The slowness of the response of trade flows to relative price changes is likely to be a feature, and a weakness, of tariff/subsidy policies as well. For that reason, the discussion in this section concentrates on quotas.

Quantitative import restrictions are often seen as a means of eliminating an actual or prospective deficit without incurring either the inflationary costs of currency depreciation or the unemployment costs of demand deflation. Since it is normally believed that removal of the restrictions after a short period will simply bring the deficit back, import quotas are normally seen as part of a long-term strategy involving a speeding-up (or the avoidance of a slowing-down) in the rate of domestic economic growth. Many arguments against quotas have focused on the possibility of retaliation by other countries, and on the fact that they are proscribed by various international agreements. Indeed, the fact that they are forbidden by international agreements may create

the impression in some minds that they must be ipso facto in national interests.

However, even if there is no retaliation by other countries, the long-run usefulness of import quotas as an adjustment device is not guaranteed. Any policy which aims to eliminate a deficit must either reduce domestic absorption of goods and services, raise domestic output, or both. Quotas might reduce absorption in the short run, through sheer unavailability of certain goods and services, but the spending deflected from imports would in the course of time be directed to domestically-produced substitutes, and exports would suffer in consequence. There is nothing in the policy of import quotas to stimulate saving, so long-term reductions in absorption cannot be expected.

Hopes must therefore rest on increasing output. They may be based on either or both of two lines of reasoning. First, it is believed by some that output in deficit countries has been held back over long periods by the need to use budgetary policy to restrain economic growth in the interests of balance-of-payments equilibrium. Currency depreciation has failed to remove the balance-of-payments constraint, so import quotas should be tried. However, it seems rather unlikely that the main premise of this argument is true. It is far more plausible that the deflationary policy measures taken in chronic deficit countries have been needed for internal anti-inflation reasons as well as for external reasons, although obvious political considerations have dictated that their ostensible motivations were external.

The second line of reasoning is more fundamental. It is suggested that, once assured of a captive market by import quotas, domestic producers will feel sufficiently confident about their profit prospects to increase investment (investment goods would obviously have to be exempted from the quantitative import restrictions), and that the rate of growth of output would be thereby increased. This programme would, of course, entail a decrease in resources available for consumption in its early stages (unless, of course, spare resources were available for employment), but this loss would be more than made up later. The policy in this form entails an act of faith in the responses of industrialists to import controls.

However, appropriate responses might not be forthcoming. Private industrialists, left to themselves, might not react to import quotas by increasing investment on the required scale, perhaps out of fear that the quotas might be withdrawn by a future government or perhaps because of sheer inertia. Rather, they might simply reduce their exports in order to supply their assured home market. In this way, the initial balance-of-payments benefit from reduced imports would be eroded by reduced exports. Recognising this possibility, many adherents of import controls favour increased state intervention in industry in order to ensure increased investment. The desirable extent, if any, of such a combination of import controls and state intervention is a complicated question which may not have a unique answer valid for all circumstances. Moreover, in particular instances the practical issue will very likely be decided on grounds broader than the ease or difficulty of external adjustment.

At least in free-market economies, then, import quotas do not seem very promising. They do not offer an easy option - to avoid both the unemployment entailed by deflation and the inflation entailed by currency depreciation, while still successfully adjusting the deficit. Attempts have also been made to use direct methods to help in adjusting surpluses. Thus in 1978 an emergency import programme was introduced by the Japanese authorities as a means of reducing their surplus. This programme consisted in large part of promoting imports for stockpiling purposes, and it certainly contributed something to the recent adjustment of the Japanese current account.

Demand management versus exchange rate changes

Policies aimed at altering the level of aggregate demand normally have powerful effects on current balances of payments. What is more, in contrast to some exchange rate changes, they inspire confidence in foreign exchange markets, so that private capital normally flows in a stabilising direction in the interval between the announcement of the policy change and the appearance of its full effects.

Aggregate demand policies alone are conventionally unpopular as a means of balance-of-payments adjustment because of their presumably

unwanted effects on the domestic economy of the country concerned. Because surplus countries have no urgent need to adjust, they do not generally use such policies for balance-of-payments adjustment. However, since exchange rates have become flexible, they have allowed their currencies to appreciate; and only when the appreciation has become large enough to present a serious threat to domestic industries have they checked it by exchange-market intervention, whose financial repercussions tend to expand domestic demand somewhat. In deficit countries, deflationary policies are adopted either because the internal as well as the external situation demands them, or else because it is clear that nothing else will halt a slide in the exchange rate, even though the authorities may not believe that the measures are necessary for domestic reasons.

As mentioned above, except when there is large-scale unemployment of productive resources, deficits cannot be adjusted without cuts in the real disposable income of some group or groups in relation to what that income would have been, had it somehow been possible to avoid adjustment. In principle, the loss of disposable income may fall on any or all of real post-tax wages, real post-tax profits, and real public spending (which may be regarded as providing a "social wage"). However, with very few exceptions, real post-tax profits in industrial countries are now so low that further reductions are hardly conceivable, so that the burden has to be borne by one or both of the other two items.

Deflation of demand generally entails a higher cost in real income foregone than does successful depreciation because the induced reduction in domestic demand is not normally fully compensated by reductions in imports and increases in sales abroad, so that a fall in domestic output in relation to what it would otherwise have been is to be expected. Moreover, currency depreciation itself helps to bring about reductions in real pre-tax wages by increases in some prices. If the public has not had much previous experience of depreciation, it may be possible for the authorities to rely on money illusion - i.e. reckoning of incomes in domestic money terms, without regard to prices or exchange rates - to conceal these income adjustments.

These things being so, could it nevertheless be easier for governments to impose the real income reductions that are needed to secure adjustment through deflation than through currency depreciation?

Depreciation has two clear disadvantages. Firstly, it depends to a large extent on money illusion, which wears out if exploited too much and the result of depreciation can simply be to worsen inflation. Even so, currency depreciations do not occur in isolation, but simultaneously with a whole range of other economic developments. If these other developments are such as to increase domestic output and incomes without increasing costs, then it is more likely that depreciation-induced income losses will be accepted, or at least not noticed. Productivity gains are the most obvious example of possible helpful other developments. Secondly, most wage agreements set a level of pre-tax money incomes. In many cases there is provision for automatic compensation for increases in the cost of living, which makes reduction of real wages through price increases impossible, but even where there is no such built-in compensation, each periodic re-negotiation is likely to take some account of cost-of-living increases. Although such compensation may be incomplete, depreciation has a further disadvantage. Wages and prices rise in a disorderly manner, in irregular and unsynchronised jumps rather than smoothly and steadily. For this reason, attempts to reduce real wages by allowing currency depreciation to increase the rate of price inflation are bound to cause large and unintentional changes in relative real incomes, which may depend to a great extent on the accidents of timing of wage increases. As a result, this means of reducing real wages is perhaps likely to appear arbitrary and unfair, and thus provoke more resistance than apparently more equitable and orderly methods of income reduction.⁷

Although deflation of demand through demand-management policy can be accomplished by price increases - for example, increases in charges for services provided by the government - other means may be used which do not affect prices directly. The obvious examples are increases in direct taxation and reductions in the quality or quantity of public services. Although such measures are bound to meet opposition, nevertheless, because they do not entail large and arbitrary changes in relative real incomes, they may not lead so directly to demands for compensation through wage increases.

As already mentioned, the main disadvantage of deflating domestic demand in order to eradicate an external deficit is that it entails some loss of domestic output. The output loss is, however,

mitigated to the extent that the reduction in domestic demand falls on imports (the marginal propensity to import), and to the extent that the reduction in domestic sales is compensated by extra exports. For example, if domestic spending is cut by 100 units, if imports fall in consequence by 30 units, and if the reduction in the pressure of demand on domestic industries means that another 10 units of exports can be sold, then the reduction in domestic output is $100 \text{ minus } 30 \text{ minus } 10 = 60$ units. The fraction of the reduction in domestic demand that is reflected in lower imports and higher exports may be called the net marginal propensity to import (NMPI).

Analogous considerations apply to the question of removing surpluses by stimulating domestic demand. The larger the NMPI, the bigger the percentage of the demand stimulus that is reflected in the external balance and the smaller the percentage that contributes to the pressure of demand on domestic resources and thus to domestic inflation.

It seems likely that the increasing integration of the world economy has increased the size of NMPIs, and thus made the disadvantages of demand-management as a balance-of-payments adjustment device less serious than they once were. Excess demand in one country can more easily be satisfied by imports than was the case 10 or 20 years ago, and excess production can more easily be exported. This is reflected in table 3, which shows the general increase in ratios of imports and exports to national incomes that took place between 1968 and 1978. Moreover, the increased importance of multinational corporations in the world economy means that corporate decisions as to what is to be produced in a particular country depend less than in the past on the level of demand in that country and more on worldwide market conditions.

While the increasing integration of the world economy has made less serious the drawbacks of demand-management policy as a means of external adjustment, it has made more serious the drawbacks of depreciation as a means of eliminating an external deficit. For import price increases obviously have a bigger direct impact on the overall price level, the more open the economy, and greater openness is also likely to mean that price increases induced indirectly by depreciation spread more quickly and fully throughout the economy. The likelihood of a purely inflationary (type 3) response to currency depreciation is thus greater. This does not

Table 3

Ratios of imports and exports to gross domestic products

Country	Imports		Exports	
	1968	1978	1968	1978
in percentages				
Canada	20.7	25.1	22.0	25.2
France	13.8	19.6	13.7	19.9
Germany	17.7	24.4	21.3	27.1
Italy	15.9	23.8	18.5	24.5
Japan	9.0	9.9	10.1	11.7
Sweden	21.6	28.0	21.5	28.5
Switzerland	29.3	32.5	30.5	35.8
United Kingdom	23.3	32.5	22.3	33.7
United States	5.2	9.9	5.2	8.4

mean, however, that exchange rate depreciation can be regarded as entirely redundant. Even in some relatively open economies, if very large adjustments are required, the unemployment that would result from purely deflationary measures may, in spite of what has been said above, still be so great that it is not possible to avoid some degree of currency depreciation, notwithstanding its attendant disadvantages.

It should also be noted that this conclusion does not apply to currency appreciation. In the discussion of recent experiences above, no instances were found in which the response to appreciation had been a general reduction in costs and prices; in all cases relative price changes conducive to adjustment occurred. This may help to explain why currency appreciation has been notably more welcome to governments than has depreciation in recent times.

III. Some recent instances of the working of exchange rate changes in balance-of-payments adjustment

In this chapter, an attempt is made to assess the contributions of various policy measures and developments - including exchange rate changes - to current-account balance-of-payments adjustment in seven recent cases. The examples have been chosen mainly for their topicality, but a subsidiary consideration was the extent of the available statistical raw material.

The appendix contains an explanation of the methods used in estimating the contributions to adjustment in the current account of the various separate influences in each case, but a brief description here may be helpful.

First, net investment income and net transfers are subtracted from the current account, because they do not respond to adjustment policies in the same way as the other components of the current account. Secondly, volume and price components of the change in the adjusted current-account balance over the period being considered are calculated and they are analysed separately. The identifiable influences on the volume component are cyclical developments in the domestic economy concerned and in the rest of the world, and the volume effects of exchange rate changes (in Japan, emergency imports were a factor as well). This method used to separate cyclical from exchange rate effects is to estimate statistically the past relationship between the volume balance and the state of the trade cycle in the domestic economy and abroad, taking into account the increasing openness of the industrial economies; and to calculate from the estimated relationship the volume adjustment that might have been expected to arise from the cyclical changes that took place over the period being considered. The remainder is attributed to the volume effects of the exchange rate change.⁸

Turning now to price effects, an attempt is made in each case to identify a "J-curve" element arising from exchange rate changes. To do this, it is assumed that any change in relative manufactured export unit values in the same direction as the change in the value of the currency is a "J-curve" phenomenon. The rest of the price effect is assumed to arise from causes which are extraneous to the current adjustment, even though they may in time entail the need for further adjustment.

Because of the conceptual and practical uncertainties involved in such calculations, no attempt has been made to estimate real exchange rate changes, but in all the cases discussed the nominal exchange rate changes have been large enough to leave no room for doubt as to the direction of the real exchange rate change.

The United States

The US current-account balance-of-payments surplus, which had been \$18.3 billion in 1975 and \$4.6 billion in 1976, turned into a record deficit of \$14.1 billion in 1977. The deficit was \$13.5 billion, or about 0.7 per cent. of GNP, in 1978, but in 1979 the current account was roughly in balance. The two developments which seem most likely to have contributed to the adjustment of the current deficits of 1977 and 1978 were the increase in the pressure of demand in the United States between 1977 and 1979 and the depreciation of the dollar, which proceeded rather erratically during the second half of 1977 and most of 1978. The dollar's average effective exchange rate index was 11.3 per cent. lower in 1979 than it had been in 1977. How much did each of these developments contribute to the adjustment?

As table 4 shows, a large part of the improvement in the current account between 1977 and 1979 was accounted for by the increase in the surplus on investment income. The reasons for this dramatic improvement in the investment income position must lie in the structure of the US external balance sheet. The largest item on the assets side is the capital acquired through many years of net outward direct investment. The depreciation of the dollar and the rise in oil prices that occurred between 1977 and 1979 meant, in effect, large increases in the dollar prices of goods and services produced by these US foreign investments, and consequently in profits. The principal item on the liabilities side of the US external balance sheet is the dollar liabilities to foreign monetary authorities which have financed the acquisition of assets abroad and current-account deficits, while at the same time providing international liquidity for the rest of the world. Although the interest rates on these external liabilities rose to very high levels in 1979, this balance-sheet structure, in the circumstances of 1977-79, yielded sharply increasing returns.

Table 4

United States:
current balance-of-payments and
associated developments

	Current account (US\$ billions)				"Volume balance" expressed as a percentage of GNP ¹	Terms of trade (Paasche index 1977 = 100)
	Total	Net investment income	Net transfers	Other		
1977	-14.1	+18.0	- 4.7	-27.4	- 1.44	100
1978	-13.5	+21.6	- 5.1	-30.0	- 1.53	100.9
1979	- 0.3	+32.3	- 5.6	-27.0	- 0.98	98.8

1. The differences between exports and imports of goods and services excluding investment income, valued at 1977 prices, expressed as a percentage of GNP. In calculating the figures in this column, it has been assumed that the price indices used by the US Department of Commerce to deflate investment income credits and debits are the same as those used in deflating exports and imports in general. Price and quantity indices based on 1977 = 100 have been constructed from the published indices, which are based on 1972 = 100, by simple changes of scale.

Table 4 also shows that the balance on goods and services other than investment income deteriorated by \$2.6 billion between 1977 and 1978, and improved by \$3 billion between 1978 and 1979. The "volume balance" improved by nearly 0.5 per cent. of GNP between 1977 and 1979. This is a small change by comparison with the past variability of the volume balance, but since the pressure of demand in the United States was rather higher in 1979 than in 1977, a worsening might have been expected. As calculated by the method shown in the appendix, the volume component of the improvement in the current balance was some \$9 billion.

According to an extrapolation of past experience using the method described briefly at the beginning of this chapter and more fully in the appendix, the increase in the pressure of demand in the United States which occurred between 1977 and 1979 might have led to a worsening in the current balance of about \$9 billion. Some of this - perhaps \$2 billion -

would have been offset by the effects of the slight recovery in the rest of the OECD area. Outside the OECD area, the non-oil developing countries' demand for imports grew faster in 1977 and 1978 than in the preceding few years. However the beneficial effect of this development on the US current balance is likely to have been largely offset by the effect of the slowdown in OPEC import growth.

The favourable effect of depreciation on the volume balance might thus be put as high as \$16 billion in 1979. The presumed effect in 1978 was much smaller - perhaps \$1-2 billion - indicating that the response to the depreciation was lagged.

The net effect of price changes on the current balance was adverse by about \$9 billion between 1977 and 1979. Much of this was the result of higher oil prices, but the US external balance may have benefited from the rise in other primary product prices. However, roughly \$5½ billion may be ascribed to the adverse "J-curve" effect of depreciation arising from the reduction in the manufactured export prices of the United States in relation to those of other countries.

The conclusion of this analysis, then, is that the improvement of about \$14 billion in the US current account between 1977 and 1979 may very roughly be explained as follows (figures in billions of dollars):

Investment income	+ 14	
Price effects	- 9	
of which "J-curve"		- 5½
Volume effects	+ 9	
of which:		
cyclical effect		- 7
remainder (presumed effect of depreciation)		+ 16
Total	<u>+ 14</u>	

In the first part of the paper, considerable stress was laid on the need to curtail domestic spending in order to correct an external deficit. However in the case of the United States, there was no conspicuous reduction in living standards between 1977 and 1979. The reason is that, although the current deficits of around \$14 billion recorded in

1977 and 1978 were of great importance for the international monetary system, in relation to the US economy they were of minor significance, constituting only about 0.7 per cent. of GNP. Thus, adjustment of the deficit did not entail acute pain for the United States.

Japan

The largest adjustment of all in 1979 took place in Japan, where the current surplus of \$16.5 billion recorded in 1978 was turned into a deficit of \$8.6 billion in 1979. The size of the turn-round was equivalent to nearly 2½ per cent. of gross national expenditure. However, because the current surplus of 1978 was heavily affected by temporary terms-of-trade developments arising from the dollar crisis of that year, and because the yen appreciated nearly as much in 1977 as in 1978, it is convenient to begin the analysis in 1977, when the current surplus was \$10.9 billion.

Separating the balances on investment income and transfers, the balance on goods and other services moved from a surplus of \$11.2 billion in 1977 to a deficit of \$9.5 billion in 1979, as is shown in table 5. Analysing this change by the method explained in the appendix indicates that price effects in aggregate had a negligible impact. This was in spite of the relative rise in oil prices over the two years, which might by itself have led to a deterioration of about \$4 billion in the external balance. Favourable "J-curve" effects of the revaluation of the yen do not appear to have been very large. This means that volume effects must have been responsible for virtually the whole of the deterioration - some \$21 billion. Some of this amount is attributable to cyclical developments. The upturn in Japan might by itself have cost the current balance some \$13 billion, of which about \$3 billion might have been offset by the change in cyclical conditions elsewhere in the OECD area. But this still leaves some \$11 billion to be explained.

As well as the appreciation of the yen, account has to be taken of the emergency import programme introduced in 1978. Emergency imports totalling about \$2 billion were purchased in both 1978 and 1979. Because the imports were bought largely for stockpiling purchases, it is likely that the programme did entail a net addition to total imports, and that it did not simply involve relabelling of goods that would have been imported in any case as "emergency imports".

Table 5

Japan:
current balance-of-payments and
associated developments

	Current account (US\$ billions)				"Volume balance" expressed as a percentage of GNP ¹	Terms of trade (Paasche index 1977 = 100)
	Total	Net investment income	Net transfers	Other		
1977	+10.9	+ 0.1	- 0.4	+11.2	+ 1.61	100
1978	+16.5	+ 0.9	- 0.7	+16.3	+ 0.72	110.7
1979	- 8.6	+ 2.0	- 1.1	- 9.5	- 0.74	98.1

1. The differences between exports and imports of goods and services excluding investment income, valued at 1977 prices, expressed as a percentage of GNP. In calculating the figures in this column, it has been assumed that the price indices used by the Bank of Japan to deflate investment income credits and debits are the same as those used in deflating exports and imports in general. Price and quantity indices based on 1977 = 100 have been constructed from the published indices, which are based on 1970 = 100, by simple changes of scale.

If this account of the emergency import programme is accepted, the remainder of the adverse volume effect - to be attributed to the appreciation of the yen - is of the order of \$9 billion. This means that the explanation of the deterioration in the current balance is as follows (in billions of US dollars):

Investment income	+ 2	
Transfers	- 1/2	
Price effects	-	
of which "J-curve"		-
Volume effects	- 21	
of which cyclical		- 10
emergency imports		- 2
remainder (presumed exchange rate effect)		- 9
Total		<u>- 19 1/2</u>

Germany

Germany had current-account balance-of-payments surpluses in every year from 1966 to 1978. In dollar terms, the biggest of these surpluses was the \$9.9 billion recorded in 1974. From 1975 to 1977 the surplus was between \$3.4 and \$4.2 billion a year, or around 1 per cent. of GNP; it increased to \$8.9 billion in 1978. However, in 1979 there was a deficit of \$5.8 billion. Because the large surplus of 1978 resulted partly from temporary factors, it is convenient to discuss the adjustment between 1977 and 1979, paying only passing attention to events in 1978.

During this period, exchange rate movements and domestic cyclical developments were both conducive to adjustment of the current-account surplus. The effective exchange rate index of the Deutsche Mark went up by 13.3 per cent., whilst the pressure of demand inside Germany increased noticeably. There was also an intensification of the pressure of demand in other countries. It is of some interest to try to separate the contributions made to the adjustment by these factors.

Table 6 shows that the change in the current balance between 1977 and 1979 was some \$10 billion, of which \$1½ billion was accounted for by transfers and investment income. The balance on transfers worsened by about \$3½ billion, partly because exchange rate changes increased the dollar value of the adverse balance that existed in 1977. About \$2 billion of this worsening was offset by an increase in the surplus on investment income, which had been abnormally low in 1977 when modifications in tax legislation precipitated exceptionally large remittances of profits to foreign shareholders. As well, the balance on transit trade and other miscellaneous items improved marginally over the two years. With these items omitted, the current surplus fell from \$11.7 billion in 1977 to \$3 billion in 1979.

Much of the increase in the surplus in 1978 may be ascribed to the improvement in Germany's terms of trade that followed the appreciation of the Deutsche Mark. In 1979, however, the terms of trade went back to below where they had been in 1977, in part because of the rise in oil prices that took place. But, although the terms of trade worsened slightly on balance, nevertheless price changes affected the German current account favourably, and the effect is particularly noticeable

Table 6

Germany:
current balance-of-payments and
associated developments

	Current account (\$ billions)					"Volume balance" expressed as a percentage of GNP ¹	Terms of trade (Paasche index 1977=100)
	Total	Investment income	Transfers	Transit trade, etc.	Other		
1977	+ 4.2	+ 0.2	- 7.7	-	+11.7	+ 2.29	100
1978	+ 8.7	+ 2.3	- 8.8	+ 1.0	+14.2	+ 1.42	103.5
1979	- 5.7	+ 2.3	-11.3	+ 0.3	+ 3.0	+ 0.65	99.3

1. The differences between exports and imports of goods and services excluding investment income, valued at 1977 prices, expressed as a percentage of GNP. In calculating the figures in this column, it has been assumed that the price indices used by the Statistische Bundesamt to deflate investment income credits and debits are the same as those used in deflating exports and imports in general. Price and quantity indices based on 1977 = 100 have been constructed from the published indices, which are based on 1970 = 100, by simple changes of scale.

when the calculations are made in terms of US dollars. The price effect arises from the fact that the dollar value of both imports and exports rose between 1977 and 1979, so that the value of the initial surplus was automatically inflated. The method by which the price effect is calculated is explained in the appendix; in this case it mitigated the worsening in the current account by \$2½ billion.

The volume contribution to the change in the current balance, computed as described in the appendix, was about \$11 billion. The size of the contribution to this change that can plausibly be ascribed to cyclical factors may be roughly estimated on the basis of past experience. The ratio of unemployment to vacancies in Germany fell from 4.5 to 2.8 between 1977 and 1979. It must be admitted that no fall in the ratio from such a high level had occurred previously in the period for which the statistics are available, but if it is nevertheless permissible to

extrapolate the experience of the past, whilst allowing for the increasing openness of the German economy, the improvement in the cyclical situation in Germany between 1977 and 1979 might be held responsible for a deterioration in the current balance amounting to about \$6½ billion.

Against this must be set the beneficial effects on the current balance of the cyclical upturn, between 1977 and 1979, in the OECD area as a whole, where the increase in the pressure of demand may be estimated at something over 1 per cent. Again extrapolating past experience, this might be held to have offset rather less than half of the deterioration arising from the cyclical upturn in Germany - perhaps about \$2½ billion.

Taking them together, then, cyclical factors both inside and outside Germany might have accounted for about \$4 billion of the volume contribution to the deterioration in the current account. Of the remainder, some must be attributed to the building-up of petroleum stocks in 1979, which obviously had much more to do with special developments in the oil market than with changes in the exchange market. This might account for \$1 billion of the volume change. The rest, or about \$6 billion, may then plausibly be ascribed to the appreciation of the Deutsche Mark.

The conclusion of this section is that the deterioration in the current balance as a whole may very roughly be explained as follows (in billions of dollars):

Investment income, transfers and transit trade	- 1½	
Price effects	+ 2½	
of which "J-curve"		+ 1
Volume effects	- 11	
of which cyclical effect		- 4
build-up of petroleum stocks		- 1
remainder (presumed effect of appreciation)		- 6
Total	<u>- 10</u>	

United Kingdom

The evolution of the current account of the United Kingdom's balance of payments over the years 1974-79 is particularly interesting. There was a large deficit of \$7.7 billion (4.5 per cent. of GDP) in 1974, which by 1977 had been reduced to \$0.4 billion. Between 1974 and 1977 the effective exchange rate index of the pound fell by 25.8 per cent. After 1977 the pound began to appreciate: its average effective index in 1979 was 9.1 per cent. higher than in 1977. At the same time the current account deteriorated, and there was a deficit of \$5.2 billion in 1979. The two phases of the UK's experience between 1974 and 1979 thus afford an opportunity to compare the workings of currency depreciation and appreciation.

In analysing the United Kingdom's current balance of payments it is necessary to make separate allowance for development of and production from North Sea oil and gas fields. It is most convenient to treat the North Sea as if it were a separate country, and simply to subtract all current-account items directly connected with the North Sea from the current account balance of the United Kingdom as a whole before entering on more detailed analysis.⁹

Table 7 shows the evolution of the current-account balance since 1974, with items related to the North Sea shown separately. These latter items showed a deficit in 1974-76, when development and production costs exceeded sales revenues; from 1977 onwards these revenues exceeded costs and profit remittances abroad. The remainder of the current account improved steadily from 1974 until 1976, but the improvement ended in 1976 and there was an extraordinary worsening of \$11.6 billion between 1978 and 1979.

These changes are best looked at by separating the period 1974-77 from 1977-79. Between 1974 and 1977 the current account, excluding the North Sea, improved by \$5.4 billion. The balances on investment income and transfers both deteriorated, and the improvement in the balance on goods and services excluding investment income (and North Sea oil effects) was \$8.6 billion. Of this, nearly \$8 billion was attributable to volume changes; there was a very small favourable price effect. Taking the period as a whole, the volume improvement is no larger than past experience might have indicated would result from the downturn in the UK economy. However, it is probable that the occurrence of a coal

Table 7

United Kingdom: current balance-of-payments and associated developments

	Current account (\$ billions)							"Volume balance" expressed as a percentage of GDP ¹	Terms of trade index (Paasche index 1974 = 100)
	Total	Excluding North Sea			North Sea				
		Total	Investment income (net)	Transfers (net)	Other	Total	Investment income (net)		
1974	- 7.7	- 7.3	+ 3.3	- 1.0	- 9.6	- 0.4	-	- 0.4	100.0
1975	- 3.8	- 2.5	+ 1.7	- 1.1	- 3.1	- 1.3	-	- 1.3	105.4
1976	- 2.2	- 1.7	+ 2.3	- 1.4	- 2.6	- 0.5	-	- 0.5	103.0
1977	- 0.4	- 1.9	+ 1.1	- 2.0	- 1.0	+ 1.5	- 0.7	+ 2.3	104.0
1978	+ 1.8	- 1.9	+ 3.1	- 3.7	- 1.3	+ 3.7	- 1.1	+ 4.8	109.0
1979	- 5.2	-14.0	+ 3.5	- 5.1	-12.4	+ 8.8	- 3.0	+11.9	111.6

1. Excludes that part of the volume balance attributable to North Sea oil and gas operations. The differences between exports and imports of goods and services, excluding investment income, valued at 1974 prices, expressed as a percentage of GDP. Price and quantity indices based on 1974 = 100 have been constructed from the published indices, which are based on 1975 = 100, by simple changes of scale.

strike in 1974 at the same time as the oil crisis, which led to short-time working in much of British industry, led to some abnormal worsening in the volume balance in 1974. Contemporary comment suggested that the adverse effect was rather small, but the balance of trade in iron and steel does seem to have been affected by perhaps \$1/2 billion. It is hard to trace a strong statistical relationship between the external pressure of demand and the UK volume balance, and it may be the case that the connection is a weak one - it has often been remarked that the share of UK exports in world trade tends to increase during a world recession. But it is unlikely that no relationship at all exists. A reasonable estimate of the adverse effect of the external recession on the United Kingdom's current balance might be some \$3 billion. It follows that the presumed effect of the depreciation of the pound may thus be estimated at no more than \$2 1/2 billion (equals \$8 minus 8 plus 3 minus 1/2 billion).

Turning to 1977-79, and again excluding the North Sea, the volume deterioration was much larger - more than \$20 billion. The terms of trade improved because of the rise in the pound, and there were favourable "J-curve" price effects of \$9 billion. Domestic cyclical developments, however, were unable to explain more than \$6 billion of the volume deterioration. The external cyclical situation did not change greatly, so that the remaining \$14 billion of the volume change has to be ascribed to the effective appreciation of the pound by 9.1 per cent. - a much larger amount, even in relation to GNP, than could be attributed to the earlier effective depreciation of 25.8 per cent.

These comments may be summarised as follows (figures are in billions of dollars):

	1974-77	1977-79
North Sea oil and gas receipts and payments	+ 2	+ 7
Investment income and transfers (other than North Sea)	- 3	- 1
Price effects	+ 1/2	+ 9
of which "J-curve"	-	+ 9
Volume effects	+ 8	- 20
of which cyclical	+ 5	- 6
1974 coal strike	+ 1/2	-
remainder (presumed effect of exchange rate changes)	+ 2 1/2	- 14
Total	<u>+ 7 1/2</u>	<u>- 5</u>

Italy

Italy's current-account deficit stood at \$8.0 billion, or 4.7 per cent. of GDP, in 1974, immediately after the first round of major oil-price increases. This deficit was reduced to a very small size in 1975, but it widened again to \$2.8 billion in 1976. The years 1977 and 1978 both saw big improvements in the Italian balance of payments; in the latter year there was a current-account surplus of \$6.4 billion.

This remarkable improvement occurred over a period during which the internal pressure of demand was decreasing and the lira was generally weak in the exchange markets. Unemployment increased by about 2 per cent., and the effective exchange rate of the lira fell by as much as 31.2 per cent. between 1974 and 1978, having already gone down by 17.9 per cent. between 1972 and 1974. It is true that the pressure of demand elsewhere in the OECD area fell, and although it is hard to trace any past statistical relationship between the Italian balance of trade in goods and services and the OECD area pressure of demand, nevertheless it is likely that this development retarded the improvement in some degree.

The development of the Italian current-account balance over the years 1974-78 is shown in table 8. The changes in net investment income and net transfers are not spectacular; of the improvement of \$15.7 billion in the balance on goods and services other than investment income, roughly \$14 billion may be attributed to volume effects (according to the method of calculation described in the appendix) and only relatively little to price effects, even though the terms of trade improved by 6.3 per cent. over the four years. The adverse "J-curve" element of the price effect, arising from the depreciation of the lira, is estimated at \$2½ billion.

The volume improvement is somewhat larger than can be accounted for solely by cyclical considerations, if previous relationships are any guide. The recession in Italy might have accounted for a volume improvement of about \$10 billion but the effect of cyclical changes in the rest of the OECD area is likely to have offset some of this. If \$7½ billion of the volume improvement were cyclical in origin, this would leave \$6½ billion - 2½ per cent. of Italian GDP - to be explained by depreciations of the lira. It seems likely that at least \$4 billion

Table 8

Italy:
current balance-of-payments and
associated developments

	Current account (US\$ billions)				"Volume balance" expressed as a percentage of GNP ¹	Terms of trade (Paasche index 1974 = 100)
	<u>Total</u>	<u>Net investment income</u>	<u>Net transfers</u>	<u>Other</u>		
1974	- 8.0	- 0.8	- 0.5	- 6.7	- 3.96	100
1975	- 0.6	- 1.2	- 0.6	+ 1.2	- 0.46	104.6
1976	- 2.8	- 1.1	- 0.6	- 1.1	- 1.08	101.8
1977	+ 2.4	- 1.1	- 0.8	+ 4.3	+ 1.10	103.7
1978	+ 6.4	- 1.1	- 1.5	+ 9.0	+ 2.10	106.3

1. The difference between exports and imports of goods and services excluding investment income, valued at 1974 prices, expressed as a percentage of GNP. Price and quantity indices have been constructed from information provided by the OECD in Quarterly National Accounts Bulletin 1965-79. The constant price figures in this publication are based on 1970 prices; indices based on 1974 = 100 have been constructed by simple changes of scale.

must be attributed to depreciation, but a larger figure would not be implausible. It was suggested in Chapter II that Italy's rapid productivity growth meant that conditions were conducive to the success of currency depreciation, and Italy succeeded, both in 1972-74 and again in 1975-78, in reducing unit labour costs in relation to those in other countries by 10-15 per cent. During 1975, however, relative unit labour costs went up by 12½ per cent. as the rate of depreciation of the lira slowed.

These movements in competitiveness were reflected in the volume balance with a lag of a year. Thus in 1975, 1977 and 1978 there were volume improvements which were distinctly larger than would have been expected on cyclical grounds. By contrast, in 1976, there was a deterioration instead of the further improvement that cyclical conditions indicated.

Looking at the period 1974-78 as a whole, the change in the current balance may be dissected as follows (figures in billions of dollars):

Investment income	-	1/2	
Transfers	-	1	
Price effects	+	2	
of which "J-curve"			- 2 1/2
Volume effects	+	14	
of which cyclical			say + 7 1/2 (no more than 10)
remainder (presumed effect of depreciation)			say + 6 1/2 (no less than 4)
Total		<u>+ 14 1/2</u>	

Canada

Canada is included in this section, not because it adjusted its external imbalance successfully, but because developments which might have been expected to lead to successful adjustment did not do so. A current-account deficit amounting to 2.9 per cent. of GNP emerged in 1975; it fell back to 2 per cent. of GNP in 1976 and remained between just below 2 and 2 1/2 per cent. until 1979. There was a change in the composition of the deficit over this period: net payments abroad of investment income increased markedly in relation to the deficit on other current-account items (see table 9) and in 1979 accounted for the whole deficit. Correspondingly, there was some adjustment in the rest of the deficit, but it was not fast enough to offset the build-up of debt-servicing charges.

On the face of it, economic developments in Canada since 1975 might have been expected to lead at least to a complete adjustment of the current deficit. First, the domestic pressure of demand decreased, with unemployment going up from 6.9 to 7.5 per cent. between 1975 and 1979, whilst there was an upswing in the rest of the industrial world. Second, the Canadian dollar depreciated sharply in 1977 and 1978: over the four-year period 1975-79 it fell by 16.2 per cent. in effective terms.

Table 9

Canada:
current balance-of-payments and
associated developments

	Current account (US\$ billions)				"Volume balance" expressed as a percentage of GNP ¹	Terms of trade (Paasche index 1975 = 100)
	Total	Net investment income	Net transfers	Other		
1975	- 4.7	- 1.9	+ 0.4	- 3.1	- 1.93	100.0
1976	- 3.9	- 2.5	+ 0.5	- 1.9	- 1.54	101.9
1977	- 4.0	- 3.4	+ 0.4	- 1.0	- 0.03	98.1
1978	- 4.6	- 3.9	-	- 0.8	+ 1.33	93.7
1979	- 4.3	- 4.4	+ 0.5	- 0.4	+ 0.63	97.1

1. The differences between exports and imports of goods and services, excluding investment income, valued at 1975 prices, expressed as a percentage of GNP. In calculating the figures in this column, it has been assumed that the price indices used by Statistics Canada to deflate investment income credits and debits are the same as those used in deflating exports and imports in general. Price and quantity indices based on 1975 = 100 have been constructed from the published indices, which are based on 1971 = 100, by simple changes of scale.

As already mentioned, it is true that there was some adjustment. The current account, excluding net investment income and transfers, improved by \$2.8 billion between 1975 and 1979. The terms of trade moved against Canada over this period (including an adverse "J-curve" effect of some \$3 billion) and the volume improvement was some \$5½ billion. But analysis of earlier experience by the methods described in the appendix would have led one to expect that the changes in cyclical conditions alone would have brought a volume improvement of about \$9 billion, ignoring any further benefit from currency depreciation. What went wrong?

As may be seen from table 1 on page 6, the Canadian depreciation succeeded in reducing both unit labour costs and export prices in

Canada relative to those in other countries, thus stimulating the demand for Canadian exports. The failure lay in the fact that output was not increased by enough to meet the extra demand. For example, the ratio of unfilled orders in export-based manufacturing industries to total manufactured exports went up by about 60 per cent. between 1977 and 1979. The most likely reason for the failure of output to increase is that prospective profits were not considered adequate to compensate for the risks involved in the investment necessary to increase production capacity, so that many industries were producing as much as they could without satisfying total demand.

The reasons for the lowness of profits are worth discussing briefly. Canada benefited greatly from the primary product boom of 1973-74, but, being self-sufficient in energy, was unscathed by the oil-price rises. Profits benefited accordingly. Real wages, too, benefited; what is more they continued to rise even after the primary product boom had ended. Between 1974 and 1977 they went up by 13.5 per cent., while productivity rose by only 3.2 per cent. The slump in primary product prices combined with the maintenance of increased real wages meant that the profit share of GNP was reduced to historically very low levels. Although currency depreciation offers an opportunity for profits to increase in export and import-substituting industries (through what were described on page 4 as type 2 responses), in fact most of the response to depreciation was of type 1—a reduction in export prices in relation to those of other countries. Moreover, real wages fell by only 1.9 per cent. between 1977 and 1979, and productivity fell slightly, so the recovery in profits was only very modest.

To sum up, the inability of the Canadian economy to adjust can be attributed to two factors. First, the maintenance of too high a level of real wages after the end of the primary product boom led to the emergence of the deficit, and the failure to reduce the level led to its persistence in 1976 and 1977. Second, although the depreciation of the dollar succeeded in restoring the international competitiveness of Canadian labour, not enough of the response to depreciation was of the profit-increasing type, with the result that output was inhibited despite the build-up of export demand.

Summary and conclusions

The results of the analyses described in this chapter are summarised in table 10. This main conclusions to be drawn from the table are as follows: In all the cases examined, except for the depreciation of the Canadian dollar, exchange rate changes made some contribution to current-account adjustment. However, no attempt has been made to measure either the inflationary costs of the depreciations, or the unemployment cost of the appreciations. In the six out of seven cases where exchange rate changes "worked", there was a lag of about a year involved. Perverse "J-curve" effects of exchange rate changes on current balances were not universal, and only in Canada were they large enough to offset the volume effects over the time span studied.

Among appreciations, that of the United Kingdom between 1977 and 1979 was the most efficient in the sense that a relatively large change in the current balance resulted from a relatively small effective appreciation. In this, it stood in stark contrast to the earlier depreciation of the pound. The reason for the efficiency of the appreciation may well have been that in the other two cases of appreciation that were discussed, some of the extra real income provided to the domestic economy by appreciation was appropriated by corporations which did not pass on adjustment-inducing relative price changes to consumers, whilst in the United Kingdom all or nearly all of the extra income was appropriated by labour, so that, in comparison to the size of the appreciation, larger relative price changes occurred.

The depreciations surveyed were on average less efficient than the appreciations. This probably reflects the fact that it is more difficult to share out real income reductions than real income increases. However, the results do not suggest that "vicious circles" - in which currency depreciation leads to more inflation but no external adjustment and hence to more currency depreciation - were operative in the countries and at the times considered. However, the analysis of chapter II suggests that circumstances are changing in such a way as to increase the danger of vicious circles in the future, at least in some countries.

Table 10

Some effects of exchange rate changes

<u>Country</u>	<u>Period</u>	<u>Percentage change in effective exchange rate index</u>	<u>Percentage change in relative unit labour costs</u>	<u>Change in volume balance attributed to exchange rate change, expressed as a percentage of GNP</u>	<u>"J-curve" effect expressed as a percentage of GNP</u>
<u>1. Appreciations</u>					
Japan	1977-79	+15.9	- 1.9	- 1/4	-
Germany	1977-79	+13.3	+ 2.8	- 3/4	-
UK	1977-79	+ 9.1	+21.9	- 4/4	+ 2/2
<u>2. Depreciations</u>					
US	1977-79	-11.3	- 7.2	+ 3/4 ¹	- 1/4
UK	1974-77	-25.8	- 0.9	+ 1/4	-
Italy	1974-78	-31.2	- 1.3	+ 2/2	- 1
Canada	1975-79	-16.2	-15.9	-	- 1/2

1. In this case there was additionally a separate large effect on the investment income balance, worth perhaps one quarter of one per cent. of GNP

IV. Conclusions

The analysis of this paper suggests the following conclusions about the rôle of exchange rate changes in balance-of-payments adjustment:

- (i) currency appreciations succeed in engendering price responses which provide incentives for adjustment, but depreciations can be counted on to succeed in this object only if sharp reductions in pre-tax real wages are not required;
- (ii) following from (i), currency appreciations are more effective in reducing surpluses than are depreciations in reducing deficits;
- (iii) there is a significant delay before exchange rate changes can assist adjustment; in some of the examples studied the delay was about a year in length;
- (iv) trade controls are sometimes seen as a better means than exchange rate changes of securing balance-of-payments adjustment, but they are unlikely to be successful in free-market economies; and
- (v) demand deflation has certain disadvantages compared with exchange rate depreciation in securing adjustment of an external deficit, but developments in the world economy have made the disadvantages less serious than they once were.

Appendix

This appendix aims to explain in detail the calculations of the effects of exchange rate changes on current balances. It is divided into sections corresponding to the different stages in the calculations.

1. Analysis of the value figures

The first stage is to separate net investment income and net transfers from the remainder of the current account. The reason for this is that these items are not responsive to exchange rate changes or to cyclical developments in the same way as are the other elements of the current account, although they may be responsive in other ways (for example, as described in the main text, the net investment income of the U.S. appears to have benefited greatly from the depreciation of the dollar).

What is left after these items have been removed is the balance on goods and services other than investment income.

2. Price and volume effects

The next stage is to separate the change in the balance on goods and services excluding investment income into price and volume components. How this is done is best illustrated in algebraic terms.

Suppose X = volume of exports in the initial year

M = volume of imports in the initial year

PX = price of exports in the initial year

PM = price of imports in the initial year

and suppose that the symbol Δ denotes the change between the initial and the final year.

If B is the balance in the initial year on goods and services other than investment income, then

$$B = PX.X - PM.M$$

and the change in B between the initial and the final years is

$$\Delta B = X.\Delta PX + PX.\Delta X - M.\Delta PM - PM.\Delta M$$

This can be rearranged as follows:

$$B = (PX + \Delta PX) (\Delta X - \Delta M) + (PX + \Delta PX - PM - \Delta PM) \Delta M + X\Delta PX - M\Delta PM$$

The volume effect is defined as the first term in this last equation. Since it involves valuing the change in imports at the price of exports, it is helpful to choose the units of measurement in such a way that the prices of imports and exports are as close together as possible. For this reason, all volumes have been measured (with inaccuracies caused by unavoidable assumptions about shifts from one price base to another) in billions of US dollars at the prices of the year in which the adjustment in question began.

The price effect is defined as everything on the right-hand side of the above equation except the volume effect.

The decision to value the changes in volumes at the price of exports rather than imports is a quite arbitrary one; choosing an up-to-date price base means - if the terms of trade have not changed sharply - that the price indexes of imports and exports are not greatly different, and this reduces the size of the effect on the calculated volume effect of this arbitrary decision.

3. Division of volume effect into cyclical and exchange rate components

Put briefly, the technique used is to estimate on the basis of past experience what volume effect might be plausibly attributed to cyclical developments in the domestic economy and abroad, and to ascribe the rest of the actual volume effect to exchange rate changes. (In the case of Japan, however, some of the non-cyclical volume effect is put down to the emergency import programme introduced in 1978.)

Regression methods are used to estimate past relationships between volume trade balances and cyclical conditions. For each country considered, the change in the volume of net exports is divided by volume GNP and regressed against indicators of changes in domestic and external cyclical conditions. The construction of these cyclical indicators is described first.

(a) Construction of external cyclical indicator

For each country, the external cyclical indicator is based on OECD industrial production. This means that in each case the "external" indicator has a domestic component, but since a domestic cyclical indicator is also included in each regression equation, it follows from

the theory of linear regression that, provided the domestic cyclical indicator and the domestic component of the external indicator are fairly closely correlated, projections based on the estimated equations will not be seriously biased.

The external cyclical indicator is constructed in a number of stages. First, the logarithm of OECD industrial production is regressed against time. For this purpose, quarterly data from the first quarter of 1955 to the second quarter of 1979 were used. Second, the residuals were inspected and particularly large positive residuals, presumably corresponding to high levels of capacity utilisation, identified in the fourth quarter of 1955, the first quarter of 1960, the second quarter of 1969 and the second quarter of 1973. It was assumed that output was at its capacity limit in these quarters.

Third, it was assumed that between each consecutive pair of peaks, capacity output grew at constant rates. This enables a series for capacity output to be constructed covering the period fourth quarter of 1955 to second quarter of 1973. To extend the series, it was assumed that in the fourth quarter of 1978 OECD industrial production was 10 per cent. below capacity. The gap between actual and potential industrial production which this assumption implies for the year 1977 is roughly consistent with the result of detailed calculations by Messrs. J.R. Artus and A.G. Turner of the International Monetary Fund.

These computations provide a series for estimated capacity output; the variable used in the explanation of volume balances was the logarithm of the ratio of actual OECD industrial production to hypothetical capacity production.

(b) Domestic cyclical indicators

Domestic cyclical indicators were chosen pragmatically: those that did well in the equation explaining volume balances were preferred to those that did less well. The choice fell on the following:

USA: FRB index of capacity utilisation in manufacturing
(Source: Federal Reserve Bulletin)

Germany: Logarithm of the ratio of unemployment to vacancies
(Source: Deutsche Bundesbank Monthly Report)

- Japan: Logarithm of the ratio of effective job offers to effective applicants
(Source: Bank of Japan Economic Statistics Monthly).
- UK: The ratio of the sum of private and public consumption and fixed investment to GNP.
(Source: Central Statistical Office, Economic Trends)
- Italy: The ratio of the number of persons unemployed to the number employed
(Source: OECD Labour Force Statistics)
- Canada: The percentage of the labour force unemployed
(Source: Bank of Canada Review)

(c) Estimation of regression equations

Considerable experimentation was done with these equations, all of which use annual data and were estimated by ordinary least squares. The equations were all in first or second difference form - i.e. they attempt to explain changes in the volume balance. In all cases, the domestic cyclical indicator was multiplied by the average import propensity, and the external cyclical indicator by the average export propensity, before being entered in the equation. This procedure enables allowance to be made for the increasing openness of economies concerned. The best equations, which were used in the computations whose results are given in the text, were as follows: (the t-statistics relating to the coefficient estimates are shown in brackets).

USA

$$\Delta \left(\frac{\Delta(X-M)}{GNP} \right) = -0.0175 \quad \Delta \left(\frac{M}{GNP} \cdot USCU \right) + 0.920 \quad \Delta \left(\frac{X}{GNP} \cdot LOECDU \right)$$

(2.37) (1.12)

$R^2 = 0.453$ $S.E. = 0.00632$ $D-W \text{ statistic} = 1.53$ 1958-77

Germany

$$\frac{\Delta(X-M)}{GNP} = 0.0146 \Delta D60 + 0.0735 \frac{M}{GNP} \Delta \log(U/V) + 1.086 \frac{X}{GNP} (\Delta LOECDECU)$$

(1.69) (3.70) (4.07)

$R^2 = 0.573$ S.E. = 0.00829 D-W statistic = 2.02 1960-77

Japan

$$\frac{\Delta(X-M)}{GNP} = -0.00530 \Delta D65 - 0.472 \frac{M}{GNP} \Delta \log EDL + 1.737 \frac{X}{GNP} (\Delta LOECDCU)$$

(0.91) (7.44) (3.92)

$R^2 = 0.811$ S.E. = 0.00545 D-W statistic = 2.02 1960-77

UK

$$\frac{\Delta(X-M)}{GDP} = 0.0112 - 1.544 \left(\frac{M}{GDP} \right) \Delta \left(\frac{C+I+G}{GDP} \right)$$

(3.72) (4.77)

$R^2 = 0.559$ S.E. = 0.00802 D-W statistic = 2.72 1957-76

Italy

$$\frac{\Delta(X-M)}{GDP} = 0.466 \frac{M}{GDP} \Delta \log RUEI$$

(3.10)

$R^2 = 0.490$ S.E. = 0.01267 D-W statistic = 2.25 1962-72

In the Italian case, RUEI = percentage ratio of unemployed to employed persons (Source: OECD Labour Force Statistics)

In the Canadian case, RUCA = percentage rate of unemployment (Source: Bank of Canada Review)

4. Division of the price effect into exchange rate induced and other components

The terms of trade may change for a number of reasons, of which exchange rate changes are only one. It is not likely that exchange rate changes affect the terms of trade in primary products, since such goods normally have single world prices. The case of services is more difficult, but in this paper any effect of exchange rate changes on the terms of trade in services is ignored. However, such changes do affect the terms of trade in manufactured goods. The size of the "J-curve" impact on the current balance has been estimated by multiplying the value of total manufactured exports in the final year considered by the change in the price index of manufactured exports in relation to the manufactured exports of other countries (the latter being published by the IMF in International Financial Statistics).

Footnotes

- * I am extremely grateful to Prof. A. Lamfalussy, Mr. M.G. Dealtry and Mr. K. Inoue for their valuable comments on earlier drafts of this paper.
1. See B. Brittain, "International currency substitution and the apparent instability of velocity in some western European economies and in the United States", BIS working paper, No. 2, April 1980. Even if the demands for national monies were stable and predictable, the distinction between the current account and the capital account would still be of some importance, because a current-account imbalance involves a change in national wealth, whereas a capital-account imbalance does not.
 2. Some monetarists - and not only those whose views were discussed in the introduction - would disagree. Their argument is that inflation reduces the real value of holdings of financial assets, and that this stimulates financial saving, which benefits the balance of payments. The evidence on whether inflation stimulates financial saving or not is mixed - in the US it appears that it does not, but in some countries the evidence is that it does. For the UK, see J.C. Townend, "The Personal Saving Ratio", Bank of England Quarterly Bulletin, March 1976. But even if inflation does stimulate financial saving, the question remains open as to how strong and how long-delayed the effect is.
 3. The fall of 2.5 per cent. in real wages in the United Kingdom between 1973 and 1977 was more than reversed by an increase of 6.2 per cent. in 1978. Although the real wage increase in 1978 was partly the result of the appreciation of the pound in that year, it is likely that there would have been some increase, albeit smaller, had the pound not appreciated. In other words, there is a good case for saying that the reduction in real wages between 1973 and 1977 was not sustainable.

4. This hypothesis is open to the objection that every appreciation by a single country implies a depreciation by the rest of the world, and that the appreciation succeeds if and only if the implied depreciation succeeds, so that there cannot be different conditions for success of appreciations and depreciations. It is tacitly assumed here, however, that only exchange rate changes of more than a minimum effective size are being considered, and that there is always a large number of countries whose exchange rates do not change by more than the minimum.
5. There is another possibility - that exchange rate changes influence stock-holding behaviour. Price increases following currency depreciation may induce profitable sales of stocks of goods, which may indeed have been held as a hedge against depreciation. The reverse may be true in cases of currency appreciation. Stock effects of this sort will contribute to the current-account adjustment, although they are likely to be motivated by the same considerations as some elements of the capital account.
6. For some evidence on this point relating to manufactured goods, see H.B. Junz and R.R. Rhomberg, "Price Competitiveness in Export Trade among Industrial Countries", American Economic Review vol. LXIII No. 2, May 1973. It is likely that the responses of the demand for services to relative price changes are rather quicker: tourist spending in particular seems to react promptly.
7. W. Fellner's article "Controlled Floating and the Confused Issue of Money Illusion", Banca Nazionale del Lavoro Quarterly Review No. 106, published in September 1973, suggests that concern with relative real wage positions - which may perhaps be interpreted as a desire for "fairness" - is of paramount importance. But the article reaches the opposite conclusion to that of the present paper, viz. that this heightens the efficiency of currency depreciation as an adjustment device in comparison to demand deflation. In the light of experience since 1973, the suggestion that price rises resulting from currency depreciation will provoke less wage pressure than, for example, income tax increases seems to me implausible.

8. Some would object that a more efficient method would be to include in the econometric estimation one or more indexes of competitiveness, suitably lagged, and thereby to estimate directly the relationship between competitiveness and the volume balance. But there are a number of difficulties with this approach. First, there is no reason why the lags in the reaction of the volume balance to an exchange rate change should be constant - they may be longer in some instances than in others. Secondly, unavoidable errors of measurement in the indexes bias the estimated coefficients. Thirdly, this method leaves awkward unexplained residuals.

9. Two difficulties in this approach are as follows. First, gas from the North Sea is sold in the UK at prices that are well below the price that would have to be paid for imported oil as a replacement energy source if the North Sea gas were not available. The revenue from sales of North Sea gas are thus an underestimate of the benefit reaped by the UK from the presence of the gas. Second, profits of UK companies arising from North Sea operations are not accounted for as a debit in the "North Sea" section and a credit in the "Excluding North Sea" section as they should be in principle. However, the inaccuracies thus entailed will not affect the main line of the argument - in fact the argument would appear stronger if the inaccuracies could be eliminated.