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Determinants of the Current Account Balances of Non-Oil
Developing Countries in the 1970s: An Empirical Analysis*

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Summary

Given the widespread interest in the balance of payments problems of non-oil developing countries during the 1970s, the lack of systematic empirical work on the reasons for these problems is somewhat surprising. This paper pursues this issue through an examination of the quantitative relationship between the current account positions of non-oil developing countries and four of the principal determinants: (1) the terms of trade, (2) the growth rates of the industrial countries, (3) the real interest rate on external debt, and (4) the real effective exchange rate. Following a brief description of how these factors evolved during the 1970s, a reduced-form equation relating the current account balance to these four factors is estimated on a pooled sample of the 32 non-oil developing countries for which published data are available during the period 1973-81. The overall results and country-by-country tests suggest that, despite its simplicity, the model fits the data quite well. The empirical estimates support the view that both external factors (the decline in the terms of trade, the stagnation of economic activity in industrial countries, and the sharp rise in real foreign interest rates) and domestic factors (approximated by the appreciation in real exchange rates) contributed significantly to the deteriorating current account positions of non-oil developing countries during the 1970s.

As to policy implications, the results provide a rough estimate of the size of the real exchange rate change that would have been needed, on average, to offset the impact of the worsened international environment on an individual country's current account position. Some non-oil developing countries did manage to pursue policies that achieved the necessary change in their respective real exchange rates, but a large number of others were either unable or unwilling to do so. The 1980s found the latter group experiencing increased current account difficulties resulting both from adverse international developments and the overvaluation of their currencies that occurred during the previous decade.

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I. Introduction

The past decade proved to be a period of considerable stress for non-oil developing countries. Throughout most of the 1970s, a combination of events caused the international economic environment to become less conducive to stable growth for this group of countries, and made the problem of economic management in general--and of balance of payments adjustment in particular--much more difficult. The substantial fluctuations in the world market prices of primary commodities, the sharp increases in the price of energy products, the slowdown of economic activity in the industrial countries, and the rise in real interest rates towards the end of the period, were all major contributors to a serious deterioration in the current account positions of most non-oil developing countries. At the same time, in a number of economies, domestic developments also played a significant role in exacerbating payments disequilibrium. In many non-oil developing countries, inflationary demand-management policies--combined with rigid exchange rate policies and restrictions on trade and payments--resulted in a cumulative loss of international competitiveness that gave rise to current account and overall balance of payments difficulties.

While the broad outlines of these developments have been discussed at length, the assessment of the contributions of the various factors listed above to the payments problems of developing countries has generally been based on more or less casual observation, rather than on a systematic evaluation of trends in a broad-based sample of non-oil developing countries. A number of studies, including Reichmann (1978), Dell (1980), Dell and Lawrence (1980), Killick (1981), and Khan and Knight (1982), have drawn conclusions from the "stylized facts" of developing countries' experience during the past decade, but have not subjected the available data to standard empirical tests. The purpose of this paper is to go beyond these previous studies and examine empirically the relative influence of so-called external and domestic factors on the evolution of the current accounts of non-oil developing countries during the 1970s. To do so, we specify a simple model that relates the current account to its main determinants and estimate the relationship for a broad group of 32 non-oil developing countries. The results of this exercise are then used to draw inferences about the relative contributions of various factors to the behavior of the current accounts of non-oil developing countries during the period 1973-81--a matter over which there is still considerable controversy. ^{1/} We believe this continuing controversy stems to a large extent from the absence of formal statistical testing of the basic relationships involved.

^{1/} For example, Dell (1980) argues that, for the period 1973-76, most of the deterioration in the current account balances of developing countries can be attributed to external factors, and principally to the changes in the terms of trade. This has been disputed by, among others, Killick (1981) and Khan and Knight (1982).

At the outset, it is necessary to point out certain areas that the paper does not cover, even though they are closely related to the subject at hand. First, we do not go into the important question of how the burden of external adjustment should be shared among surplus and deficit countries, or between the non-oil developing countries as a group and the industrial world. These are essentially normative questions about how the international monetary system should ensure some degree of symmetry between various countries in undertaking balance of payments adjustment. As such, they extend beyond the scope of the empirical approach adopted here. Second, the issue of the appropriate trade-off between adjustment and financing in the context of transitory versus permanent shocks to the balance of payments is only covered in passing. A number of recent papers (Nowzad (1981), Guitian (1981), and Polak (1982)) have dealt extensively with this particular topic.

The outline of the rest of the paper is as follows. In Section II we first briefly describe recent current account developments in the non-oil developing countries and discuss the behavior of the factors considered responsible for these developments. In Section III the quantitative role of the main factors is assessed on the basis of empirical tests undertaken with a pooled cross-section time-series sample of the 32 non-oil developing countries for which the necessary data are available. Section IV briefly summarizes the results and indicates their relevance for balance of payments adjustment policies in developing countries.

II. Factors Affecting Current Account Positions

The combined current account deficit of non-oil developing countries, expressed as a proportion of their exports of goods and services, rose sharply from an average of about 17 per cent during the period 1967-73 to over 20 per cent in the period 1974-81 (Table 1). During the latter period there were also considerable year-to-year fluctuations in this ratio. In the aftermath of the first oil price increase in 1973-74, there was a sizable worsening of the current account positions of non-oil developing countries, with their combined deficit reaching a peak of nearly 31 per cent of exports of goods and services in 1975. This represented a near tripling from the value registered in 1973. Favorable movements in the prices of primary commodities led to a marked improvement in the current account balance in 1976-77, but from 1977 onwards the ratio of the combined deficit to exports of goods and services continued to rise steadily at the rate of approximately two percentage points per annum. The second round of oil price increases in 1979-80 appears to have had a much smaller impact on the current accounts of non-oil developing countries than did the earlier increase; indeed, there was no important difference between the rate at which the combined current account deficit increased in the two years preceding the oil price increase (1977-78) and the two years that followed it (1980-81).

Table 1. Non-Oil Developing Countries: Current Account Balances, Terms of Trade Changes, and Foreign Real Interest Rates, 1973-81

(per cent)

	1973	1974	1975	1976	1977	1978	1979	1980	1981
Current account balance <u>1/</u>	-10.6	-24.8	-30.9	-18.1	-12.9	-15.2	-17.7	-20.4	-22.4
Terms of trade change <u>2/</u>	6.7	-5.1	-10.0	5.6	6.9	-5.4	0.8	-6.4	-8.1
Foreign real interest rate <u>3/</u>	-9.8	-19.4	9.1	-6.2	-6.1	10.7	-1.7	-0.6	6.6

Sources: IMF, World Economic Outlook, 1982; IMF, International Financial Statistics.

1/ As a per cent of total exports of goods and services.

2/ Percentage change.

3/ Eurodollar deposit rate adjusted for changes in an index of export prices of non-oil developing countries (expressed in U.S. dollars).

Four factors have typically been identified as having played an important role in current account developments in the non-oil developing countries during the 1970s. These are: (1) the deterioration in the terms of trade; (2) the slowdown of economic activity in the industrial countries; (3) the sharp increase in the level of real interest rates in international credit markets, particularly towards the end of the decade; and, (4) inadequate or insufficient domestic adjustment that led to appreciation of real effective exchange rates. This list is certainly not exhaustive, but it does cover the more important causes of the current account difficulties experienced by most non-oil developing countries. ^{1/} The four factors that we concentrate on have sometimes been divided into "external" and "domestic" categories, ^{2/} although this distinction is perhaps not particularly useful in practice, owing to the close interrelations that often exist among different factors. Nevertheless, for expositional reasons it may be convenient to view the first three factors, namely variations in the terms of trade, the growth rates of industrial countries, and foreign real interest rates, as "external", in the sense that these are effectively exogenous to the typical non-oil developing country. By analogous reasoning, movements in real effective exchange rates can be treated as a "domestic" or endogenous factor to the extent that domestic economic policies influence both the nominal exchange rate and domestic factor and output prices. We now turn to a brief discussion of each of these external and domestic factors.

1. Terms of trade

The terms of trade of non-oil developing countries taken as a group fell at an average rate of about 2 per cent per year over the period 1973-81 (Table 1). ^{3/} During the previous ten-year period (1963-72) the terms of trade had improved at an average rate of one half per cent per year, so that the decline that began in 1973 represented a distinct change in the trend. A considerable part of the terms of trade deterioration in the 1970s can be attributed to the rise in import prices that resulted from the fourfold jump in the world price of energy products in 1973-74 and the further substantial increase that occurred in 1979-80. In this connection, Cline (1980) for example found that, whereas 15 of the 25 non-oil developing countries in his sample experienced a deterioration in their terms of trade between 1971-72 and 1975, 19 among these countries showed an improvement in their terms of trade once the cost of oil imports was excluded from their import price data.

^{1/} We abstract, therefore, from the effects of domestic supply shocks, e.g., droughts and other weather-related phenomena, rising protectionism in the export markets of developing countries, etc.

^{2/} See Dell (1980) and Killick (1981).

^{3/} The terms of trade are defined in the customary manner as the ratio of the price of exports to the price of imports.

The declines in the terms of trade that occurred after each episode of oil price increases were broadly similar--7.6 per cent (1974-75) and 7.3 per cent (1980-81). In both cases favorable movements in the prices of primary commodities coincided with the oil price increase and helped to mitigate part of the adverse effect. For example, the price index of non-oil primary commodities rose by 28 per cent in 1974, and during 1979-80 it registered an average increase of about 12 per cent per year. While there were years when commodity prices fell, i.e., 1975 (by 18.2 per cent), 1978 (by 4.7 per cent), and 1981 (by 14.8 per cent), the average annual rate of increase was nearly 12 per cent for the period 1973-81 as a whole. Furthermore, it is possible that the increase would have been even larger had growth rates in industrial countries not decelerated perceptibly towards the end of the 1970s. Evidence on the association between economic activity in industrial countries and prices of primary products has recently been provided by Goreux (1980) in a study of the IMF's compensatory financing facility. For a sample of 37 primary commodities, Goreux found that, over the period 1962-79, fluctuations in primary commodity prices could be explained to a large extent by cyclical movements in economic activity in industrial countries and by world inflation. The empirical results indicated that each one per cent change in the business cycle index for industrial countries tends to be associated with a 2.2 per cent change in the same direction in the prices of primary commodities.

A point worth mentioning in the context of these terms of trade developments is that the predicament of non-oil developing countries was not unique. The terms of trade of industrial countries on average fell by more (2.3 per cent per year) during 1973-81 than they did for non-oil developing countries (1.7 per cent per year). This is perhaps not too surprising, in view of the fact that petroleum products represent a relatively larger share in total imports of industrial countries than they do in total imports of non-oil developing countries. Of course it is true that, for a variety of reasons, industrial countries were in a better position to adjust to the deterioration of their terms of trade than were non-oil developing countries, so that the impact on the latter group was more severe. The only gainers in the 1970s were, as one would expect, oil exporting countries who as a group experienced an average improvement of about 25 per cent per annum in their terms of trade.

Broadly speaking, there appears to be sufficient synchronous movement in the current account ratios and terms of trade changes during the period under consideration to allow one to conclude that there is an association between the two variables (Table 1). While a more detailed examination of this relationship is undertaken later in the paper, it may be useful to present a preliminary notion of the statistical nature of the relationship on the basis of the aggregative data shown in Table 1. A simple regression of the annual change in the combined current account position of the non-oil developing countries (expressed as a proportion of their exports

of goods and services (ΔCA) on the percentage change in their terms of trade ($DTOT$) and a linear time trend (T) yields the following results: ^{1/}

$$(1) \quad \Delta CA_t = -6.352 + 0.851 DTOT_t + 1.237 T$$

(1.51) (2.66) (1.57)

$$R^2 = 0.408; \quad D.W. = 1.65$$

While these estimates are based on a very small number of observations (9), it is nevertheless worth noting that the coefficient measuring the effect of terms of trade changes on the change in the current account ratio has the expected positive sign and is significantly different from zero at the 5 per cent level. These results are suggestive, although they cannot be treated as definitive.

2. Slowdown of growth in industrial countries

Apart from the indirect effect working via changes in the terms of trade of non-oil developing countries, growth in industrial countries also has a more direct impact on current accounts through its influence on the exports of non-oil developing countries. There was a pronounced decline in the average growth rate of real GNP of industrial countries between the period 1963-72 (4.7 per cent) and the period 1973-81 (2.8 per cent); for the subperiod 1979-81 the average annual growth rate was only 2 per cent. Growth in the volume of exports of non-oil developing countries also fell, but the decline here was a relatively modest one, from 6.7 per cent in 1963-72 to 5.9 per cent in 1973-81. Given the empirical results of Goldstein and Khan (1982) that a one per cent change in real GNP in industrial countries is associated with a 2.3 per cent change in the volume of exports of non-oil developing countries, ^{2/} the reduction of less than one percentage point in the growth of exports in the 1970s is somewhat surprising. Whereas the average growth rate of imports of industrial countries fell quite sharply, from 9 per cent (1963-72) to 3.6 per cent (1973-81), this was apparently not reflected in a proportionate decline in export growth for non-oil developing countries as a group.

Goldstein and Khan (1982) have argued that during the 1973-81 period two main factors helped to minimize the consequences of this slower growth of industrial countries' imports on the exports of non-oil developing countries. First, non-oil developing countries, particularly those with a relatively higher proportion of manufactures in their total exports,

^{1/} T-values are shown in parenthesis below the coefficients. R^2 is the adjusted coefficient of determination, and D.W. is the Durbin-Watson test statistic.

^{2/} See Goldstein and Khan (1982), Table 16, page 21.

were able to capture a larger share of the industrial countries' slow-growing import volume. The process was assisted in the beginning of the period by the granting of tariff preferences, but was then to some extent reversed later, as protectionist pressures rose in the industrial world. Second, non-oil developing countries were able to increase their total exports (in volume terms) faster than their exports to industrial countries by directing a larger share to oil exporting countries, which were becoming increasingly important markets for exports of manufactures and primary products during the period.

3. Foreign real interest rates

The third major external factor affecting the current accounts of non-oil developing countries, particularly during the late 1970s, was the sharp increase in service payments on external debt. Debt service had not been a very serious problem for many non-oil developing countries during most of the period prior to 1975, because conditions in the international credit markets were generally favorable and a large proportion of outstanding debt, particularly for the low income countries, had been lent by foreign official institutions during the 1960s at fixed concessionary rates. As a result, the effective interest rates on external debt, when adjusted by the increase in their export prices, yielded real interest rates that were low or negative for many non-oil developing countries during this period (Artus (1982)). This conclusion is substantiated by the data on foreign real interest rates presented in Table 1. As can be seen, for most of the period 1973-77 foreign real interest rates were decidedly negative and averaged about -6.5 per cent.

In 1978 this picture changed quite drastically. Owing to adverse terms of trade shocks and weakness in export market growth, the non-oil developing countries' stock of external debt, particularly short-term debt, rose sharply. In addition, interest rates in international capital markets were climbing to post-war highs at a time when developing countries' export prices began to weaken. Real interest rates on external debt became positive and averaged around 4 per cent per year during 1978-81, a turnaround of some 10.5 percentage points (Table 1). The high real interest rates that have generally prevailed since 1978 exerted their strongest impact on the debt service burdens of those countries whose stocks of external debt were relatively large, and these were obviously the countries that had already experienced substantial current account deficits and resorted to foreign financing in earlier years. From this point of view, the recent rise in debt service burdens can also be seen at least partly as the lagged effect on the current account of the other factors that are being discussed in the present paper.

4. Real effective exchange rates

Domestic demand pressures have historically been an important factor affecting current account developments in non-oil developing countries. Evidence on this has been provided by Reichmann (1978), Dell and Lawrence

(1980), and Killick (1981). For example, in examining the causes of balance of payments problems for 21 countries that had stand-by arrangements with the IMF during the period 1973-75, Reichmann (1978) concluded that overexpansionary demand policies were the major factor in 15 of these cases. On the other hand, Dell (1980) has argued that over a similar period (1973-76):

"... demand pressures emanating from domestic economies were far less important, relative to other causes of changes in the trade balance, than had previously been the case." (page 834).

Excess domestic demand is normally reflected in domestic inflation, and if the authorities are not able or willing to alter the nominal exchange rate to keep pace with the differential between domestic and foreign inflation rates, 1/ the real exchange rate will appreciate. 2/ Inflation was endemic in most non-oil developing countries during 1973-81, averaging about 29 per cent per year for the group, compared to about 12 per cent in the period 1963-72. More importantly, there was a tendency for exchange rate changes to lag behind domestic price level changes that were in excess of those being experienced by trading partners. This would imply the existence of a positive relationship between domestic demand pressures, inflation and the real effective exchange rate, and such a link has been documented by Aghevli (1982) for a number of Asian countries, and by Khan and Knight (1982) and IMF (1982) for broader groups of developing countries. The behavior of the real exchange rate, being the outcome of changes in the nominal exchange rate and domestic inflation, essentially reflects the way in which exchange rate policy and demand-management policies are mutually coordinated.

An increase in the real effective exchange rate is clearly a fundamental determinant of the current account since, other things equal, it tends to raise the demand for imports and to reduce foreign demand for exports. Furthermore, if the price of exports is fixed exogenously in world markets while domestic nominal wages rise in line with domestic prices, an appreciation of the real exchange rate induces a cost squeeze on the exporting sector that reduces the supply of exportables. On the basis of these effects, it seems legitimate to view movements in the real effective exchange rate as a useful summary indicator of the domestic factors that would typically be expected to influence the current account. At the same time, it should also be kept in mind that external factors,

1/ Allowing for any equilibrium changes in national price levels. See Frenkel and Mussa (1981).

2/ For purposes of this exercise the real exchange rate is defined as the home country's consumer price index relative to an import-weighted average of consumer price indices in partner countries, adjusted for the nominal exchange rate.

such as changes in the terms of trade, may also exert a systematic effect on the real effective exchange rate, so that it is not always a reflection of domestic factors alone. ^{1/} It was this type of situation that we had in mind when we earlier alluded to the practical difficulties of making a clear-cut distinction between so-called external and internal factors.

III. Empirical Estimates of the Factors Affecting Current Account Balances

The analysis so far has been both descriptive and aggregative in nature. We now turn to a more systematic empirical examination of the respective roles played by the four factors in the evolution of current account positions. For this purpose we look at the evidence from 32 non-oil developing countries for which the relevant published data are available during the period 1973-80. ^{2/} Our purpose is to test the influences of each of the factors listed above on the current accounts of this group of non-oil developing countries. To do so, we formulate and estimate a simple model of the current account that introduces the four factors as the principal explanatory variables.

The basic current account equation that we consider has the following general form:

$$(2) CA/X = f(TOT, DYIC, RRI, RER, T)$$

where,

CA = current account balance (excluding official transfers);

X = nominal exports of goods;

TOT = terms of trade;

DYIC = growth of real GNP in industrial countries;

RRI = foreign real interest rate;

^{1/} For example, a worsening of the terms of trade owing to an increase in import prices would raise the domestic price level. If domestic policies, including exchange rate policy, were not changed, the real effective exchange rate, as we have defined it, would tend to appreciate.

^{2/} These 32 countries are: Bolivia, Brazil, Burma, Colombia, Cyprus, Dominican Republic, Ecuador, Ethiopia, Fiji, Greece, Guyana, Honduras, Israel, Jamaica, Jordan, Kenya, Korea, Malawi, Malaysia, Malta, Mauritius, Pakistan, Panama, Paraguay, Philippines, Rwanda, South Africa, Sri Lanka, Suriname, Thailand, Turkey and Yugoslavia. Since the requisite published data are not available for all these countries for 1981, the period of coverage was reduced to 1973-80.

RER = real effective exchange rate index; and,

T = linear time trend.

Based on the discussion of Section II, we would expect that an improvement in the terms of trade or an increase in the growth rates in industrial countries would result in an improvement of the current account, while a rise in the foreign real interest rate or an appreciation of the real effective exchange rate would tend to worsen it. ^{1/} The time trend variable is assumed to capture the effects of other factors, both external and domestic, on the current account. ^{2/}

In a sense, equation (2) can be viewed as an unrestricted reduced-form relationship that is derived in a straightforward manner from a structural model of the components of the current account--imports, exports and net service payments. While it could certainly be argued that this formulation is excessively simple and may not include all the relevant determinants of the current account balance, the estimates of equation (2) should still yield useful information on the specific question that we are concerned with here, namely the relative importance of the various specified factors. For estimation purposes, the following linear approximation of (2) was utilized:

$$(3) \quad (CA/X)_t = a_1 \log TOT_t + a_2 DYIC_t + a_3 RRI_t + a_4 \log RER_t + a_5 T$$

Certain restricted versions of (3) were also estimated, by setting $a_2 = a_3 = a_5 = 0$, $a_2 = a_5 = 0$, and $a_5 = 0$, respectively. The first restricted form (3.1) tests for the effects of terms of trade and real effective exchange rate changes only; the second (3.2) adds in the effect of variations in foreign real interest rates; the third (3.3) includes all the variables other than the time trend; and the final equation (3.4) is the most general. These four equations should be sufficient to isolate the factors that have exerted the largest influence on the dependent variable during the sample period.

The equations corresponding to (3) were estimated using pooled time-series cross-section data for the sample of 32 non-oil developing countries. The data for each country comprised eight annual observations

^{1/} The variable X is used only to scale the current account balance to make it comparable across countries. In order to avoid problems associated with exchange rate conversions, we chose not to use domestic income as the scale variable.

^{2/} Presumably this would also include the effects of rising protectionism over the sample period.

corresponding to the period 1973-80. ^{1/} Allowance was made for cross-country differences in the ratio of the current account to exports during the sample period by the addition of 32 country dummies in the specification. It was also explicitly assumed that the parameters (a_1, \dots, a_5) were the same across countries, so that no slope dummies were introduced. As a consequence, the estimates of the equations can be interpreted as being relevant for an "average" or "typical" non-oil developing country, rather than applying to any specific country.

The results for the various estimated versions of the equation are presented in Table 2. The variables representing the terms of trade and the real effective exchange rate consistently enter all specifications with the expected signs, and the coefficients are significantly different from zero at the 5 per cent level. Despite the fact that the foreign real rate of interest is considered to have become relevant only towards the end of the period, adding this variable into the equation results in a significant improvement in the goodness-of-fit (equation 3.2). Ideally, one would wish to scale the foreign real interest rate faced by each non-oil developing country by its outstanding stock of foreign debt, in order to reflect changes in interest payments more accurately. ^{2/} Even without this modification, however, the interest rate coefficient has a negative sign and is statistically significant at the 5 per cent level. ^{3/}

Changes in the growth rate of industrial countries also appear to induce changes in the current account ratio, but the effect is not as strong as in the case of the other variables. Although the coefficient of this variable has the expected positive sign, it is significant only at the 10 per cent level (equations 3.3 and 3.4). This probably reflects the fact that non-oil developing countries were partially successful in offsetting the direct effects of the slowdown in industrial countries by curtailing imports and, to a lesser degree, by increasing their exports to other regions. Also, since the indirect effect of a change in industrial country growth performance on the non-oil developing countries' terms of trade is already captured explicitly in the estimate of a_1 , the weak direct effect shown by the estimate of a_2 should not be taken as an indication of the total effect exerted by variations in industrial country growth rates on the current account balances of non-oil developing

^{1/} This yielded 256 observations for each of the variables. The basic data are obtained from Research Department data files and IMF, International Financial Statistics. The variables CA and X are in current U.S. dollars; TOT is the ratio of the unit value of exports to the unit value of imports, both expressed in terms of U.S. dollars; RRI is the three-month Eurodollar deposit rate adjusted for changes in the individual country's export price index; and RER is calculated using 1977 import weights and the relevant consumer price indices.

^{2/} This was not possible due to the absence of data on total stocks of foreign debt for the individual countries in the sample.

^{3/} This could reflect the fact that the stock of foreign debt has grown smoothly over the period, so that most of the variations in interest payments result from changes in the interest rate on this debt.

Table 2. Results: Current Account Balances, 1973-80 $\bar{I}/$

Equation Number	Terms of Trade logTOT	Growth in Industrial Countries DYIC	Real Foreign Interest Rate RRI	Real Effective Exchange Rate logRER	Time Trend T	R ²	S.E.E.
3.1	0.768 (6.96)			-0.614 (7.82)	0.901	0.275	
3.2	0.563 (4.70)		-0.450 (3.80)	-0.569 (3.22)	0.907	0.267	
3.3	0.521 (4.29)	0.015 (1.86)	-0.470 (3.98)	-0.514 (2.88)	0.908	0.266	
3.4	0.512 (4.25)	0.013 (1.62)	-0.408 (3.38)	-0.598 (3.29)	-0.017 (2.14)	0.910	0.264

$\bar{I}/$ T-values are presented in parentheses below the coefficients. R² is the adjusted coefficient of determination, and S.E.E. is the standard error of the estimated equation.

countries. Clearly, the four factors that we have considered are not the only ones that are important since the time trend variable, which is introduced to represent those influences not explicitly included in the specification, yields a coefficient that is significant at the 5 per cent level. The negative estimated coefficient of the trend indicates that these miscellaneous factors exerted a systematic negative influence on the current account balances of the non-oil developing countries throughout the period 1973-80. The most general version of the estimated equation (3.4) explains a large proportion of the variance in the current account ratios of our sample. All factors have the expected signs and, with the exception of growth in industrial countries, they are statistically significant at the 5 per cent level.

While the fit of the model for the entire sample is quite good, it would be useful to ascertain how well equation (3.4) does in explaining the current account ratio for each individual country. One simple way of doing this is to obtain country-specific measures of goodness-of-fit by calculating the correlation between the actual and fitted values of the current account to exports ratio using the observations pertaining to each country in the pooled sample. The purpose of this is to judge the extent to which the overall conclusions are influenced by the stringent simplifying assumption used to obtain the pooled-sample estimates; namely, that a given change in one of the explanatory variables exerts the same quantitative impact on the current account ratio for each of the 32 countries. The relevant correlation coefficients, calculated from the results of equation (3.4), are presented in Table 3.

The results of this exercise are quite interesting in that they suggest only a few cases where the simplifying assumption referred to above is likely to result in serious in-sample prediction errors. In three countries--Malta, Panama, and Suriname--the correlation coefficients are obviously poor, but for the other 29 countries the correlation coefficient is generally above 0.5, and in some it is over 0.9. By and large one can conclude that, despite the restriction that the slope coefficients are the same across countries, the relationship that we have postulated does not do badly in explaining the movements in the current account to exports ratio for the countries in our sample. It is possible that the fit could have been improved if we had permitted the basic economic parameters to vary across countries, but even without such an extension the results turned out to be reasonably satisfactory, both on an average basis for the group of non-oil developing countries, and for the individual countries making up the sample.

If we treat the results as relevant estimates for the "average" non-oil developing country in our sample, they suggest that this individual country was not completely powerless to adjust to exogenous shocks, since the authorities could have used an appropriate combination of demand management and exchange rate policies to counter the effects of adverse changes in the other variables. For example, the estimates in Table 2 suggest that, ceteris paribus, it would require a depreciation of about

Table 3. Correlation between Actual and Predicted
Values of Current Account Balances, 1973-80

<u>Country</u>	<u>Correlation Coefficient</u>
Bolivia	0.707
Brazil	0.779
Burma	0.658
Colombia	0.654
Cyprus	0.704
Dominican Republic	0.807
Ecuador	0.875
Ethiopia	0.800
Fiji	0.714
Greece	0.495
Guyana	0.489
Honduras	0.758
Israel	0.932
Jamaica	0.764
Jordan	0.552
Kenya	0.838
Korea	0.723
Malawi	0.744
Malaysia	0.704
Malta	0.207
Mauritius	0.913
Pakistan	0.862
Panama	-0.281
Paraguay	0.985
Philippines	0.881
Rwanda	0.755
South Africa	0.700
Sri Lanka	0.898
Suriname	-0.284
Thailand	0.676
Turkey	0.526
Yugoslavia	0.722

0.9x per cent in the real effective exchange rate in order to keep the current account ratio unchanged in the face of an x per cent deterioration in the terms of trade. This assumes, of course, that the authorities are in a position to alter the real exchange rate by changing the nominal rate, an issue on which there is considerable dispute on both the theoretical and empirical levels. 1/ For example, it could be that, owing to widespread indexation, this is not a feasible policy for some countries since domestic factor prices would tend to "snap back" immediately following a devaluation, thereby leaving the real exchange rate unchanged. While the speed of this "pass-through" effect of a devaluation onto the domestic price level depends on the stance of economic policies as well as on the price responsiveness of domestic factor and product markets, the available evidence--admittedly for industrial countries--on the pass-through effect does not support the thesis of instantaneous reaction. 2/ Since there is no reason to believe that this conclusion does not carry over to the case of the developing countries, particularly if appropriate supporting policies are implemented domestically, it seems reasonable to conclude that at least some portion of the current account effects of adverse international developments could be offset by a combination of a more flexible exchange rate policy and tighter demand-management policies designed to keep domestic inflation in check.

Assuming that appropriate demand-management policies were in place during the 1970s, we can also calculate, approximately, the average depreciation in the real effective exchange rate that would have been required for the typical non-oil developing country to maintain equilibrium in its current account over this period. On the basis of the estimates in Table 3 and the average changes in the terms of trade, growth in industrial countries and the real foreign interest rate for all non-oil developing countries over the period 1973-81, the average depreciation necessary would have been a little over 2-1/2 per cent per year. 3/ While this is certainly not a negligible real adjustment for a low-income country, it would seem to be preferable to the alternative of failing to adjust or, worse still, allowing the real effective exchange rate to appreciate and being forced to undergo highly deflationary and disruptive adjustment at a later stage.

1/ In this context one has to be careful to make a distinction between using nominal exchange rate adjustment to restore the equilibrium real exchange when it has moved out of line as against trying to change the equilibrium rate.

2/ See Goldstein and Khan (1983).

3/ The method of calculation is simply:

$$\begin{aligned}\overline{\Delta \log RER_t} &= (\overline{a_1 \Delta \log TOT_t} + \overline{a_2 \Delta DYIC_t} + \overline{a_3 \Delta RRI_t}) / \overline{a_4} \\ &= (0.512(-1.6) + 0.013(-0.6) - 0.408(1.8) - 0.017) / 0.598 \\ &= -2.64\end{aligned}$$

The data for the variables are taken from Table 1. A bar over a variable indicates the average annual rate of change over the period.

It should be stressed that, strictly speaking, the above estimate is relevant only for the case of an individual country, and cannot be applied to the group as a whole. An attempt by a large group of non-oil developing countries to depreciate their real exchange rates simultaneously would be likely to induce a deterioration in their terms of trade that would at least partly offset the positive effects of the exchange rate action. This raises an interesting policy dilemma faced by developing countries as a group: an exchange rate change will tend to be more effective for an individual developing country if its competitors refrain from similar action; obviously the beneficial effects of such a policy would be severely limited, or even eliminated entirely, if it were undertaken simultaneously by a large group of developing countries.

IV. Conclusions

In view of the widespread interest in the balance of payments problems faced by non-oil developing countries during the 1970s and their policy implications, the paucity of empirical work on this subject is quite surprising. This paper has attempted to further this discussion by examining the direct quantitative relationship between variations in the current account position and a set of factors that were assumed to be its main determinants, using pooled cross-section time-series analysis for a sample of 32 non-oil developing countries during the period 1973-80. In summary, our empirical tests support the hypothesis that external factors (as represented by the secular decline in the terms of trade, the slowdown of economic growth in industrial countries, and the increase in foreign real interest rates) as well domestic factors (captured by the appreciation in real effective exchange rates) were relevant in explaining the deterioration of current accounts of non-oil developing countries. Thus the empirical results suggest the importance of exercising circumspection in attributing the current account imbalances experienced by non-oil developing countries during the 1970s to any single cause.

It has sometimes been asserted that the nature of a balance of payments stabilization program depends on the origin, or proximate cause, of disequilibrium. This view asserts that if a payments deficit is the result of excessively expansionary demand-management policies the appropriate cure involves domestic demand restraint, whereas if the problem is caused by exogenous factors, such as a fall in the terms of trade, no adjustment is necessary and foreign financing should be provided. Since our results indicate that both types of factors were at work during the 1970s, and as it is exceedingly difficult to separate the relative contributions of domestic and external factors to current account instability in a developing country, particularly in any ex ante sense, it would seem to make more practical sense to adopt an alternative view that has often been implicit in the work of the Fund. In this context, the question of whether a deficit ought principally to involve adjustment or financing should depend on whether the imbalance is viewed as permanent or temporary,

irrespective of the origin of this imbalance. Such an approach has been stressed by, among others, Nowzad (1981), Guitian (1981), and Polak (1982). If developments that give rise to balance of payments difficulties are expected to be short-lived and self-reversing, they may involve a need for temporary financing; permanent changes, on the other hand, necessarily require adjustment of the basic supply-demand balance in the economy.

While one can argue that the slowdown in growth in industrial countries and the sharp rise in foreign real interest rates have been transitory phenomena and are likely to be reversed in the near future, the deterioration in the non-oil developing countries' terms of trade since 1974 appears to have been more in the nature of a long-term change. The terms of trade fell in five of the eight years 1974-81, and a further sharp decline of close to 12 per cent is estimated to have taken place in 1982. Some financing of the deficits created by terms of trade changes did occur, but the situation also called for a substantial adjustment effort. In terms of the framework of this paper, evidence of insufficient adjustment in a number of developing countries is seen in the way their real effective exchange rates appreciated during this period. For individual countries, suitable adjustment would have meant pursuing a more flexible exchange rate policy, supplemented by the application of a broad range of demand-management policies. Some countries, notably those among the group that are classified as major exporters of manufactures or "newly industrialized countries," did adopt such a strategy with considerable success. However, the beginning of the 1980s also found a large number of non-oil developing countries experiencing increased current account deficits resulting not only from adverse international developments, but also from overvaluation of their currencies that had taken place in the previous decade.

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