

NBER WORKING PAPER SERIES

EXTERNAL DEBT, BUDGET DEFICITS  
AND DISEQUILIBRIUM EXCHANGE RATES

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Working Paper No. 1336

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
April 1984

The research reported here is part of the NBER's research program in International Studies and project in Productivity (World Economy). Any opinions expressed are those of the author and not those of the National Bureau of Economic Research.

NBER Working Paper #1336  
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ABSTRACT

The paper investigates the sources of debt and debt difficulties for a group of Latin American countries. It is argued that external shocks-- oil, interest rates, world recession and the fall in real commodity prices-- cannot account by themselves for the problems. Budget deficits that accommodate terms of trade deterioration and disequilibrium exchange rates are central to a complete explanation. The paper documents that in Chile an extreme currency overvaluation led to a massive shift into imported consumer durables while in Argentina overvaluation in conjunction with financial instability led to large-scale capital flight. In the case of Brazil the budget deficit is the explanation for the growth in external indebtedness. The difference in the experience of the three countries reflects the difference in their openness to the world economy.

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Revised, April 1984

EXTERNAL DEBT, BUDGET DEFICITS AND DISEQUILIBRIUM EXCHANGE RATES\*

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This paper explores the role of disequilibrium exchange rates and budget deficits in promoting external indebtedness and the current debt crisis. Oil, interest rates and world recession are often isolated as the chief causes of the world debt crisis. But these factors only have made much more apparent and unsustainable an underlying disequilibrium in which exchange rate overvaluation and/or budget deficits were perpetuated by continuing and excessive recourse to the world capital market.

The details of the disequilibrium differ, however, quite a bit between countries. For that reason we look at three different episodes: Argentina, Chile and Brazil. In one case capital flight plays a key role in the growth in debt, in the other cases the level and composition of spending assume primary importance. We investigate these determinants to the period 1978-82. The period is chosen to coincide with major changes in the world economy and with disequilibrium real exchange rate policies in several countries.

We start by laying out a framework and some facts concerning the debt accumulation.

1. Some Facts and a Framework

Latin American debt problems are not new, and a year after the Mexican and Brazilian problems became apparent the literature abounds with references

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\*An earlier version of this paper was presented at the ISPE Seminar on public economics at the University of Santa Cruz, February 1984. I am indebted to Domingo Cavallo, Eliana Cardoso and Stan Fischer for helpful comments.

to the earlier episodes of overlending in the 1930s and before. Here is a typical quote from 1937:<sup>1</sup>

"The history of investment in South America throughout the last century has been one of confidence followed by disillusionment, of borrowing cycles followed by widespread defaults, and of a series of alternating repudiations and recognitions of external debts. Willingness to maintain service payments has certainly been less high than in the British Empire, and excesses were inevitable under the conditions which existed while the United States was investing such huge sums in these countries...The ability of the most credit-worthy governments to avoid default must necessarily be impaired if any considerable part of the nominal value of loans has not, in fact, been put to the use for which it was intended."

After the wholesale default on external debt in the 1930s there was a long gap during which current account imbalances were financed by a reduction in reserves (accumulated during the war), by direct capital inflows, official aid and by borrowing conducted through international institutions.<sup>2</sup> Table 1 shows external debt data for benchmark years for several countries. The data problems, even for the very recent years, remain quite overwhelming. But even so the table conveys a notion of the very rapid growth of external indebtedness in the 1970s.

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<sup>1</sup>See Royal Institute (1937) p.266.

<sup>2</sup>For a discussion see Sachs (1983), United Nations (1964) and the annual reports of the Foreign Bond Holders Protective Council.

Table 1 External Public or Publicly Guaranteed Debt  
(Billion \$U.S.)

	1945	1956	1960	1970	1975	1983
Argentina	0.9	0.7	1.5	5.0	7.9	38.5
Brazil	0.4	1.5	1.8	5.5	22.2	93.7
Chile	0.4	0.3	0.6	3.2	5.3	18.7
Mexico	0.5	0.5	1.0	9.7	19.5	86.6
Price Level (1970=100)	41	68	75	100	137	235

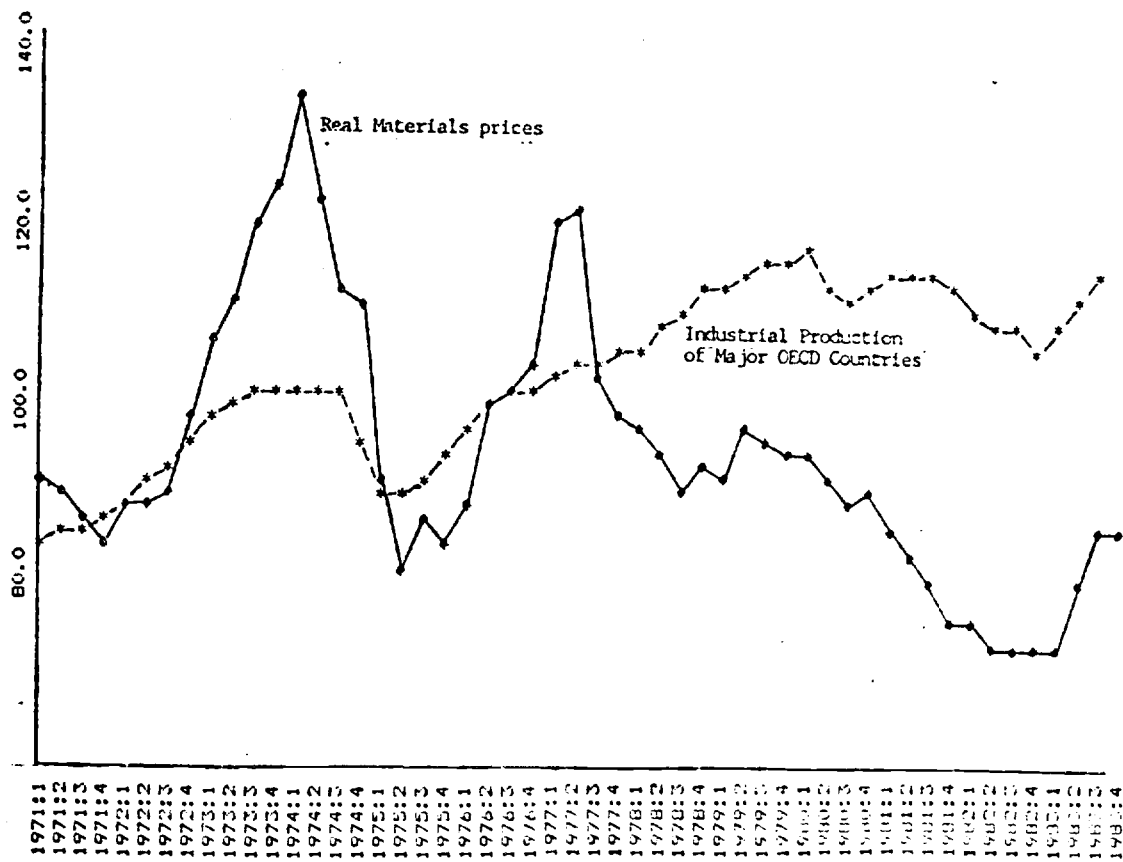
Note: The data for 1945, 1956 and 1960 only include debt in excess of 1 year maturity. The price level reported in the last row is the US GNP deflator. The unit value index in dollars for world trade would show a somewhat larger cumulative increase.

Source: United Nations (1964) and Morgan Guaranty.

From the supply side the conventional explanation for the lending burst is the oilshock that made possible financial intermediation by commercial banks. This is brought out by the fact that over the period 1970 to 1983 the share of bank lending in total debt increased from only 25% to nearly 75%. On the demand side the reasons for the debt build-up are much less clearcut. Oil, interest rates and the world recession are often cited and are certainly a good part of the story in some countries.

Table 2 and Figure 1 show the important differences in the world macroeconomic setting for the debtors in the early 1970s and in the 1978-83 period. The former period is clearly a debtors paradise with high growth and inflation, sharp real commodity price increases and low nominal interest rates. The 1978-82 period is precisely the reverse and to that extent must account for some of the debt problems. Even so it remains interesting to know

Figure 1 INDUSTRIAL PRODUCTION AND REAL MATERIAL PRICES  
(Indices 1975-77=100)



what the precise channels are. We will show in particular that domestic policies and the degree and particular kind of openness--capital mobility, free trade in goods, both or neither--influence the way in which households and firms respond to exchange rate, commercial and fiscal policy.

Table 2: Prime Rate, World Growth and Price Inflation in World Trade  
(Average Annual Percentage Rate)

	Prime Rate	Inflation Rate in World Trade	World Growth
1970-73	6.7	12.4	4.7
1979-82	15.5	4.4	1.1

Source: International Financial Statistics and Economic Report of the President, 1984.

A Framework. The balance of payments accounts provide a link between the increase in gross external debt and the portfolio and spending decisions of the economy. In equation (1) we show the change in official reserves (R or the balance of payments) equal to the current account surplus, CA, plus the capital account surplus. The latter is broken up in three components: net direct and longterm portfolio capital inflows, KD, foreign borrowing, B, and gross private capital outflows, KO.

$$(1) R = CA \text{ Surplus} + KD + B - KO$$

Rearranging terms we can then identify the components or proximate sources of the increase in gross external debt as follows:

$$(2) B = CA \text{ Deficit} + (R + KO) - KD$$

Increased gross external debt, from (2) reflects a current account deficit, reserve build-up or private capital outflows, or a net outflow of direct and portfolio capital. Equation (2) immediately draws attention to the

fact that the debt build-up does not correspond one-for-one to a resource transfer from lending countries to the borrowers. Part of the increased gross debt merely reflects capital flight and thus no change in aggregate net foreign assets. Another part reflects the capitalization through increased borrowing of the inflation component in nominal interest payments. The resource transfer is limited to the inflation-adjusted current account.<sup>3</sup>

We now look at the period 1978-82 to identify empirically the various components in (2) for Argentina, Brazil, Chile and Mexico. In Table 3 we show an estimate of the components of the gross debt increase. We use balance of payments and external debt data, from different sources, to try and piece together the "proximate sources" of the increase in gross external debt. The difference in data sources and the precariousness of debt and balance of payments data imply that these estimates cannot be very precise. Bearing in mind these limitations the data still give a good idea of the difference in patterns between countries.

In the case of Argentina the current account deficit is almost entirely financed by direct investment and portfolio capital inflows. The increase in debt therefore corresponds to a large extent to the financing of capital flight--the Central Bank borrows abroad and sells foreign exchange to private residents who use the proceeds to acquire foreign assets. The breakdown is of course not entirely precise because the current account certainly underestimates military imports and, in the case of Argentina, perhaps to a very significant extent. It has been suggested the underestimate maybe \$7

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<sup>3</sup>Let  $A/P^*$  be net real foreign assets measured in terms of world prices. Then the change in real net foreign assets is:

$$\Delta(A/P^*) = \Delta A/P^* - \frac{A}{P^*} \frac{\Delta P^*}{P^*} = CA/P^* - \frac{A}{P^*} \frac{\Delta P^*}{P^*}$$

which is the inflation-adjusted current account.



Table 3 Components of the Increase in Gross External Debt: 1978-82  
(Billion \$ U.S.)

	Increase in Gross External Debt	Current Account		Direct and Portfolio Capital Inflow	Residual* (Reserve Gains + Capital Outflows)
		Total	Trade Interest		
Argentina	26.8	-10.6	(6.8) (-9.3)	7.2	23.4
Brazil	48.8	-58.4	(-4.7) (-33.7)	11.5	1.9
Chile	11.5	-11.4	(-3.9) (-5.1)	1.3	1.4
Mexico	55.1	-33.6	(-4.6) (-26.3)	9.6	36.1

Sources: Morgan Guaranty, Data Resources, Inc. and I.M.F.

Note: \*This column is calculated as the part of debt increase not accounted for by the current account deficit or the net capital (direct and portfolio) outflows. Interest payments are not adjusted for inflation.

billion. Underinvoicing of exports and overinvoicing of imports and smuggling further distort the data.

The table makes it clear that in the Argentinian case we are looking primarily at an increased debt to finance capital flight, not current account imbalances. Thus the government incurs external debts and uses the proceeds to finance private capital outflows or private acquisition of foreign assets. The increase in gross external debt misrepresents the net foreign asset position of the country, since increased public debts are largely matched by larger private foreign assets. But since the latter are largely removed from the control and disposition of the authorities there is nevertheless a debt problem.

In the case of Brazil and Chile the residual item in the last column accounts for very little. The increased debt reflects current account deficits, not capital flight. In both cases direct investment and portfolio capital flows finance only part of the current account deficits and hence external debt increases by the difference. Both countries, unlike Argentina, have cumulative trade deficits, and of course deficits on service account. In both cases interest payments account for half or more of the increase in debt.

We have shown now, in accounting terms, that increased gross external debt may correspond to increased net external indebtedness, as is the case of cumulative current account deficits, or it can simply reflect capital flight with no change in the country's net foreign assets. This reshuffling between the private sector and the government is relevant whenever the private sector's foreign assets are beyond the reach of the authorities.

## 2. Theory.

Cumulative current account deficits are the more common counterpart of increased external indebtedness. Equation (3) shows the linkage between the national income accounts and the current account:

$$(3) \text{ Decline in Aggregate} = \text{CA Deficit} = (I - S) + \text{Budget Deficit} \\ \text{Net Foreign Assets}$$

Episodes of current account deficits can, in this perspective, be analyzed in terms of the shocks to which the economy is exposed and the impact they exert on saving, investment and the budget. We now discuss the channels through which saving, investment and the budget are affected. Throughout we use standard neoclassical macroeconomics as the relevant framework. We will try to identify transitorily high levels of investment and budget deficits or transitorily low levels of saving.

Saving: Household Saving behavior takes place in the standard multi-period framework. Saving is governed by wealth which is the present value of after-tax labor income plus the value of initial assets, and by the real interest rate. The real interest rate is the world nominal rate adjusted for depreciation and the domestic rate of inflation. The latter can differ from that abroad to the extent that traded/nontraded goods or export/import prices change over time or through changes in exchange rate or commercial policy.<sup>4</sup>

There are several channels through which events in the economy can lead to a reduction in saving:

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<sup>4</sup>On this point see Bruno (1972), Obstfeld (1983), Razin and Svensson (1983), and Dornbusch (1983).

- An increase in wealth because of perceived higher future incomes or an increase in the future rental on domestic real capital. Since by assumption the gains in output occur only in the future, but consumers are forward looking, the anticipations lead to higher current spending and thus to dissaving.

- The effect of expected future income gains on current spending is reinforced if these anticipated gains come together with the removal of borrowing constraints and increases in wealth that make it possible to spend at the level of normal income.

- Dissaving may be the counterpart of intertemporal resource allocation by the household in response to intertemporal relative price and hence real interest rate movements. With high intertemporal substitutability consumption occurs in period where interest rates are low and inflation is high.

Purchases of consumer durables are an important reason for variations in measured saving. Intertemporal variations in the real price of durables (and even more strongly of the availability of durables) affect the timing of purchases. They lead to purchases in periods where the real price is low. This effect is more strongly at work the higher the rate of price increase on durables relative to interest and the rate of physical depreciation. If consumers perceive of themselves as "renting" durables the confidence in a strong resale market and liquidity of durables reinforces the tendency for intertemporal substitution of purchases, as does reduction of credit constraints.<sup>5</sup>

In the context of an open economy a transitory real appreciation, or an overvalued exchange rate, would therefore lead us to predict dissaving.

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<sup>5</sup>See Mishkin (1976) and Deaton and Muellbauer (1980), Chapter 14.

Consumers would concentrate purchases of imported durables in those periods and hence current account deficits would tend to be large.

- A critical question is to what extent private saving behavior is affected by government budget deficits. In other words do households, in response to deficits, build up assets in the anticipation of future taxes on their own incomes and those of their heirs. We assume that these effects are limited to taxes directly borne by the current generations and do not extend further. Thus deficits are by and large not offset by increased current and future saving. Effects on saving result only from directly anticipated taxation or from a reduction in the value of assets reflecting future taxes on the income from those assets.

Investment: There are three channels through which investment is affected. We are particularly concerned with the link between exchange rates and investment. Inventory investment is influenced by the cost of carrying inventories relative to the return on the goods being carried. Business fixed investment is influenced by changes in the desired capital stock and by changes in the adjustment costs associated with capital formation. In the appendix we sketch a formal model and focus here simply on the main ideas.

An anticipated depreciation implies capital gains on imported goods, specifically on materials and foreign consumer or producer durables. Firms would, other things equal, purchase importables prior to an anticipated depreciation and hold them to collect capital gains. But that tendency is dampened by three factors: First, there will after a point be increasing marginal costs to carrying inventories. Second, there is uncertainty about the future price. Third, carrying inventories involves an alternative cost in terms of nominal interest foregone. The optimal inventory for risk averse

investors firms, given these considerations, will depend on the mean and variance of the expected real return on inventories--inflation relative to interest rates and on the marginal cost of carrying. Increased anticipated depreciation that is not reflected in interest rates and reduced variance will raise inventory investment and hence imports of materials or imported producer and consumer goods.

To discuss business fixed investment we can think of a standard neoclassical adjustment cost-based investment theory. Real exchange rates here play a role because they determine the desired capital stock by influencing the user cost of capital or by affecting the adjustment cost. Real exchange rates affect adjustment costs because investment has import content, specifically in the form of imported machinery.

What are the effects of a transitory real appreciation or, equivalently, an anticipated real depreciation? While the real exchange rate is overvalued the real price of imported goods is low and, for that reason, investment is high. During the period of overvaluation capital is being accumulated because the overvaluation in fact constitutes an investment subsidy for those investment activities that have import content. Once the real depreciation occurs the accumulation of capital is reversed.

A second channel through which overvaluation or anticipated real depreciation influence investment is via the desired stock of capital. Suppose investment has significant import content and that capital is used in the production of tradeables. A transitory overvaluation and anticipated real depreciation now exerts opposing effects on investment. The low real price of tradeables depresses the stock demand for capital, but the investment subsidy implicit in overvaluation tends to promote investment. The net result depends

on how significant the subsidy is as a determinant of investment. When import content is important the net result will still be a transitory investment boom and hence an import boom of investment goods.

Once again we have assumed an anticipated real depreciation that is not fully matched by interest rates. To the extent that nominal interest rates rise in anticipation of depreciation this raises the user cost and reduces therefore any impact on investment.

In the case of investment, therefore, there are strong links between the timepath of the real price of imports and the level of investment goods imports. Anticipation of real depreciation must produce an import bulge.

The Budget: The government, in principle, obeys the intertemporal budget constraint. The budget constraint states that the present value of tax revenues (including the inflation tax) must equal the initial debt plus the present value of outlays. Subject to political constraints on the rate of cut in outlays or the rate of increase in taxes the government would practice tax smoothing as suggested in Barro (1983). A permanent loss in revenues would be immediately and fully offset through increased tax rates or reduced outlays, leaving debt unchanged. Transitory shocks to revenue or to outlays would be substantially met by debt finance. The increase in debt in turn is amortized over the longterm by a small increase in taxes and cut in outlays.

An increase in interest rates reduces the present value of the excess of taxes over outlays and hence requires an adjustment in the path of taxes and expenditures. Once again, if the shock is transitory debt finance will bridge the gap in the shortterm and small tax and outlay changes assure intertemporal solvency of the government. If the increase in rates is permanent then immediate adjustment of tax rates relative to outlays occurs and debt remains unchanged.

The tightness of the debt finance model must be relaxed to recognize three practical considerations. First, there are constraints on the rates at which politicians can or will change taxes and outlays. Secondly, the identification of disturbances as transitory or permanent may in itself take time, all disturbances being assumed transitory, particularly when they are adverse. Third, debt default both internal and external is a way of assuring the intertemporal budget constraint although such a "policy" would of course be reflected in the interest rate required by holders of the public debt.<sup>6</sup>

The government budget problem is made more specific when we introduce specific standard of living constraints. Such constraints imply that in the presence of adverse shocks to the real income of the favored group additional outlays are required to support the standard of living. If tax adjustments or reductions in the standard of living can occur only over time there is a built-in link between (adverse) economic shocks and the budget. Adverse shocks therefore involve invariably an early stage of deficit finance, even if they are persistent.

A failure to smooth taxes and outlays as well as benefits in the case of a permanent disturbance does need justification. Why would tax payers be willing to see low tax rates now and pay for those low rates by higher future rates yielding equal present value tax collection? Why would those who receive government benefits claim a front-loaded flow of benefits rather than a steady stream of equal present value? The tax smoothing model rejects such behavior as irrational and predicts that government following noxious policies along these patterns would be thrown out of office for failing to maximize

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<sup>6</sup>I note in passing that wealth taxes or levies as a way of responding to shocks have been insufficiently considered in the recent deficit finance literature, though not, of course, in the interwar writings.



voters' welfare. But the moment the public discounts at a rate in excess of the market rate of interest the future is systematically undervalued and biased toward debt finance. The argument is reinforced when liquidity constraints lead part of the population to discount at exceptionally high rates.

There is, of course, an interdependence between the model of debt finance and the private sector's optimal intertemporal allocation of resources and portfolio choice. The more the government chooses debt finance, postponing required tax increases, the more the private sector can adjust to the future increased taxes or debt default by holding non-taxable assets (dollars and washing machines). This raises the cost to the government of delaying adjustment, but does not eliminate altogether the tendency toward shortrun deficit finance.

In concluding on the issue of the budget it is worth noting important linkages between the exchange rate and government outlays. These arise in two respects. First, to the extent that there is an external public debt a real depreciation raises the real value of debt service in terms of domestic output and hence is likely to increase the budget deficit. There is thus a potential trade-off between international competitiveness and budget balance.

The second link between exchange rates and the budget arises in case of exchange rate guarantees. If the government has guaranteed a given exchange rate, sometime in the past, but has since found it necessary to depreciate then the resulting exchange rate subsidy will deteriorate the budget. In a situation where exchange rate guarantees and external debt exist, and it is difficult to adjust taxes, there is thus a tendency to seek overvaluation as one of the ways to minimize debt finance.

We have now reviewed the various channels through which the current account is affected as a consequence of transitory and permanent disturbances. The point that emerges is that anticipated real depreciation acts in a most forceful way to generate current deficits in the external balance. In addition, through the budget, current and transitory shocks to receipts and outlays tend to translate into deficit finance and hence into external deficits. We now consider how these considerations help explain the current accounts and external debt accumulation of Brazil and Chile.

### 3. Application to Chile and Brazil.

In Brazil and Chile external debt increases are the counterpart of current account deficits. They represent levels of spending and resource absorption in excess of current income. But the details of the process differ. In Chile overvaluation is the key while in Brazil the budget deficit assumes a central role.

Chile: Following hyperinflation Chile had undergone in 1973-77 economic stabilization and reform in respect to fiscal policy and commercial policy. The budget deficit was reduced from more than ten percent (as a fraction of GNP) in the early 1970's to actual surpluses. Tariffs were reduced from average nominal rates near 100 percent, with individual rates widely dispersed, to a uniform rate of only 10 percent by 1978. Inflation was reduced from over 500 percent per year to practically zero, and to top it off growth in 1977-81 averaged 8 percent per year. Today the country bears little resemblance to that performance: Output has declined since 1981 by 10 percent, and unemployment stands at 30 percent. Exchange rate policy and excessive recourse to external debt finance are at the center of an explanation.

In an effort to speed up the process of disinflation the Chilean authorities decided in early 1979 to give a try to the "law of one price". The exchange rate was fixed at 39 pesos to the U.S. dollar, in the hope that the pegging would directly cut down the rate of inflation but also break inflationary expectations. But at the time Chilean inflation was still more than 30 percent, far above the rate in the U.S.. Moreover, formal indexing arrangements linked wage increases to past inflation. As Corbo (1983) has documented the combination of inflation and indexation led over time to growing overvaluation as wages were pushed up relative to the prices of importables and the world prices of exportables. The growth in real wages, for those employed, of course implied a sharp gain in the standard of living. The loss in employment in response to overvaluation was slow to build up and thus the period 1977-80 offered a spectacle of yet another "miracle".

The Chilean boom conditions in the early stage of overvaluation lend support to the notion that real depreciation, in the short run is deflationary. Here the real appreciation, by raising real wages has expansionary effects on aggregate demand before the employment effects and bankruptcy start making their inroads. This point has been emphasized by Diaz Alejandro (1963) and more recently by Calvo (1982) in the Argentinian context.

In Table 4 we show the ratio of consumption and of gross fixed investment to GDP (in constant 1977 prices), as well as the budget deficit ratio. It is clear that 1980-82 is the period to focus on since consumption sharply rises as does the investment ratio and the budget deficit. Investment and saving behavior explain the sharp deterioration in the current account.

Table 4: Consumption, Fixed Investment and the Budget Deficit in Chile  
(Percent of GDP)

	1960-69	1970-79	1978	1979	1980	1981	1982
Investment	20.2	15.7	16.5	19.6	23.9	23.9	9.6
Consumption	79.7	75.8	72.4	71.1	70.5	76.2	76.1
Budget Deficit	2.9	6.8	0.8	-1.7	-3.1	-1.6	2.4
Current Account	NA	NA	7.7	5.7	7.2	14.6	9.4

Source: Banco Central de Chile and International Financial Statistics.

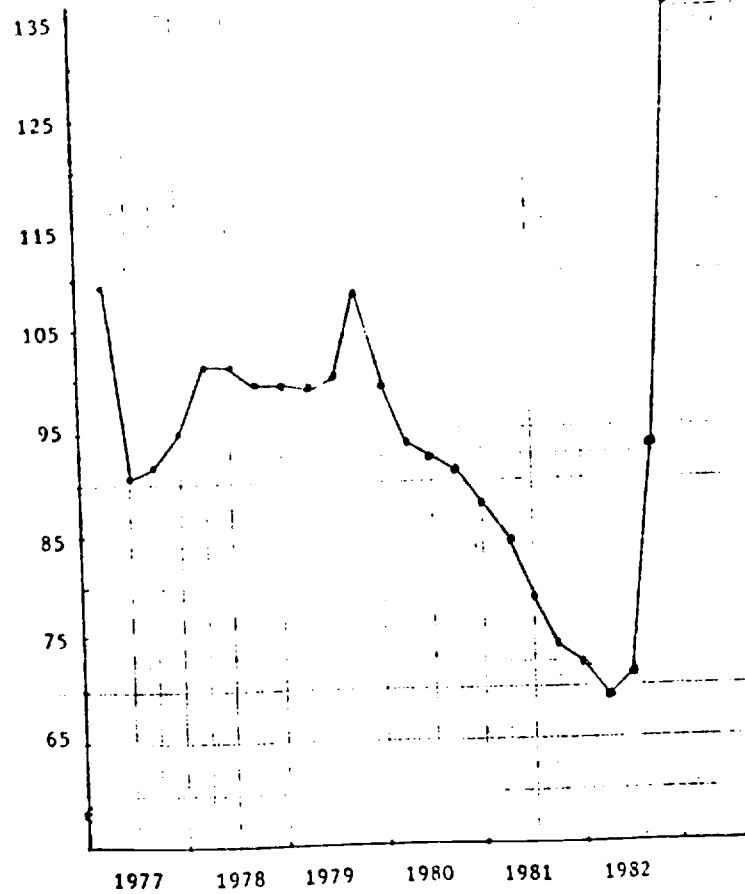
We now focus on the mechanism through which consumption and investment spending increased so sharply. Figure 2 shows the real exchange rate -- import prices relative to the prices of nontradeables -- for the period. The real appreciation, on this measure, amounted to 25 percent by early 1982. Table 4 shows some of the implications. Imports of all goods increased very sharply over the period peaking in 1981. As a particular example we see automobiles. Import growth was immense both in percentage terms and as a fraction of the existing stock. Imports peaked in 1981 falling off sharply afterwards.

Table 5 Chile: Imports and the Real Exchange Rate

	1978	1979	1980	1981	1982
Imports (\$US Billions)	3.00	4.22	5.82	6.78	3.83
Trade Balance (\$US Billions)	-0.52	-0.32	-0.45	-2.41	0.29
Real Exchange Rate (1978 = 100)	100	100.6	90.7	76.9	92.0
<u>Automobiles (1000s)</u>					
Stock	335.8	386.0	458.7	573.8	NA
Imports	11.4	33.6	51.6	79.5	30.3
Production	17.1	16.5	25.2	20.6	7.9

Source: Banco Central de Chile and Corbo and de Melo (1983).

Figure 2 The Chilean Real Exchange Rate  
(Index 1972:ii=100)



Source: Corbo and de Melo (1983)

Table 6 shows the same pattern in more detail. The Table reports the quantity indices for different groups of imports. In each case we observe the sharp 1981 peak and the decline in 1982-83. The pattern is significantly more pronounced for capital goods than for intermediates, even though in the latter category automobile parts and pieces and intermediate industrial goods, unlike primary commodities, show very high growth rates.<sup>7</sup>

Table 6: Import Quantity Indices for Chile  
(January-June of each period)

	1980	1981	1982	1983
Total	100	133	92	68
Consumption Goods:	100	175	125	75
Automobiles	100	226	90	38
Electric Domestic	100	156	68	NA
Capital Goods:	100	134	90	38
Machinery	100	128	119	52
Transport Equipment	100	140	53	20
Breeding Stock	100	328	85	50
Intermediate Goods:	100	117	81	76

Source: Banco Central de Chile

The pattern of strongly growing imports through 1981 reflects in part the very strong performance of the Chilean economy. In addition the increase in asset prices that took place in 1977-81 implied increased wealth and hence the allocation of part of the gain in wealth to increased consumption. Harberger

<sup>7</sup>In interpreting these numbers we bear in mind that from 1980 to 1981 industrial production was approximately flat while from 1981 to 1982 it declined by around 20%. GDP growth in 1981 was 5.7 percent, -14.3 percent in 1982 and -0.5 in 1983.

(1983) in particular has emphasized this point.

In addition to the growth and wealth impact on consumption and investment there appears to be a strong real exchange rate effect on the composition and level of spending. By 1981 the sustainability of the increasingly overvalued exchange rate was becoming an open question. While the government was sworn to sustaining the exchange rate, the growing problems of export and import competing firms, and growing unemployment made it more and more plausible that depreciation would take place. Moreover, along with depreciation a return to protection was not out of the question. In these circumstances it is clear that we would expect to observe a sharp increase in purchases of importables. Tables 3, 4 and 5, of course, bear that out in a massive way. (See, too, in Figure 3 the trade balance for 1981 that shows an all time deficit). They also show that once the overvaluation came to an end, in June 1982, the import boom collapses.

The real exchange rate affects directly saving and investment and hence the current account. But it also works through a separate channel. Overvaluation, once the shortrun expansionary effects have passed, leads to a change in the composition of spending. Demand for domestic goods declines and demand for importables rises. The shift implies a reduction in domestic output and employment. The fall in income reduces saving of the private sector and it also leads to an increased budget deficit. Accordingly the indirect effects further deteriorate the external balance. The steep decline in world copper prices in 1981-82 further reinforced the effect of declining income on the external balance. If the decline is perceived as transitory it leads to dissaving both by households and by the public sector and hence enlarges the external deficit and borrowing. The copper price decline is, of course, often cited as an explanation for the external deficit and debt

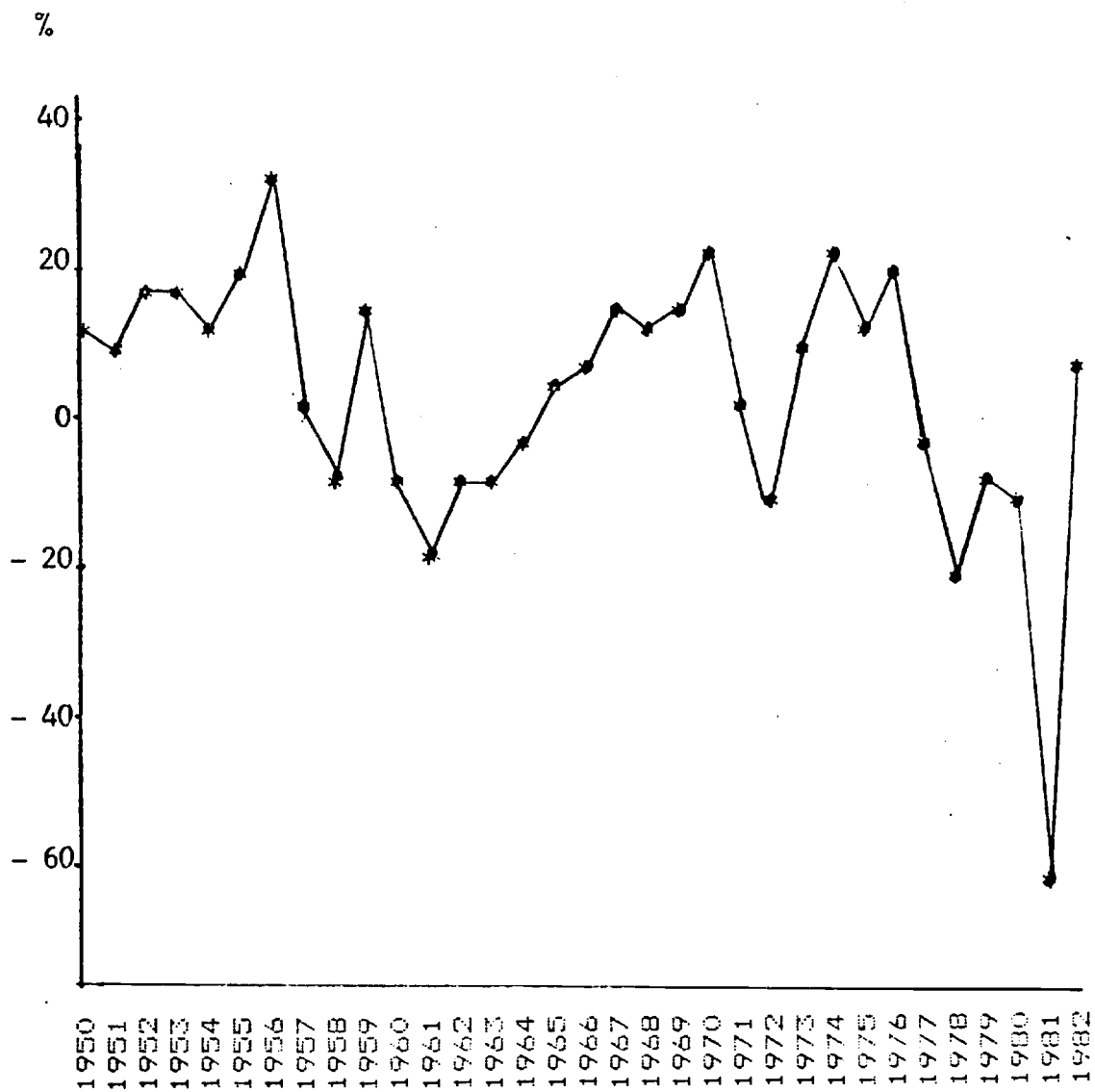


Figure 3 Chile: Ratio of Trade Surplus to Exports



accumulation. But the explanation cannot be taken too far. Even in 1982 the dollar value of copper exports still exceeded the 1978 level by a large margin.<sup>8</sup>

One further factor, which we will see in particular at work in the Brazilian case, is the effect of increased interest rates in the world market. For a debtor country this implies a deterioration in the terms of trade and hence an adverse real income effect. An estimate of the direct contribution to the deficit of higher interest rates in the world market is \$3.2 billion.

To a large extent the increase in Chile's external debt is the counterpart of a domestic accumulation of consumer and producer capital. This invites the question whether there is any lack of optimality involved in what happened in 1978-82 and where does the "debt problem" reside? Did consumers and firms benefit from the disequilibrium exchange rate and if so at whose expense? Furthermore, assuming that the debt ultimately must be serviced is there a welfare loss from disequilibrium exchange rate policy, setting aside the implications for financial stability and economic activity?

The welfare economics of disequilibrium exchange rates appear quite straight forward. We can think that the government borrows in the first period in the world market and uses the proceeds to finance a transitory consumption or investment subsidy on importables. In the second or more

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<sup>8</sup>The dollar value of copper exports and the real price of copper (1980=100) show the following pattern

	1978	1979	1980	1981	1982
Exports (\$ billion)	1.27	1.9	2.15	1.72	1.73
Real Price (1980=100)	81	102	100	82	73

The real price of copper here is measured in terms of the unit value of industrial countries' exports.

distant period taxes are collected to discharge the external debt. This represents the public finance aspects of the overvaluation policy, neglecting all macroeconomic side effects. It is apparent that a large subsidy of this kind will have net adverse welfare effects and this is all the more the case when we take into account the macroeconomic effects. The actual story is somewhat more complicated because we must take into account the private capital market. Consumers and firms perceive a net subsidy only to the extent that market interest rates do not reflect the anticipated depreciation. Since the government did not, in fact, lend itself at negative expected real interest rates we must conclude that interest rates not fully reflecting anticipated depreciation imply disagreement in the capital market about the likely timing and magnitude of depreciation. Those anticipating large and certain depreciation borrow and import, those anticipating small and unlikely depreciation are the lenders. But the government comes back into the act when we recognize that a policy of bailing out banks that are in trouble serves as a safety net for the domestic financial operation and, effectively, makes the whole operation almost exactly like the pure public finance scheme laid out above.

Brazil The deterioration of the Brazilian external indebtedness is largely due to failure to adjust the budget to the combined external shocks of higher world interest rates and increased real oil prices. Higher interest rates and increased oil prices were almost automatically reflected in larger deficits through two channels: government subsidies that maintained a low domestic price of oil and government external borrowing through state enterprises to finance the increased debt service. Domestic adjustment through tight money served to raise interest rates and stop growth, but its primary purpose was to stimulate external borrowing to finance the current account. Failure to

depreciate the real exchange rate meant that the economy stagnated despite growing external deficits and debt.

Table 7 shows the external shocks. The terms of traded, as a consequence of oil and the world recession deteriorated vastly. In addition interest rates, including spreads, nearly doubled. The combined effect immediately implied a very significant deterioration in the external balance unless drastic domestic adjustment policies were pursued. Table 7 shows the cumulative actual increase in debt between 1978 and 1982 as well as a calculation of the effect of higher oil prices and interest rates.

In the calculation we cumulate the difference between the cost of servicing the 1978 debt level at actual rather than at the 1978 Libor rates. We also take the difference between the actual and the 1978 level of oil imports. The sum, cumulated at actual interest rates is reported in the last column. It measures approximately the increase in debt "due to external shocks". It turns out to amount, cumulatively, almost exactly to the actual increase in external debt. The calculation supports the notion that the debt problem is due to the shocks; but it leaves open the question of the macroeconomic channels through which the shocks are translated into external deficits and debt accumulation. The budget deficit is an essential channel.

Table 7 The External Shock to the Brazilian Economy

	1978	1979	1980	1981	1982
Libor	8.9	12.1	14.2	16.8	13.2
Terms of Trade (1977=100)	76	79	65	55	54
Oil Price (\$US, 1977=100)	101	127	238	275	260
Actual Debt Increase (Cumulative, Billion \$ US)		7.4	16.7	27.1	35.2
Oil & Interest Effect* (Cumulative, Billion \$ US)		3.6	11.7	23.5	34.8

\*For method see text

Source: IFS, Data Resources, Inc. and Conjuntura Economica.

In Table 8 we show the budget deficit as a fraction of GDP as well as the growth rate of real output. Budget data are not available before 1980. Since then data are available both for the operational budget and the separate category of interest (monetary correction).

Table 8 The Brazilian Public Sector Deficit and Growth  
(Percent of GDP)

	1978	1979	1980	1981	1982
Public Sector Deficit	NA	NA	7.5	12.7	15.8
Operational				6.0	6.8
Monetary Correction				6.7	9.0
Real Diesel Price (1973=100)	139	154	158	190	188
GDP Growth	4.8	6.7	7.9	-1.9	1.4

Source: IMF, Data Resources, Inc. and Gazeta Mercantil, and Lauro Ramos.

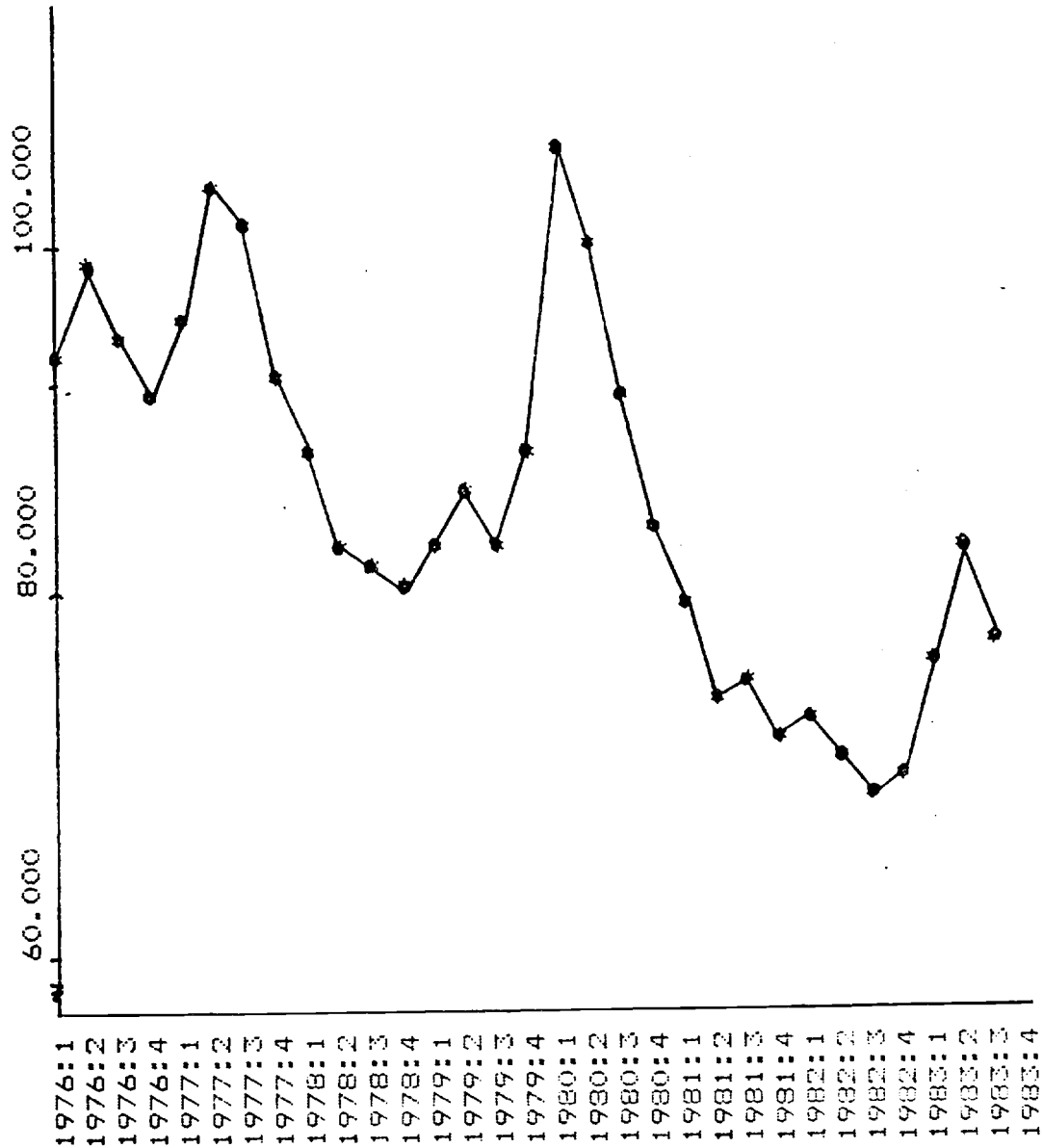
The link between external sector the budget and current account deficits stems in large part from extensive subsidies. The government subsidizes

diesel oil because supply of merchandise in the interior is dependent on road transport. While the real price of oil in the 1963-82 period increased six-fold in the world market, the domestic price did not even double. But subsidies also applied to a range of other goods especially food products. At the same time there were agricultural subsidies at fixed nominal rates, implying real interest rates of -60 percent and even more. The fact that the budget deficit absorbed the external shocks meant that there was no automatic private adjustment to increased world interest rates and increased real oil prices. Nor did the increased budget deficit lead to offsetting domestic saving in the anticipation of future taxes. Thus the external shocks translated fully and automatically into the current account. The increased interest costs were financed by increased external borrowing through state enterprises and so was the increased budget deficit stemming from higher real oil prices.

Brazil is certainly not a case where the increased external deficit reflected an increase in investment. In 1965-77 investment as a fraction of GDP averaged 21.7 percent. In the period 1978-81 it averaged only 20.5 percent. The increased deficit thus reflects consumption and the budget, not an investment boom. In fact, the increasing monetary tightness that was pursued in order to raise interest rates and thus attract capital flows cut into investment.

The poor external performance of the country was not only due to a failure to adjust the budget for increased costs of debt and subsidized programs. A good part of the poor performance stems from a systematic overvaluation of the exchange rate. Figure 4 shows the real rate exchange measured by non-coffee export prices relative to the domestic price level.

FIGURE 4 BRAZILIAN EXPORT PROFITABILITY  
(Index 1975=100)



Note: Export profitability is measured by the price of non-coffee exports relative to the domestic price level.

The exchange rate policy of the post-1968 period had been to maintain a PPP relation relative to the US WPI. But that policy of course implied that there was no adjustment for increased real oil prices and interest rates, nor for the vagaries of the dollar in terms of other major currencies.

The balance of payments consequences of the external shocks were contained by increasing domestic oil production and by the domestic stop to growth that reduced non-oil imports sharply. At the same time the overvaluation of Argentina and the growth in oil exporting countries' imports from Brazil led to a temporary export boom. In 1979-81 export revenue grew at an average annual rate of 23 percent. The strong export growth and the poor experience with the late-1979 maxi devaluation--inflation and no persistence of the real depreciation because of preannounced depreciation below the full, accelerated indexation--misled policy makers into maintaining a constant real exchange rate. Failure to seek a large real depreciation as the longrun adjustment to the deterioration in the external sector thus ultimately led to the 1982 debt crisis and the catastrophic collapse of activity since.

Unlike in Chile and in Argentina there was no capital flight or flight into imported durables. In part this is a consequence of the fact that the country is closed both on trade and capital account. Imports are severely restricted and thus a Chilean style flight into imported durables is inconceivable. The only capital flight, leaving aside under and overinvoicing, must take place through the black market or through special accounts in the central bank where exchange rate guarantees are offered to capital importers. But on neither account does the capital flight lead to an increased external deficit and debt. In one case it is reflected in the increased premium in the black

market. In the other case firms and banks that have borrowed abroad in dollars and wish to repay their loans prior to maturity can liquidate their dollar debts by making a deposit in the central bank, with the central bank carrying the loan and the exchange rate risk to maturity. In this case capital flight takes the form of paying off dollar loans by making deposits in the central bank. There is no impact on foreign exchange reserves. The only effects are a monetary contraction and, should a devaluation take place prior to maturity, a future increased budget deficit as the central bank purchases foreign exchange to service the debt.<sup>9</sup>

The only place where real exchange rate effects are quite apparent is in respect to tourism. Here the respective over and undervaluation of currencies in Argentina and Brazil is significant as is the interaction of the respective black markets. In the first quarter of 1981 the massive Argentinian overvaluation leads to a surplus in Brazil's net travel balance, in the second and third quarter of 1982 a huge black market premium in Brazil, together with a \$2000 tourist allowance at the official rate lead to a huge deficit. But these swings in the tourist balance stay within less than one billion dollars and thus are more an indication of exchange rate mismanagement than a substantive part of the debt story.

In 1973-75 LDCs were generally applauded for sustaining growth in the face of world recession by running external deficits financed in the world capital market. Brazil followed that pattern at the time and, again in the 1978-82 period. The experience raises the question how a country should decide between financing and adjustment in the face of transitory shocks such

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<sup>9</sup>See R. Dornbusch and A. Moura da Silva (1983).



as interest rate increases or more permanent shocks such as increased real oil prices. Moreover, if longterm domestic energy projects are present--Brazil's alcohol program and oil production--is it sensible to sustain growth even, if that means debt in the interim rises to a higher longrun level? The Brazilian experience brings out particularly clearly the fact that we do not have a sensible model of the optimal level of external debt. Our models merely tell us that debt trajectories are unsustainable when the trend growth rate of exports, say, falls short of the rate of interest. Brazil's case suggests that the automatic capitalization of transitory interest rate shocks or terms of trade shocks runs into risks if rolling over is not automatic. In such a model the joint probability of adverse shocks and credit rationing, and their persistence may lead to exactly the opposite pattern of the 1973-75 period. Debt is retired through a deflationary strategy before the costly credit rationing occurs or, aggressive export promotion and import substitution measures accompany the continued borrowing. The philosophy "debt does not get paid, debt gets rolled" then is poor advice.

#### 4. Argentina: Capital Flight

In the case of Argentina external debt accumulation financed primarily capital flight, not current account imbalances. Unlike Chile, Argentina had severe political instability, continuing high protection, but completely unrestricted capital flows. For these reasons purchases of external assets rather than imported durables were the obvious way to escape from instability and expected depreciation. Moreover, again unlike in Chile, there was clearly no sharp increase in investment. Thus the trade deterioration in 1979-80 is not a significant part of the story. Nor does the \$ 1 billion deterioration in the travel account explain much of the increased debt. The large outflow of shortterm capital indicated in Table 9 is more central to the explanation

of the debt build-up. Of course, one must leave the reservation that the trade data do not include all military imports--as much as \$7 billion are missing in one estimate--and to that extent may lead us to apportion too large a part of the debt increase to the capital account.

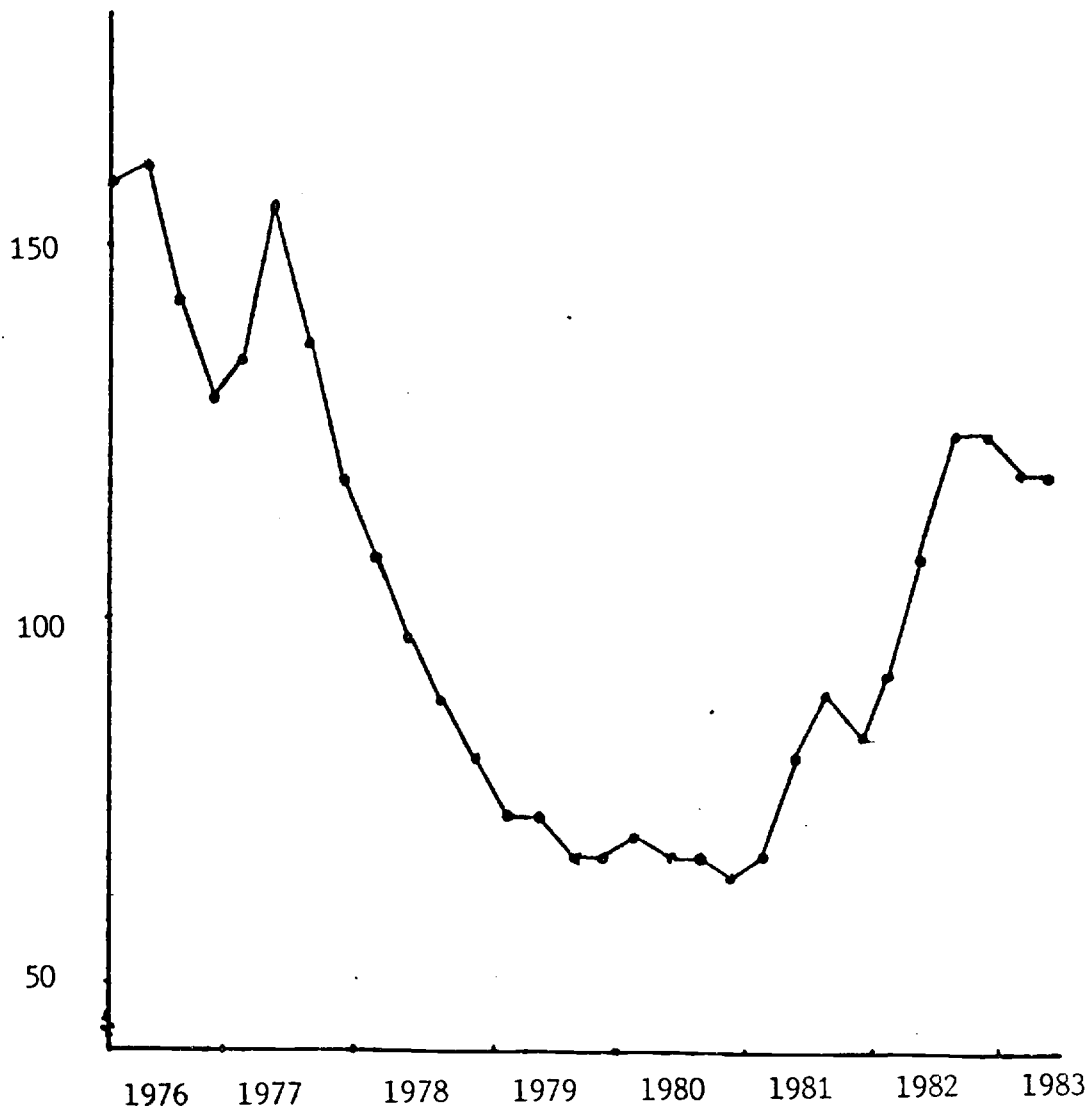
Table 9 Argentina: Trade, Capital Flows and Debt

	1978	1979	1980	1981	1982
Trade Balance	2.9	1.8	-1.4	0.7	2.7
Current Account	1.9	-0.5	-4.8	-4.7	-2.5
Increase in Debt	2.8	6.5	8.0	8.5	0.9
Longterm Capital and Direct Investment	0.4	0.5	0.9	2.0	3.3
Shortterm Capital and Errors and Omissions	-1.3	1.5	-2.4	-8.5	-4.9

Source: IMF.

Figure 5 shows the Argentinian real exchange rate that is central to an explanation of the capital flows. Under finance minister Martinez de Hoz the exchange rate was used systematically to stabilize inflation. First, until December 1978 the rate was managed by the central bank allowing deliberate real appreciation. Then, from December 1978 until March 1981 the rate followed a preannounced "tablita". In 1980 the continued prefixing of the exchange rate became doubtful. Overvaluation was apparent and the coming change in the presidency led to the belief in depreciation and instability. With no limitations on private capital outflows there was a massive shift into foreign assets. The flight into foreign assets included purchases of US currency, bank deposits and securities abroad as well as real estate especially in the US and in Brazil.

Figure 5 THE ARGENTINIAN REAL EXCHANGE RATE  
(Index 1978-83=100)



Note: Ratio of import prices to domestic prices

The source of capital flight is the combination of currency overvaluation and ongoing and increasing domestic financial instability. The domestic instability derives from an inability to bring fiscal deficits under control and stop the inflationary process in a decisive way. In fact, in 1980-81 the deficit, even setting aside debt service, strongly deteriorated. Table 10 shows some of the results.

Table 10: Argentinian Financial Instability

	1978	1979	1980	1981	1982
Real Exchange Rate (1978-83=100)	92	68	66	78	109
Inflation (Dec. to Dec.)	176	160	101	105	165
Real Interest (Passive Rate)	-15.6	-9.5	-4.4	6.6	-26.2
Budget Deficit (% of GDP)	10.1	9.0	11.3	16.4	17.2
Excl. Debt Service	1.8	2.4	7.2	8.2	5.3

Source: Cavallo (1983), Data Resources Inc., International Financial Statistics and Indicadores de Coyuntura.

By 1982 the Malvinas war and the resulting inability to further tap the world capital market, combined with domestic exchange control end the episode. The most interesting aspect of the Argentinian public external indebtedness is that it appears to be matched, one for one or better, by increased private holdings of external assets. But because the authorities have no access to these assets there is nevertheless an acute debt problem. In the aftermath of these disturbances the question remains whether any significant portion of the capital would return in case of an effective stabilization program. Experience indicates that this is not the case.

Concluding Remarks

The popular view of growing LDC debts is that they reflect unsound budgetary policies or unsustainable growth programs. Sachs (1983) by contrast has argued that current account imbalances of the 1970s reflect high, productive investment that fully justify external borrowing. Bankers who have poured money into these countries certainly favor the view that they have supported productive investment thus making it plausible that debts should be serviced. In this review of the debt experience of Argentina, Brazil and Chile, we find a much more mixed story. Only in Chile does investment play any significant part in the current account deterioration. But clearly imports of consumer goods play at least as significant a role. Moreover, the burst in imports and the resulting current account deterioration is primarily due to currency overvaluation.

In Argentina and Brazil increased investment plays absolutely no role in the debt increase. In the case of Brazil the budget deficit and the lack of an adjustment of the public sector to external shocks are behind the debt growth. The failure to adjust the real exchange rate, in this case, explains the longterm debt difficulties. In the case of Argentina currency overvaluation in conjunction with prospects of political instability and international capital mobility explain the increased debt. Here the current account plays little role and capital flight is behind increased debt.

The examples in no way suggest that investment is unimportant in the context of current account imbalances. But whether it does play a significant role depends in part on whether trade and/or capital are free to move and in part on the prospects for economic stability. When trade is relatively unhampered and prospects are bright investment may be central. In other cases public sector dissaving or capital flight are more plausible sources of

external imbalance.

There are important differences in the three episodes studied. The countries differ, in the 1978-82 period, in terms of financial and political stability, and in terms of openness. Argentina is the most unstable and the most open on capital account. Capital flight, therefore, is the obvious response to exchange rate instability and deteriorating expected returns on domestic assets. While some trade liberalization accompanied the overvaluation experience flight into importables still seems to have been minor. Chile is at the other extreme with domestic political stability and, at least initially, a budget surplus. The complete liberalization of trade together with initial prosperity of households and firms leads to an import boom that makes up for years of high tariff walls. But because there is no expectation of a financial collapse, currency reform, wealth taxes etc., capital outflows never come into play in a major way.

Brazil shares Argentina's financial instability; the budget deficit is vast and any attempt at stabilization takes the form of tight money which, in the context of indexation, aggravates the condition of the financial system by causing debt to be growing more rapidly, the tax base to shrink and firms to go bankrupt. The 1979 change in the economic team signals a direction of fiscal irresponsibility, but even so the Chilean or Argentinian style flight into foreign assets or goods remain impossible because the economy is firmly closed. Even though the economy is severely closed the financial instability can only be sustained by raising interest rates to force items into the world capital market, renewing loans and taking fresh credit, thus financing the budget and current account deficit. The closeness of the economy in respect to trade, combined with the interest rate policy assure that the system continues until the external borrowing constraints of 1982 emerge. Failure to

allow a real depreciation in time then meant that the country was unprepared to absorb the drying up of external credit expect through a severe depression.

## APPENDIX

Investment: Significant changes in investment can come about through two channels. The first is a transitory increase in investment as a result of an increased desired capital stock; the other is a change in the timing of investment in response to intertemporal relative price variations. We draw up a standard investment model to isolate these effects.

The desired capital stock depends on the required rate of return net of capital depreciation,  $i + d - \dot{Q}/Q$ , and on the real price of capital ( $Q/P$ ) as can be derived from the standard arbitrage condition:

$$(4) \quad Pf'(k)/Q = i + d - \dot{Q}/Q$$

or

$$(5) \quad k = g((i + d - \dot{Q}/Q)Q/P) \quad ; \quad g' < 0$$

On the investment side we assume adjustment costs and also assume that imports as well as domestic output are inputs in the production of investment. We assume a proportional import requirement and an increasing marginal domestic input requirement. The solution to the investment problem then is a rate of investment that depends positively on the real price of capital in terms of imports,  $Q/P_m$ .<sup>1</sup>

$$(6) \quad I = h(Q/P, v) \quad ; \quad v = P_m/P$$

where  $v$  is the real exchange rate or the real price of domestic goods in terms of importables. The investment model is completed by the capital accumulation

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<sup>1</sup> Suppose firms in the investment business maximize the value of profits  $Z = QI - aP_mI - P_b(I)$  with  $b', b'' > 0$ . The coefficient  $a$  denotes the constant unit import content of investment. The first order condition is  $b'(I) = (Q/P - av)$  or  $I = h(Q/P, v)$  with  $v = P_m/P$ .



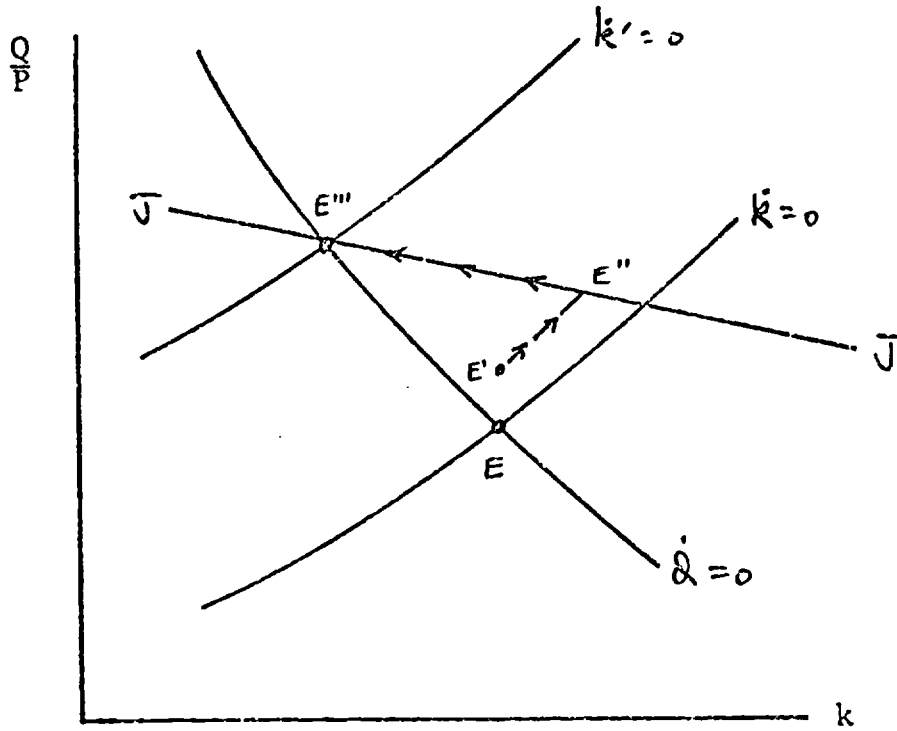
equation:

$$(7) \quad \dot{k} = h(Q/P, v) - dk$$

The rational expectations equilibrium, given a constant real exchange rate and interest rate, can be visualized in terms of the conventional phase diagram. The equilibrium capital stock and the real price of capital follow a saddlepath to the steady state.

Consider now the anticipation of an increase in the real cost of imports which acts as a temporary investment stimulus. This is shown in Figure 1. Starting from an initial equilibrium at point E there is an expectation that the real exchange rate will depreciate or the real price of imports in terms of domestic goods will rise in the future. There is an immediate jump in the real price of assets and that higher real price promotes a transitory investment boom. Once the real depreciation does take place (point E'') the real price of capital keeps rising but now disinvestment takes place. Pending an anticipated real depreciation, therefore, we expect investment and hence investment goods imports, to be high. The same analysis, of course, applies to a transitory decline in the real price of imports.

The exposition so far assumed that capital is used to produce domestic goods but has itself import content. There is another case in which anticipated real depreciation has a significant impact on investment. In this case capital is used to produce tradeables and investment has an import content. A real depreciation, in the longrun must raise the real price of capital but the capital stock may rise or fall. However, pending the anticipated increase in the real price of tradeables there will be an investment boom and hence a boom of investment goods imports.



FigureA1 The Investment Effects of an Anticipated Real depreciation

Consumer Durables: Consider a much simplified of durables where we neglect time preference, depreciation and resale as well as non-durables. The consumer's welfare depends on the services from durables in two period, the second period being denoted by a prime.

$$(8) \quad U = V(S) + V(S')$$

Services are given by the cumulative stock

$$(9) \quad S = D, \quad S' = D + D'$$

where  $D$  denotes durable purchases.

The budget constraint is

$$(10) \quad Y - T = PD + P'D'$$

where  $Y - T$  denotes the present value of income net of taxes and  $P'$  is the discounted second period price. We assume  $P < P^* < P'$  where  $P^*$  is the equilibrium real price under a correctly valued real exchange rate while  $P$  is the price consumers actual face.

For the economy, in the aggregate, tax payments are  $T = (P^* - P)D$  but the individual household takes taxes as unrelated to purchases. The individual faces the budget line obtained by adding  $D$  to both sides of (10) to obtain:

$$(10a) \quad S' = (Y - T)/P' + (1 - D/D')S$$

Figure A-2 shows the consumer equilibrium. The consumer views the budget line as having a slope  $dS'/dS = 1 - P/P'$  which is flatter than the slope of the social budget line  $dS'/dS = 1 - P^*/P'$ . Consumer equilibrium, including the subsidy distortion due to overvaluation, is at point  $A'$  on indifference curve  $U$  with excessive purchases of durables in the first period and a level of welfare lower than at  $A''$  on indifference curve  $U^*$ . It is apparent that the larger is the subsidy the further the equilibrium lies to the south-east of  $A''$ , thus further deteriorating welfare.

If the consumer does not take into account the fact of taxes the

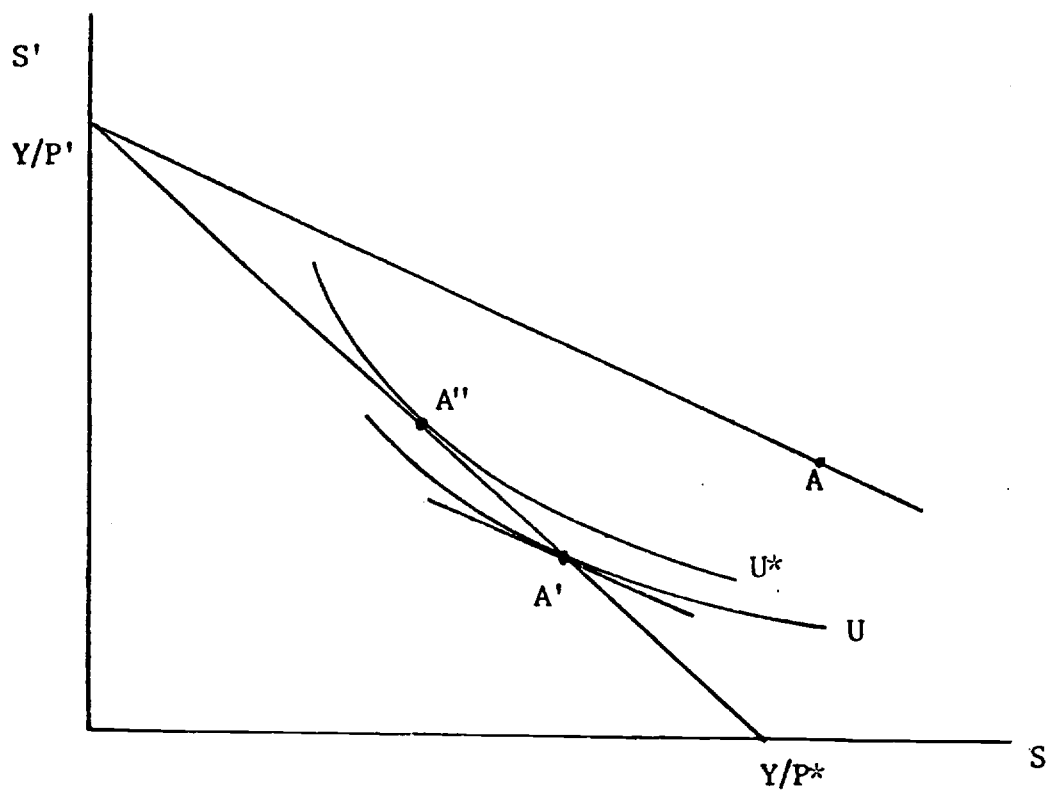


Figure A-2 Consumer Durables and Disequilibrium Exchange Rates

consumption point A would be chosen in the first period, leading to second period distress once the taxes are collected. This consideration is of interest because it helps explain the collapse of durable purchases after 1981.

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