IMMEDIATE ATTENTION

SM/87/124

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June 2, 1987

To: Members of the Executive Board

From: The Secretary

Subject: World Economic Outlook: Staff Studies - The Import-Intensity of Output Growth in Developing Countries, 1970-85

There is attached for the information of the Executive Directors a staff study on the import-intensity of output growth in developing countries, 1970-85. This paper, together with the study on potential output in major industrial countries (SM/87/40, 2/12/87) and the study on export diversification in developing countries (SM/87/93, 4/23/87), is intended for eventual publication in the "World Economic and Financial Surveys" series.

If Executive Directors wish to make comments prior to publication, comments should be addressed to Mr. Crockett (ext. 8982) by the close of business on Tuesday, June 23, 1987.

Mr. Mirakhor (ext. 7405) or Mr. Montiel (ext. 7408) is available to answer technical or factual questions relating to this paper.

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INTERNATIONAL MONETARY FUND

World Economic Outlook: Staff Studies

The Import-Intensity of Output Growth in Developing Countries, 1970-85

Prepared by the Research Department
(In consultation with other Departments)

Approved by Jacob A. Frenkel

May 28, 1987

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The Import-Intensity of Output Growth in Developing Countries, 1970-85

I. Introduction

The sharp reduction in private capital flows to indebted developing countries since mid-1982 has required a rapid adjustment of domestic absorption relative to income in these countries. The prospect that the supply of external financing will continue to be limited over the medium term implies that the large adjustment in the trade balance achieved by many developing countries over the last four years will to a large extent need to be sustained. Meeting this objective will involve some combination of stimulating exports and restraining imports. The ability to raise export growth depends both on external factors, such as the cyclical behavior of the world economy and the strength of protectionism in external markets, and on domestic factors, such as internal policies and supply elasticities. For a variety of reasons--both external and internal--the brunt of the adjustment burden over the past few years has fallen on imports. In view of the likely magnitude of the trade balance adjustment that must be sustained over the medium term and of current prospects for growth in world markets, there is little likelihood at present that the volume of imports in indebted developing countries will sustain growth at pre-1982 rates over the foreseeable future.

It therefore becomes important to examine the probable consequences of this reduction in import volume for the level of domestic output. Adjustment requires that real absorption be reduced relative to real output. The requisite gap between income and absorption can in principle be generated at any level of output, but sound economic management requires that this be done at a level as close to full employment as possible. This task is complicated by the existence of structural economic links between the volume of imports and the level of real output. The perceived strength of these links is such that, in the absence of formal econometric models, analysts of future prospects for indebted developing countries typically rely, in projecting future output growth rates, on rules of thumb that posit a fixed link between output growth and the rate of expansion of import volume, based on the average relationship between these variables in the past (see IMF (1986), Cline (1984), and Bacha (1986)).

The purpose of this paper is to assess the usefulness of such rules of thumb. More formally, it is to investigate the historical stability of the relationship between the growth rate of imports and that of output--a relationship henceforth referred to as the "import intensity of output growth"--for various groups of developing countries that figure prominently in the Fund's World Economic Outlook exercise and to account for the variation in that relationship. The findings of this study are intended

to help in formulating judgments about the probable relationship between these growth rates over the medium term. The key issue is whether the link between import volume growth and output growth is sufficiently flexible to justify the expectation that a moderation in the rate of growth of imports relative to pre-1982 experience will be compatible with a resumption of output growth at rates approaching those attained before the onset of the debt crisis. It is important to emphasize that the study is not directly concerned with policies to promote growth, but rather with the narrower question of whether it is reasonable to rely on the pre-1982 relationship between the growth rates of imports and of real output in projecting the expansion of imports associated with a given future path for the growth rate of real output.

The paper is organized in four sections. The next section presents an overview of the historical relationship between import volume growth and the growth of output for various groups of developing countries. This section serves as background for the later discussion by establishing some empirical regularities between import and output growth rates. A theoretical discussion in Section III is intended to identify exogenous and policy variables that may cause variations in the simple bivariate link between import volume growth and the expansion of real output and that may potentially account for the empirical regularities identified in Section II. The role of these variables is tested empirically for both individual countries and for country groups in Section IV, using a disaggregated import data set constructed for this purpose. A concluding section offers some thoughts on the probable evolution of the same variables over the medium term and the implications for medium-term changes in the import intensity of output.

II. Imports and GDP Growth: 1967-85

Although the historical data on the growth of GDP and imports of developing countries are strongly suggestive of a positive association between the two growth rates over the last two decades, there has been considerable variation in the relationship across country groupings as well as in the year-to-year experience of individual groups. Moreover, this relationship behaved quite differently during the 1982-85 period than during 1967-81.

1. Developments during 1973-81

For the developing countries as a whole, the growth rates of both imports and GDP during both the 1967-72 and 1973-81 periods were quite high by the standards of the more recent past. While the growth rate of GDP was higher during 1967-72 than over the period 1973-81, imports grew at a faster rate in the latter period (Table 1). The average growth rate

of imports during 1973-81 exceeded that of real GDP by almost 4 percentage points (Table 1), reflecting especially rapid growth in 1973 and 1974 (Appendix Table 10).

For capital-importing countries, the rate of expansion of imports fell short of that for all developing countries during both the 1967-72 and 1973-81 subperiods, but particularly in the period after the first oil shock, when the imports of capital-exporting oil exporters increased rapidly. Among the capital importers, import growth was concentrated in the subgroup of market borrowers (Table 1). It may be noted that countries without debt-servicing problems exhibited markedly higher growth rates of imports during both 1967-72 and 1973-81 than those which subsequently developed such problems, reflecting in part the faster growth in export value experience by this group. 1/

For the capital-importing countries as a whole, the pattern of output growth roughly matched that of import growth, with rapid expansion during the beginning of the period followed by a one-year slowdown in mid-1970s and immediate recovery to high and stable growth rates for the remainder of the period, during which import growth rates consistently exceeded output growth rates. This pattern was similar for broad groupings classified by financial criteria, but not for the 15 heavily indebted countries, whose import growth rate was quite high for every year during the period; the small low-income countries, whose imports displayed the largest year-to-year variation during this period as compared with other groups (Appendix Table 10); and sub-Saharan Africa, where growth rates of imports and GDP declined sharply in 1973-81 as compared with the 1967-72 period, and there were also considerable annual fluctuations in import growth.

An important aspect of the behavior of output and imports during the 1967-81 period was the relative fluctuations exhibited by the growth rates of these two variables. The data in Table 1 show that during the 1973-81 period import growth accelerated for most groups, in spite of the slight slowdown in output growth, and import growth was much more volatile than was growth of output. The stability of the relationship between these variables may be examined by considering the stability of the year-to-year differences between the growth rates of imports and output. 2/ If a strong linear relationship exists between the two variables, one would expect to see this reflected in a stable difference between their growth rates, at least during periods of steady output growth. For the developing countries as a whole, the two growth rates had an annual average difference

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1/ See IMF (1986), p.91

2/ This is, of course, simply the first difference of the log of the import-to-output ratio, i.e., it measures year-to-year changes in import intensity of output.

Table 1. Developing Countries: Average Growth of GDP and Imports

	Growth Rate of GDP 1/ (In Percent)		Growth Rate of Imports 2/ (In Percent)		Coefficient of Variation	
	1967-72	1973-81	1967-72	1973-81	GDP	Imports
Developing countries	6.1	4.9	7.0	8.7	0.4	0.5
By region						
Africa	5.8	3.0	5.6	7.2	0.8	0.8
Asia	5.2	6.0	6.0	9.8	0.6	0.7
Europe	6.2	4.5	9.3	4.5	0.2	1.2
Middle East	9.5	4.4	9.3	15.4	0.3	0.8
Western Hemisphere	5.9	5.0	7.1	6.2	0.2	0.9
By financial criteria						
Capital importing countries	5.7	5.1	6.9	7.3	0.4	0.6
Market borrowers	6.5	5.1	8.6	8.4	0.3	0.5
Official borrowers 1/	3.2	3.6	2.8	3.4	0.6	1.4
Countries with recent debt-servicing problems	5.5	4.5	5.9	6.2	0.4	0.9
Countries without debt-servicing problems	5.8	5.6	7.7	8.4	0.5	0.7
By miscellaneous criteria						
Fifteen heavily indebted countries	6.1	4.8	7.2	8.2	0.4	0.7
Small low-income countries	3.0	3.5	1.2	2.4	0.8	3.4
Sub-Saharan Africa	4.6	2.4	4.7	2.5	0.3	2.0

Source: Appendix Table 10.

1/ GDP is real gross domestic product.
2/ Imports are expressed in real terms deflated by import price index.

of 0.9 percentage point between 1967 and 1972 and 3.8 percentage points for the 1973-81 period (Appendix Table 10), indicating a marked increase in the import intensity of output growth. Moreover, there was also a large year-to-year variation in this measure between 1973 and 1981 (Appendix Table 10).

The top panel of charts 1-6 displays the behavior of the two growth rates during the 1967-81 period for the developing countries as a whole and five key subgroupings, while the bottom panel shows the difference between the two growth rates. It is clear from the top panels of charts 1-6, that the two growth rates move fairly closely together during 1967-81. The bottom panel, however, suggests two observations. First, since--except for 1975--the curves in this panel generally lie above the horizontal axis, the period 1973-81 exhibits a substantial "import bulge"--i.e., as indicated above, the growth of output became more import-intensive. Second, the shape of the curve in the bottom panel mirrors that of the import growth curve in the top panel, suggesting that the difference in the growth rates is dominated by the variability in import growth. In fact, the coefficient of variation of the import growth rate was larger than that for GDP growth for all country groupings except Africa (Table 1).

A third "stylized fact" about the import intensity of output growth in developing countries is that during the 1973-81 period, the difference between import and output growth rates tended to peak during and immediately following peaks in output growth rates, and to reach a trough during or immediately following a trough in the growth rate of real output (Charts 1-6, Appendix Table 10). For almost all groups considered, import growth exceeded output growth by the largest margin during 1973-74 and fell short by the greatest amount in 1975 and 1976, indicating both correlation between the two growth rates and the more marked fluctuation in import growth rates.

In an effort to systematize the historical relationship existing between imports and output, the growth rate of real imports was regressed on the growth rate of real GDP for the period 1967-81. 1/. The results of the regression for the developing countries as a whole and for various country groupings are reported in Table 2. The excess of import growth over output growth during this period shows up in the generally positive constant terms. A positive correlation between these variables is

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1/ It is not the intention to suggest that these regressions are either representative of some causal relationship between the growth of imports and that of GDP or an attempt to estimate import demand functions. They are only used to summarize the correlation that existed between the two growth rates in the period under consideration and used to obtain a rough estimate of import shortfalls using the group-specific "rules of thumb" implied by the regressions.

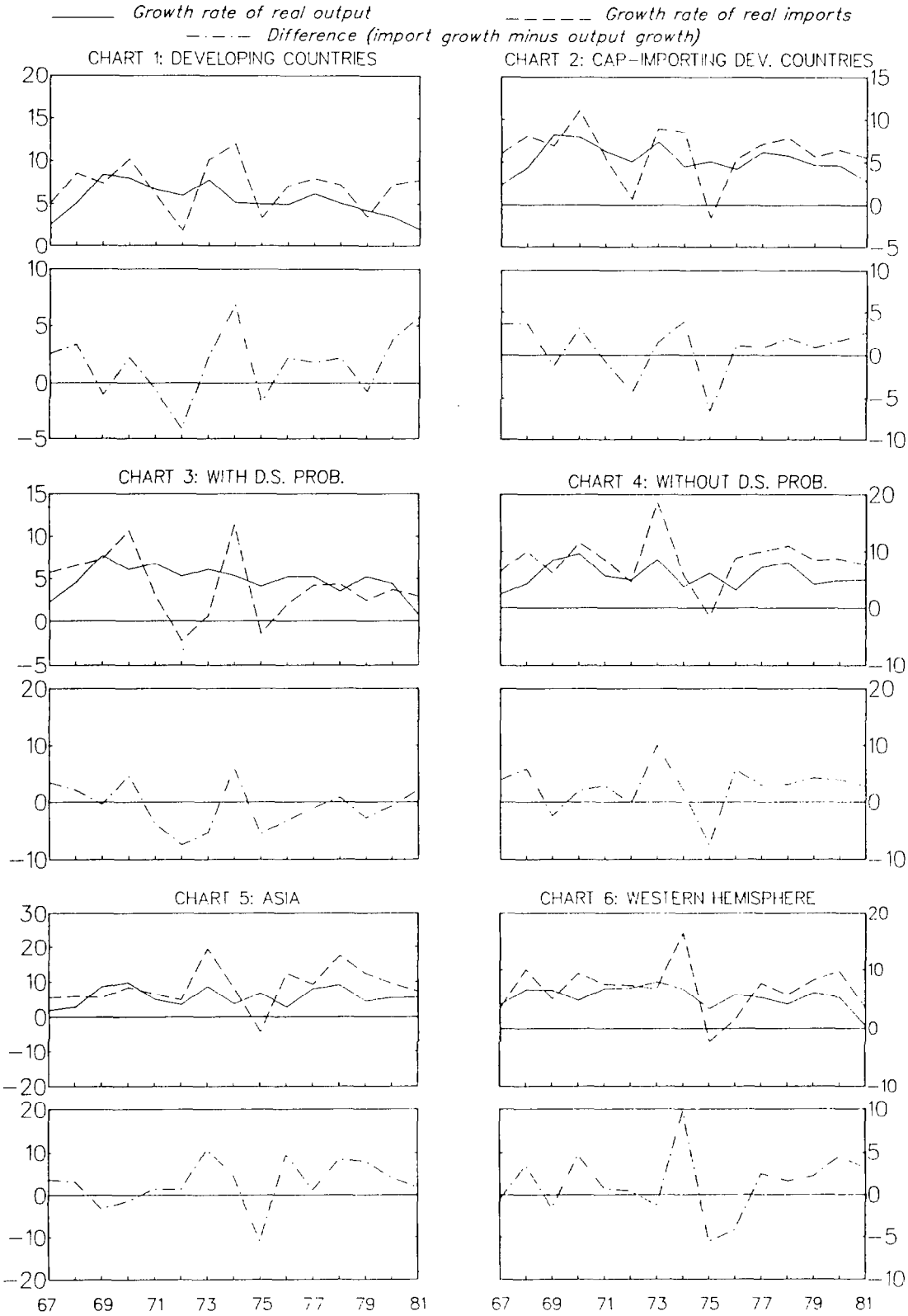
Table 2. Developing Countries: Relationship Between Growth of Real Imports and Growth of Real GDP, 1967-1981

	Constant*	Growth of Real Output	SEE	Durbin-Watson	$\bar{R}^2$	Mean Square Error (Within Sample)	Mean Square Error (Outside Sample)
Developing countries	3.45 (1.28)	0.85 (1.79)	3.28	2.16	0.20	10.79	53.51
By region							
Africa	4.19 (1.65)	0.59 (1.20)	6.04	2.01	0.10	36.43	131.17
Asia	4.94 (1.33)	0.58 (0.97)	5.81	2.13	0.07	33.75	23.05
Europe	-1.44 (-0.39)	1.51 (2.25)*	4.41	1.98	0.28	19.45	31.92
Middle East	8.22 (1.64)	0.73 (1.15)	11.19	1.11	0.09	125.12	209.20
Western Hemisphere	-1.02 (-0.30)	1.41 (2.35)*	3.99	2.61	0.30	15.91	132.12
By financial criteria							
Capital importing countries	1.71 (0.58)	1.02 (1.91)	3.30	2.56	0.22	10.91	38.29
Market borrowers	2.03 (0.71)	1.13 (2.36)*	3.38	2.62	0.30	11.39	50.20
Official borrowers	-2.77 (-1.13)	1.71 (2.61)*	3.66	2.22	0.34	13.42	3.04
Countries with recent debt-servicing problems	1.19 (0.33)	1.00 (1.41)	4.41	2.33	0.13	19.42	114.29
Countries without debt-servicing problems	3.51 (1.11)	0.81 (1.41)	4.27	2.48	0.15	18.22	22.40
By miscellaneous criteria							
Fifteen heavily indebted countries	2.92 (0.85)	0.91 (1.52)	4.91	2.49	0.15	24.11	224.76
Small low-income countries	-4.94 (-1.29)	2.08 (1.98)	6.43	1.99	0.23	41.37	6.21
Sub-Saharan Africa	0.05 (0.02)	1.03 (1.25)	5.34	2.55	0.11	28.55	30.03

Source: International Monetary Fund, World Economic Outlook.

* t statistics in parenthesis.

GROWTH RATE OF REAL OUTPUT, REAL IMPORTS AND THE DIFFERENCE



indicated for all groups. Equally important, however, is the fact that, as can be observed from the low values of the coefficient of determination, very little variation in the growth rate of imports can be explained by variation in the real GDP growth rate, indicating--not surprisingly--that some important variables have not been taken into account. 1/

We have already noted that the growth rate of imports tended to recover rapidly for most groups after a severe trough in the mid-1970s. To determine whether or not there was a structural change in the basic relationship between output and import growth after the world recession in 1975, the regression equations were estimated for 1967-1974 period and 1975-1981 in order to test the hypothesis that the coefficients of the two relationships were equal. The results of this Chow test are reported in Table 3. 2/ As can be seen, the hypothesis that the coefficients of the two regressions are equal cannot be rejected, implying that despite the sharp contraction in import growth relative to output growth for most groups in the middle of the last decade, simple univariate regressions provide no basis to support the assertion that the basic relationship between these variables changed permanently after 1975. The previous relationship between the variables appears to have been restored after the severe but brief contraction in that year.

2. Developments during 1982-85

The growth rate of output in developing countries fell from an annual average of 4.9 percent during 1973-81 to 2.6 percent between 1982 and 1985. The decline in imports--from 8.7 percent to -1.5 percent--was far more drastic, however, reversing the difference between the two annual average growth rates from a positive 3.8 percent to a negative 4.1 percent (Table 4). The year-to-year differences between the two growth rates were dominated by imports, just as had been the case in the 1973-81 period (Appendix Table 10). Although the growth rate of GDP remained positive for developing countries

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1/ If these regressions are interpreted as misspecified import-demand functions, the exclusion of such variables of course biases the coefficient of the output variable. More important for our purposes, whether the true partial correlation between imports and output is over- or understated by the simple correlations reported here depends on the correlations between the omitted variables and both imports and output. Based on results reported in Section IV--in particular the importance of the terms-of-trade variable--it is likely that the true partial correlation is overstated here.

2/ Since this test has little power in the present context, its use should not be mistaken as a claim to statistical rigor. It is intended to be contrasted with the results of similar (and similarly heuristic) tests for the 1982-85 period.

Table 3. Developing Countries: Relationship Between Growth of Real Imports and Growth of Real GDP, 1967-74 and 1975-81

	Constant*	Growth of Real Output	SEE	Durbin-Watson	$\bar{R}^2$	CHOW
Developing countries						
1967 to 1974	3.33	0.92	4.40	1.35	0.16	
	(0.60)	(1.07)				0.22
1975 to 1981	5.80	0.25	1.93	2.02	0.03	
	(2.07)	(0.40)				
By region						
Africa						
1967 to 1974	4.60	0.55	7.15	1.87	0.11	
	(1.10)	(0.85)				0.01
1975 to 1981	3.55	0.73	5.76	2.04	0.03	
	(0.58)	(0.37)				
Asia						
1967 to 1974	3.53	0.82	4.78	1.61	0.25	
	(0.97)	(1.40)				0.18
1975 to 1981	8.59	-0.01	7.58	1.32	0.00	
	(0.95)	(-0.01)				
Europe						
1967 to 1974	5.40	0.71	3.13	2.82	0.07	
	(0.87)	(0.69)				3.25
1975 to 1981	-0.61	0.78	4.48	1.94	0.13	
	(-0.14)	(0.87)				
Middle East						
1967 to 1974	-9.94	2.54	11.71	1.03	0.25	
	(-0.56)	(1.41)				0.59
1975 to 1981	10.05	0.44	11.36	1.17	0.03	
	(1.87)	(0.39)				
Western Hemisphere						
1967 to 1974	0.54	1.23	4.48	2.31	0.13	
	(0.06)	(0.93)				0.12
1975 to 1981	-0.55	1.19	4.05	0.73	0.25	
	(-0.13)	(1.30)				
By financial criteria						
Capital importing countries						
1967 to 1974	3.56	0.83	3.60	1.97	0.20	
	(0.87)	(1.23)				0.44
1975 to 1981	0.85	1.03	3.27	1.00	0.11	
	(0.13)	(0.79)				
Market Borrowers						
1967 to 1974	3.31	1.01	3.93	2.00	0.22	
	(0.64)	(1.31)				0.20
1975 to 1981	2.99	0.81	3.16	1.25	0.13	
	(0.64)	(0.85)				
Official borrowers						
1967 to 1974	-0.42	1.20	3.86	2.34	0.26	
	(-0.14)	(1.46)				1.07
1975 to 1981	-8.16	3.03	3.37	0.80	0.60	
	(-1.96)	(2.72)				
Countries with recent debt-servicing problems						
1967 to 1974	2.88	0.89	5.74	1.29	0.07	
	(0.38)	(0.67)				0.70
1975 to 1981	3.09	0.24	2.29	1.20	0.03	
	(1.11)	(0.38)				
Countries without debt-servicing problems						
1967 to 1974	2.93	1.01	4.27	2.70	0.31	
	(0.75)	(1.65)				0.43
1975 to 1981	6.55	0.11	4.69	1.19	0.00	
	(1.04)	(0.10)				
By miscellaneous criteria						
Fifteen heavily indebted countries						
1967 to 1974	5.70	0.57	6.68	1.39	0.04	
	(0.75)	(0.49)				0.20
1975 to 1981	1.95	0.97	2.64	2.58	0.35	
	(0.71)	(1.62)				
Small low-income countries						
1967 to 1974	-3.70	1.90	4.02	2.65	0.51	
	(-1.34)	(2.52)*				0.15
1975 to 1981	-8.42	2.85	9.24	1.70	0.14	
	(-0.74)	(0.92)				
Sub-Saharan Africa						
1967 to 1974	1.80	0.73	5.65	2.59	0.04	
	(0.28)	(0.51)				0.11
1975 to 1981	0.51	0.54	5.88	2.14	0.01	
	(0.10)	(0.26)				

Source: International Monetary Fund, World Economic Outlook.

* t statistics in parentheses.

Table 4. Developing Countries: Average Growth Rates of Imports and GDP, 1973-85

	Growth Rate of GDP		Growth Rate of Imports		Average Difference Between Growth Rates of Imports and GDP	
	1973-81	1982-85	1973-81	1982-85	1973-81	1982-85
Developing countries	4.9	2.6	8.7	-1.5	3.8	-4.1
By region						
Africa	3.0	0.7	7.2	-6.3	4.3	-7.0
Asia	6.0	6.6	9.8	4.7	3.8	-1.9
Europe	4.5	2.3	4.5	1.8	—	-0.5
Middle East	4.4	-0.1	15.4	-4.5	11.0	-4.4
Western Hemisphere	5.0	0.7	6.2	-9.1	1.2	-9.8
By financial criteria						
Capital importing countries	5.1	3.2	7.3	-0.5	2.3	-3.6
Market borrowers	5.1	1.5	8.4	-3.1	3.3	-4.6
Official borrowers	3.6	2.2	3.4	-0.3	-0.3	-2.5
Countries with recent debt-servicing problems	4.5	0.7	6.2	-7.2	1.7	-7.9
Countries without debt-servicing problems	5.6	5.7	8.4	3.8	2.8	-1.9
By miscellaneous criteria						
Fifteen heavily indebted countries	4.8	0.4	8.2	-10.1	3.4	-10.4
Small low-income countries	3.5	3.2	2.4	1.0	-1.1	-2.2
Sub-Saharan Africa	2.4	1.4	2.5	-3.7	0.1	-5.0

Source: International Monetary Fund, World Economic Outlook.

as a group during the 1982-85 period, that of imports was negative in all years of the period except 1984.

The capital-importing countries exhibited a GDP growth performance which, though following the same pattern of behavior, was more favorable than that for the developing countries as a whole. Imports of the capital importers, however, declined more sharply in 1982 and grew much more rapidly in 1984 than those of the developing countries as a whole.

While this pattern of behavior of output and imports--as well as the differences between the growth rates of the two--was broadly duplicated by the major groups of countries classified by financial criteria (Table 4), real output in the group of countries without debt-servicing problems maintained a growth rate averaging 5.7 percent per year between 1967-85 and, although their imports declined in both the recessions of 1975 and 1982, they rebounded immediately in 1976 and 1983. A connection between debt problems and instability in the import-output relationship is further suggested by the observation that among all developing country groupings, the 15 heavily indebted countries exhibited the largest variation in the difference between the two growth rates for the entire period 1967-85 (Appendix Table 10). It is also noteworthy that Asia's GDP actually grew slightly faster between 1982 and 1985 than it had during the 1973-81 period (Table 4), although the import growth rate declined sharply. Clearly the link between output and import growth has not been immune to disruptions, even when output growth has been sustained. All other regions shared a common experience in 1982 in that they had low or negative rates of growth of output and compressed their imports drastically, with the difference between the two growth rates achieving its largest negative magnitude of the last two decades in 1982. 1/

To summarize, the period 1982-85 was one in which the import intensity of output fell markedly for all groups of developing countries (Table 4). However, certain groups of countries for which the adjustment of import intensity was moderate were able to achieve this adjustment with only a slight decrease in the average growth rate of real output (the small low-income countries) or even while increasing output growth rates (Asia and the countries without debt-servicing problems) during this period.

In an effort to see whether or not the behavior of imports in 1982-85 is consistent with the historical relationship between imports and output prior to that period, the regressions discussed in Section II.1 above were used to estimate the growth rate of imports and to calculate import shortfalls for the 1982-85 period. The mean square error terms in Table 2 show

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1/ The Middle East is an exception in that for this region massive import compression did not occur until 84-85.

the forecast errors that result from using these regressions to predict the growth rates of imports for the years 1982-85. The mean squared error out of sample (i.e., for the 1982-85 period) is several times larger than within sample for developing countries as a group and for the capital importing countries. Inspection of Table 2 reveals that the differences can be traced to countries that borrowed heavily in financial markets. The difference between in-sample and out-of-sample mean squared error is particularly stark for the 15 heavily indebted countries, the countries with debt service problems, and countries in the Western Hemisphere. By contrast, differences between in-sample and out-of-sample mean squared errors are negligible for countries without debt-service problems and for Asian countries, and are actually larger in-sample for official borrowers and small low-income countries.

To assess the statistical significance of these errors, the relationship between growth rates of real imports and real GDP for 1967-85 period has been estimated while introducing two sets of dummy variables for years 1975 and 1982-85. The dummy variables were introduced to capture the large reduction in imports in 1975 and in 1982-85. The results of this exercise are reported in Table 5. As can be observed from the t-values of the coefficients of the dummy variables, for the developing countries as a whole a significant shift in the relationship between the two growth rates occured in 1982-85. As for other groupings, significant shifts seem to have occurred in both periods for capital-importing countries, the market borrowers and countries without debt-servicing problems. For Asia and Europe only the 1975 dummy is significant, while for the 15 heavily indebted countries and Africa only the 1982-85 period dummy is significant.

Charts (7-12) display the import shortfalls that result from using the regressions based on 1967-81 data to predict the growth rates of imports for the developing countries as a whole and some of their subgroupings. The bar graphs measure the difference between actual and predicted growth rates of imports for the 1970-85 period. These charts dramatize the fact that the already relatively weak relationship that existed between the growth rate of imports and that of GDP for most years in the 1967-81 period produced large systematic errors in prediction during the first half of the 1980s. These errors have tended to persist during the 1982-85 period, in sharp contrast to what was observed after 1975.

In utilizing past history to indicate what is likely to happen in the future, the shortfalls in imports must be explained. The next section surveys the theoretical relationship between the growth rates of real GDP and imports and the factors that may cause this relationship to change.

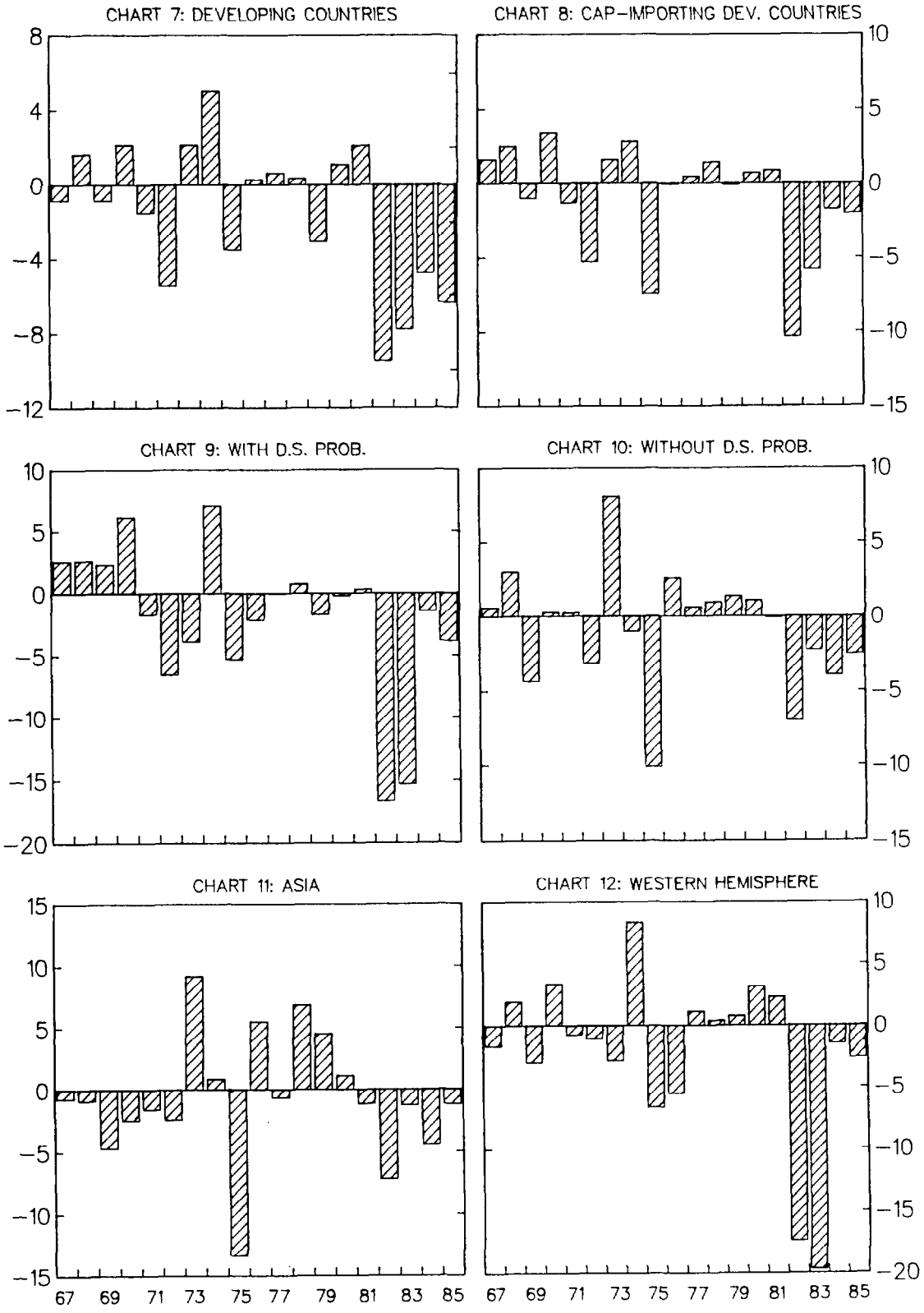
Table 5. Developing Countries: Relationship Between Growth of Real Imports and Growth of Real GDP, 1967-1985

	Constant*	Growth of Real Output	Dummy (1975)	Dummy (1982-85)	SEE	Durbin-Watson	$\bar{R}2$
Developing countries	3.33	0.92	-3.40	-7.25	3.01	1.86	0.72
	(1.40)	(2.21)*	(-1.09)	(-3.50)**			
By region							
Africa	3.72	0.64	3.58	-10.48	5.82	2.28	0.54
	(1.53)	(1.40)	(0.59)	(-2.87)*			
Asia	4.62	0.81	-14.35	-5.24	4.27	1.65	0.50
	(1.73)	(1.88)	(-3.23)**	(-2.13)			
Europe	-0.30	1.43	-10.96	-1.12	4.23	1.99	0.52
	(-.09)	(2.29)*	(-2.49)*	(-0.37)			
Middle East	5.97	0.87	19.96	-10.38	9.85	1.36	0.51
	(1.31)	(1.56)	(1.94)	(-1.55)			
Western Hemisphere	-5.55	2.30	-4.36	-5.10	4.58	2.36	0.80
	(-1.72)	(4.28)**	(-0.89)	(-1.38)			
By financial criteria							
Capital importing countries	0.97	1.27	-7.96	-5.42	2.78	1.91	0.73
	(0.42)	(3.04)**	(-2.77)*	(-2.99)**			
Market borrowers	2.84	1.07	-7.13	-7.50	2.82	2.29	0.83
	(1.27)	(2.95)**	(-2.39)*	(-3.34)**			
Official borrowers	-1.80	1.56	-6.35	-1.94	3.09	1.98	0.54
	(0.86)	(2.84)*	(-1.97)	(-1.03)			
Countries with recent debt-servicing problems	-1.71	1.65	-4.31	-6.66	4.70	2.07	0.69
	(-0.52)	(2.65)*	(-0.88)	(-1.78)			
Countries without debt-servicing problems	3.42	0.95	-10.75	-4.99	3.11	2.54	0.61
	(1.52)	(2.57)*	(-3.34)**	(-2.83)*			
By miscellaneous criteria							
Fifteen heavily indebted countries	-0.67	1.61	-1.71	-9.99	5.48	2.12	0.74
	(-0.20)	(2.83)*	(-0.30)	(-2.36)*			
Small low-income countries	-3.36	1.79	-9.39	-1.33	5.67	2.40	0.35
	(-0.98)	(1.97)	(-1.56)	(-0.41)			
Sub-Saharan Africa	1.07	0.82	-5.43	-5.86	4.92	2.65	0.40
	(0.34)	(1.01)	(-0.94)	(-1.79)			

Source: International Monetary Fund, World Economic Outlook.

* Significant at the 5 percent level.
** Significant at the 1 percent level.

IMPORT SHORTFALLS (%)



III. Imports and Output: The Theoretical Links

The previous section describes the evolution of the growth rates of import volumes and of real output over the 1973-1985 period for various groups of countries. The contemporaneous relationship between import volume growth and the growth rate of real output clearly emerges in the data, but is seen to exhibit substantial variability, differing both across country groupings and across time for a given country group. Nevertheless, the short-run relationship between real imports and real output has clearly displayed systematic behavior. For most country groups, the differences between the growth rates of these variables was very high during 1973-74, exhibited a "bulge" with little trend during the second half of the 1970s, and then collapsed after 1981. In order to form a judgment about the prospective behavior of this relationship over the medium term, it is important to understand the factors that may underlie its variability. To this end, this section examines the theoretical relationships that link the growth of real imports to that of real output.

It is worth noting at the outset that imports and output are both endogenous variables. This means that each of these variables is a function of numerous exogenous and policy variables, implying that in general the observed relationship between the growth of imports and output over any period of observation depends on the time path followed by the exogenous and policy variables over that period. At this level of generality, there would be no particular reason to expect a strong positive association between imports and output except through a fortuitous evolution of the exogenous and policy variables. However, matters are different if the economy contains strong structural links between imports and output. Such links would impose restrictions on the coefficients of the exogenous and policy variables in the reduced-form expressions for these variables in a manner such that imports and output would tend to move together even for very different paths of exogenous and policy variables. 1/ At issue in this section is the strength of these structural links.

1/ This point is easy to formalize. Let M denote the log of real imports, Y the log of real output, and $X = (X_1, \ldots X_n)$ be a vector of exogenous and policy variables. The reduced-form expressions for imports and output are $M = F'(X)$, $Y = G'(X)$ and therefore $\dot{M} = F'\dot{X}$, $\dot{Y} = G'\dot{X}$. The observed relationship between $\dot{M}$ and $\dot{Y}$ over some period will thus depend on the values taken by the components of $\dot{X}$ during that period. But if the structure of the economy contains an equation of the form $M = aY$, then the data will always show $\dot{M} = a\dot{Y}$, regardless of the behavior of X.

Empirical work on import demand functions suggests that, in addition to output, a relative price price term cannot be ignored, and that import demand may not adjust instantaneously (see Goldstein and Khan (1985)). Thus, the demand for imports is typically taken to depend on the price of imported goods relative to domestic goods, on the level of real output and on lagged values of imports. To go beyond such a specification, it is useful to disaggregate imports into the categories of consumer, intermediate, and capital goods. The nature of the structural relationship between each of these and real output is now considered in turn.

1. Imports of consumer goods

Theory suggests that imported consumer goods should be treated like other consumer goods. The demand for such imports should therefore depend on the relative price of imported vis-à-vis domestic consumer goods as well as on those variables that determine total household consumption. This suggests a role for permanent household real income and the real interest rate. Permanent household income, in turn, depends on the household's stock of real nonhuman wealth, on expected future labor income, and on fiscal variables. Current real output may play an important role insofar as it affects the household's expectations of future labor income. Furthermore, in many developing countries households may typically be rationed in credit markets. In that case, current income may be an important source of liquid funds. Other things equal, therefore, the long-run demand for imports of consumer goods will fall in response to adverse changes in the terms of trade, to increases in tariffs on consumer goods imports, and to real exchange-rate depreciation. Adverse changes in the terms of trade reduce the real value of domestic output--more so, the more such changes are perceived to be permanent--while tariff increases and real depreciation increase the relative price of imported consumer goods compared to domestic consumer goods. Current real output may play an important role as a proxy for nonhuman wealth, a predicter of future labor income, and as a source of liquidity for credit-constrained households. In all three roles, an increase in real output result in increased imports of consumer goods. Furthermore, since changes in demand may take time, the level of consumer-good imports associated with a given level of real output may also depend on how long that level of output has persisted. 1/

An additional complication arises because households in developing countries may frequently be unable to act on their desired or "notional" demand for consumer goods as described above. In the presence of reduced export receipts and limited availability of external financing (due to

1/ For an attempt to incorporate some of the intertemporal considerations cited above into empirical import demand functions for developing countries, see Winters (1985).

either external or internal factors), authorities in many countries have at times resorted to the rationing of foreign exchange while maintaining an overvalued exchange rate (Zaidi (1985)). Such exchange controls force consumers off their import demand curves, so that observed levels of consumer goods imports fall short of the notional demand for such imports described above. In such circumstances increases in real output will be associated with less than "normal" levels of consumer-good imports. When such constraints are relaxed, however, the growth rate of real imports will tend to temporarily overshoot its normal level as households move back to notional levels of import demand.

2. Imports of intermediate goods

The relationship between the level of output and that of imported intermediate goods is a technological one, captured in the aggregate production function. If output were rigidly linked to the level of intermediate goods imports, then a limitation in such imports (due to a shortage of foreign exchange) would necessarily reduce output. Such a rigid linkage would occur, however, only if the aggregate production function exhibited fixed coefficients between imported intermediate goods and domestic value added. In the long run, substitution possibilities clearly exist between technologies that are intensive in imported intermediate goods and those that are not. In the short run, with capital in place, individual firms should be able to engage in at least some substitution of labor and domestic goods for imported intermediate goods. Even if not, the economy in the aggregate can do so by shifting resources between industries that are intensive in imported intermediate goods and those which are not.

These considerations suggest that, for a given level of output, the demand for imported intermediate goods will depend on the quantity and type of capital in place and on the price of such goods relative to both domestically-produced intermediate goods and to labor. Therefore the real exchange rate, the world price of intermediate goods and the level of tariffs on imports of intermediate goods all play a part in determining the level of imported intermediate goods used to produce a given level of real output. Domestic wage rates will also be a factor to the extent that labor can be substituted for intermediate goods. Since the scope for substituting both labor and domestically-produced intermediates for imported intermediates will depend crucially on the characteristics of the capital stock, however, the demand for imported intermediates is likely to exhibit a much larger long-run than short-run elasticity with respect to relative price changes. This means that the variability of the rate of growth of demand for imported intermediate goods relative to the rate of growth of output is likely to be much greater in the long run than in the short run.

It also means that exchange controls have probably had a less significant effect on the short-run relationship between the rate of growth of imports of intermediate goods and that of output. The close relationship of imported intermediate goods to output in the short run has caused governments typically to shift the burden of exchange controls to consumer goods for fear of the negative output consequences of restricting imports of intermediates.

Although the demand for inputs of imported intermediate goods may be closely linked to output, and though exchange controls may not impinge as heavily on this category of imports, actual imports of intermediate goods may vary substantially relative to the use of such goods in production by domestic firms due to the existence of inventories. Though inventories of such goods may in normal times bear a stable relationship to output--and thus the growth rate of intermediate goods imports, to that of output--such inventories are likely to be highly sensitive to changes in domestic real interest rates, a variable that has been quite volatile in many developing countries. Thus the growth rate of actual intermediate goods imports may vary substantially relative to that of output in the short run due to changes in real interest rates, even while the use of such goods in production maintains a fairly stable relationship to output in the short run.

3. Imports of capital goods

Imported capital goods are likely to be imperfect substitutes for domestically-produced capital goods for many purposes, and therefore constraints on the volume of capital that can be imported can lead to a fall in the long-term growth of productive capacity. The amount of imported capital that a private firm will wish to employ to produce a given level of output is likely to depend on the rental costs of both imported and domestic capital, which in turn depend on the real interest rate and on the prices of imported and domestic capital goods. The latter are affected by international prices of manufactured goods, tariffs on imported capital goods, and the real exchange rate. When the private sector is rationed in credit markets--as is the case in many developing countries--credit availability may influence the demand for imported capital goods more than the real interest rate. Prices of substitutes and complementary factors--including domestic wages and prices of imported and domestic intermediate goods-will also play a role in the private firms' demand for imported capital. Favorable movements in the terms of trade may encourage capital accumulation both by inducing an expectation of higher levels of output in the future and by easing liquidity constraints through improved cash flows. Finally, the demand for imported capital goods is also influenced by a variety of fiscal and regulatory measures directed at private investment.

In addition to the factors listed above, the relationship between capital goods imports and current real output is influenced by dynamic considerations. Since adjusting the capital stock is costly, private firms will typically not adjust their desired stock of capital in response to a desired change in real output unless that change in output is perceived to be permanent. Other things being equal, this would tend to make imports of capital goods less volatile than real output. For the same reason, even when a change in real output is regarded as permanent, the stock of imported capital will only be adjusted gradually. It is expected that, if it takes time for permanent changes in real ouput to be recognized as such, changes in the growth of capital goods imports would typically lag changes in the growth of real output.

Finally, in many countries the public sector is an important importer of capital goods for infrastructural investment or for investment in non-financial public enterprises. Cost-minimization in the provision of public services should in principle cause imports of capital goods by the public sector to respond to the same set of considerations as described above for a private firm. However, the existence of public investment introduces a new complicating factor--in periods of budget stringency, capital expenditures by the public sector in developing countries have appeared to be more severely affected than current expenditures, a phenomenon that is frequently explained on non-economic grounds. 1/ Thus the state of public sector finances in countries where this sector looms large may be an important additional variable explaining the level of capital-goods imports associated with a given level of real output.

4. Summary

The analysis of this section has indicated that there is indeed a sound basis in theory for expecting a fairly strong link over time between the growth rate of real output and that of real imports of consumption, intermediate, and capital goods, other things being equal. However, there is no basis in theory for supposing the structural links between real imports and real output to be sufficiently strong to generate an empirical correlation between these variables that is robust with respect to a wide range of variations in the paths followed by exogenous and policy variables. There are several reasons for reaching this conclusion:

a. Variables such as the terms of trade, the real exchange rate, commercial policy, and the real interest rate will affect the demand for imports associated with a given level of real output for all categories of imports, though with varying importance across categories.

1/ In particular, political pressures are said to shift the baurden of budget stringency from current consumption spending to spending on imported capital goods, at least in the short run.

b. The response of imports of all kinds to a given change in the level of output is not structural, since it depends on how the change in output is brought about, and in particular on whether the change is temporary or permanent.

c. Even when the nature of the output change is known, the adjustment of imports has an important dynamic component. Faced with a permanent increase in the rate of growth of real output, for example, costs of adjustment in the stocks of imported capital goods will cause the rate of growth of capital goods imports to temporarily overshoot its long-run value as the stock of capital adjusts to its steady-state level.

d. Finally, in the case of each category of imports factors are operative that can sever the "normal" relationship between import volume growth and real output growth. These include quantitative import restrictions, which are undertaken in a period of foreign exchange shortage and which may bear especially heavily on consumer goods imports; changes in inventories of imports of intermediate goods; and volatility in the public investment budget.

IV. Empirical Tests of Sources of Instability in the Import-Output Relationship: 1970-1985

The period 1970-85 witnessed a succession of crises in the international economy, beginning with the collapse of fixed exchange rate parities in 1971 and including the following interrelated sources of disequilibrium in the international economic environment: 1/

a. Macroeconomic developments in the industrial countries during the period, including two major recessions, which affected the volume of foreign demand for exports of the developing countries.

b. Sharp fluctuations in the terms of trade of the developing countries, which had a marked influence on the export income of the developing countries and on the prices of their imports.

c. Large changes in the international nominal rates of interest, which, coupled with changes in inflation, produced massive fluctuations in the real rates of interest for the developing countries.

d. Substantial changes in the availability of external finance to the developing countries. 2/

1/ See Khan and Knight (1983) and Khan (1985).
2/ See IMF (1986) Chapter V, UNCTAD (1985, p.64), World Bank (1985).

e. Movements in the real exchange rates and aggregate demand in developing countries also influenced the demand for imports during the period under consideration.

This section focuses on these factors, examining empirical evidence presented in the Appendix. For this purpose, the temporal pattern of changes in the import intensity of output growth is compared in the first sub-section to that of changes in the terms of trade, real rates of interest, real exchange rates, and foreign exchange availability. Because the last factor is itself influenced heavily by the economic performance of the industrial countries (particularly through their demand for exports of the developing countries), the rate of economic growth in these countries will be taken as a proxy.

The second subsection reports the results of estimating disaggregated import demand functions incorporating these explanatory variables both for individual countries and for various groups of countries. Data limitations preclude an attempt to disentangle empirically the roles of all the factors identified in Section III which in theory may influence the contemporaneous relationship between import growth and output growth. This section focuses more modestly on the empirical role played prior to 1982 by certain key variables that, according to the arguments of the previous section, affect the desired level of imports of various types associated with given levels of real output. The variables singled out are major exogenous variables known to have undergone significant fluctuations during the 1973-81 period and for which time series data of reasonable length could be constructed.

1. Behavior of the major exogenous variables

(a) Terms of Trade

The period 1970-1985 was characterized by large fluctuations in the terms of trade of the developing countries. Changes in the terms of trade affect the export income of the developing countries, and, as argued in Section III, when these changes are expected to persist, they tend to affect imports, particularly those of consumer goods. The period 1972-80 was a very favorable one from the standpoint of developing countries' terms of trade. Substantial back-to-back terms of trade improvements were registered by most groups of developing countries in 1973-74, 1976-77, and 1979-80. As can be observed from Charts 13-18, fluctuations in the difference between the growth rates of imports and GDP closely track changes in the terms of trade for various groups of developing countries during the entire period, suggesting a potential empirical role for this variable. The positive increases in the difference between the two growth rates in 1972-74 and in 1979-81 are associated with substantial improvements in the terms of trade, and the sharp post-1982 reductions in the import

intensity of output are associated with adverse terms of trade developments. By way of summary, Appendix Table 25 presents the simple regression of the growth rate difference on changes in the terms of trade. The coefficient of the change in the terms of trade is invariably positive and often quite significant statistically.

(b) Real Rates of Interest

Charts 19-24 show a close inverse association between movements in the real rates of interest facing the developing countries, as well as their various subgroupings, and the difference between the growth rates of imports and output throughout the period under consideration. During the 1970s real interest rates were frequently negative, and such negative rates of interest can be expected to have contributed to an increase in import intensity by encouraging all categories of imports. The bivariate regression in Appendix Table 26 indicates an inverse relationship between changes in import intensity and in real interest rates.

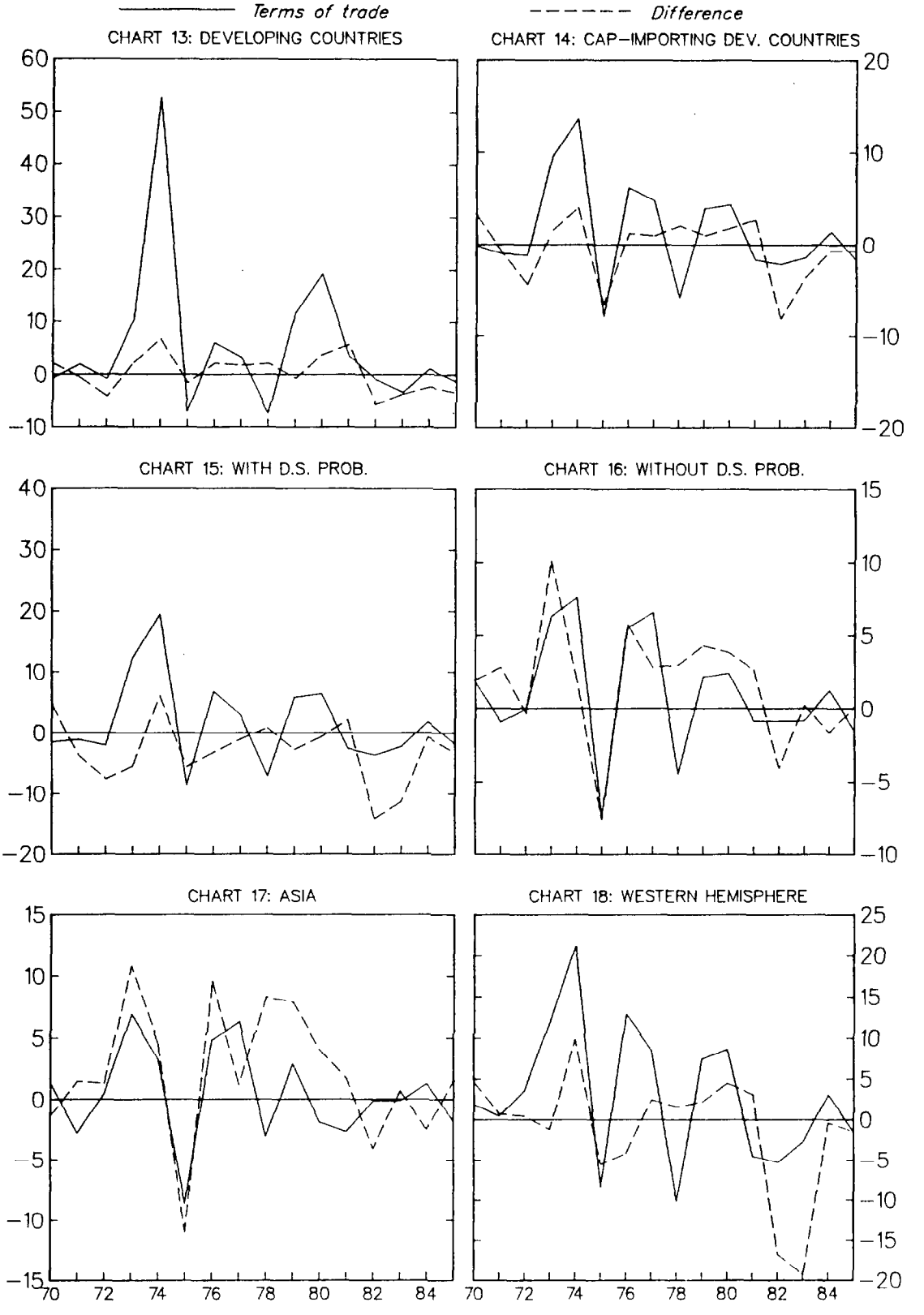
(c) Real Effective Exchange Rates

Section III argued that an increase in the real effective exchange rate, other things being equal, tends to increase the demand for imports, while a reduction in this variable tends to have an opposite effect. Charts 25-30 indicate that, while the long-run association between changes in real exchange rates and the import intensity of output growth may well be in the expected direction, the year-to-year fluctuations in the two curves, on the whole, did not appear to be clearly associated for most years in the 1970s, and the real exchange rate generally was the wrong sign in the bivariate regression reported in Appendix Table 27. A more careful look at the data is necessary before an independent role for the real exchange rate can be discerned.

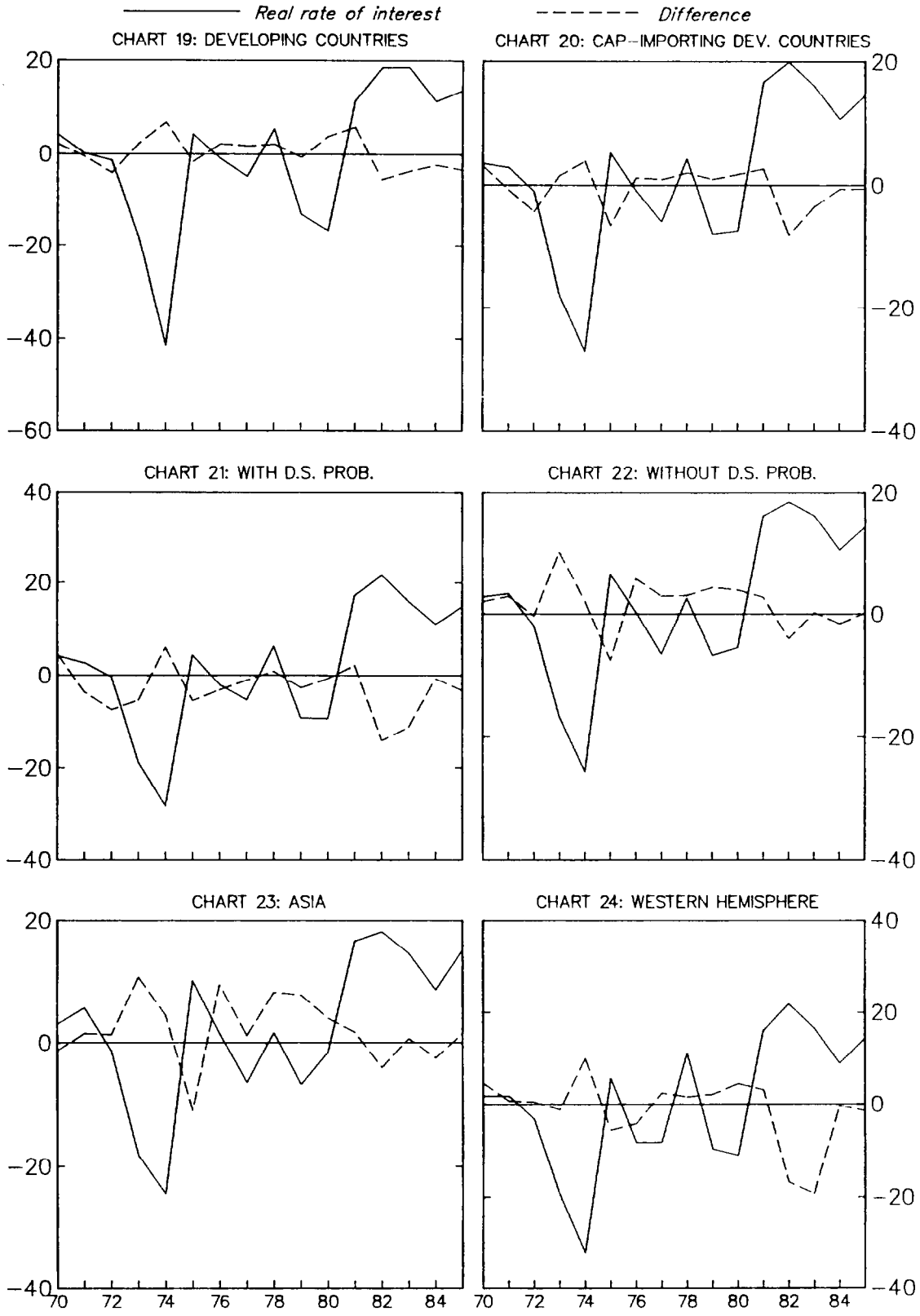
(d) Foreign Exchange Availability

Foreign exchange availability is defined here as the sum of export earnings and net external borrowing. Export earnings of the developing countries are strongly affected by the industrial countries' demand for exports of the developing countries. The volume of imports of the industrial countries in turn is determined by their economic performance. Since the supply of external funds to developing countries from commercial lenders may depend on these countries' export prospects, variations in the growth rates of GNP of industrial countries will be relied upon to shed light on the effect of foreign exchange availability on the relationship between imports and output. Charts 31-36 show a fairly close association between the changes in the growth rates of the industrial countries' GNP and the difference between growth rates of imports and GDP of various groups of developing countries for most of the period under consideration. Bivariate regressions also provide some support for this variable (Appendix Table 28).

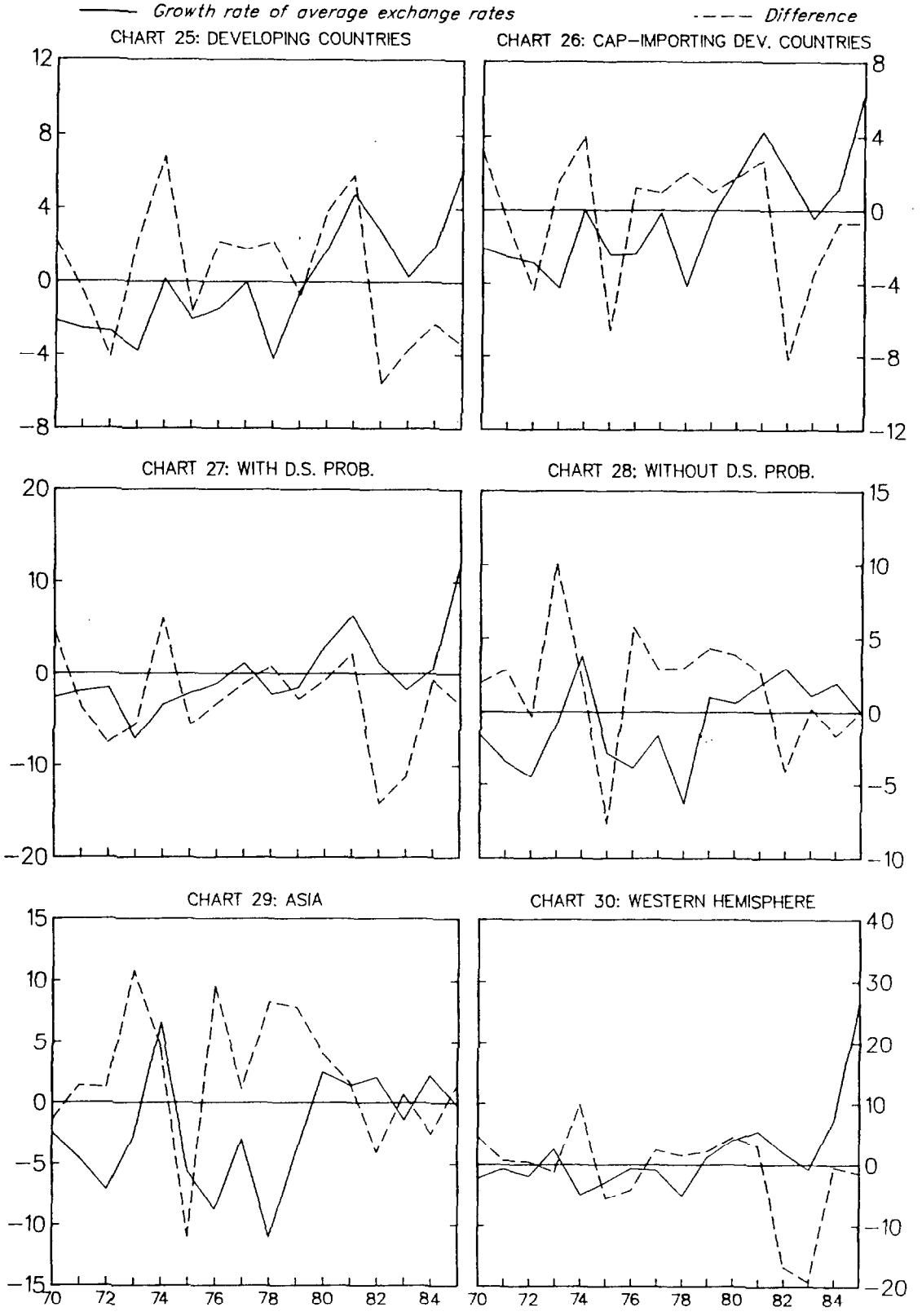
TERMS OF TRADE AND DIFFERENCE BETWEEN GDP AND IMPORT GROWTH RATES



REAL RATE OF INTEREST AND DIFFERENCE BETWEEN GDP AND IMPORT GROWTH RATES



GROWTH RATE OF AVERAGE EXCHANGE RATES AND DIFFERENCE BETWEEN GDP AND IMPORT GROWTH RATES



GROWTH RATE OF INDUSTRIAL COUNTRIES' GNP AND DIFFERENCE BETWEEN GDP AND IMPORT GROWTH RATES

CHART 31

DEVELOPING COUNTRIES

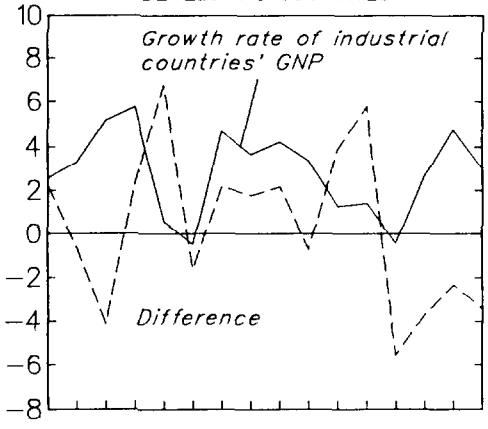


CHART 32

CAP–IMPORTING DEVELOPING COUNTRIES

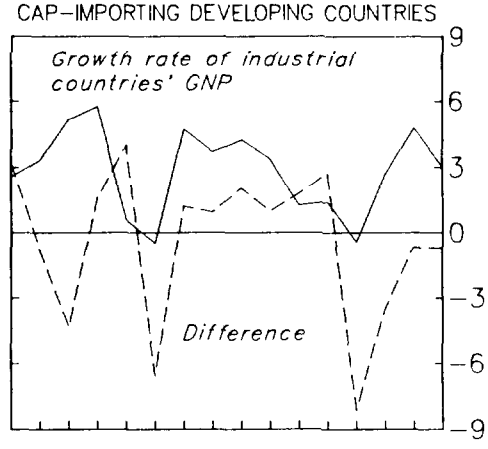


CHART 33

WITH D.S. PROB.

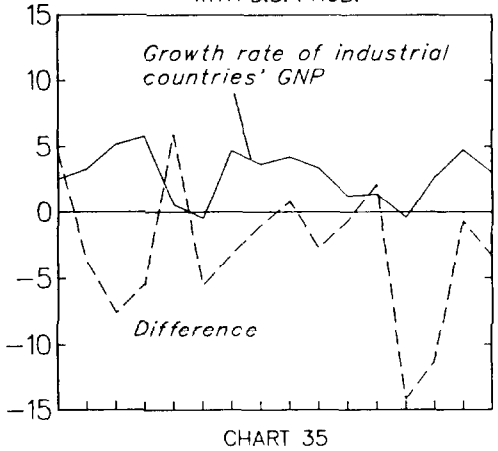


CHART 34

WITHOUT D.S. PROB.

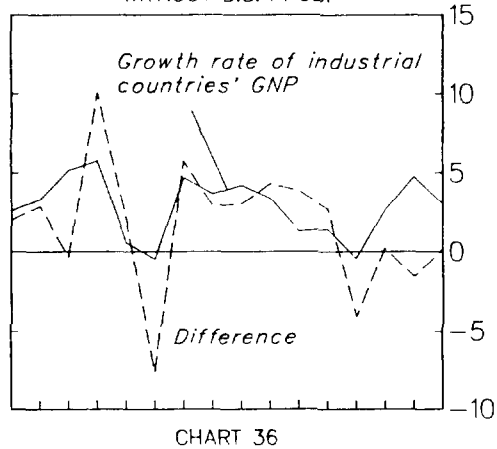


CHART 35

ASIA

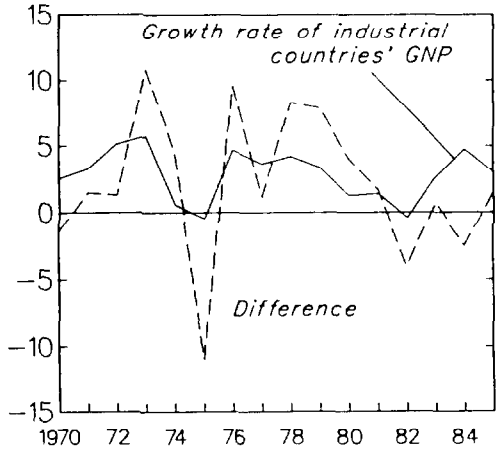
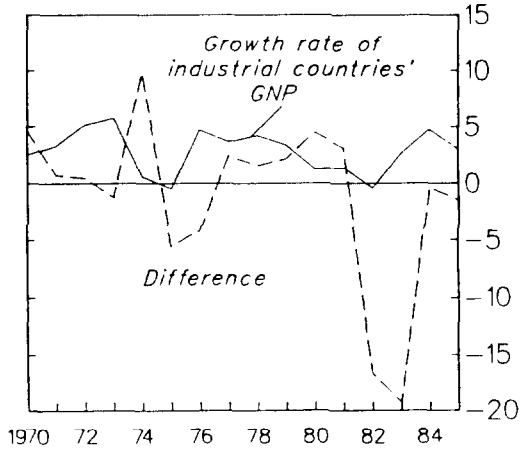


CHART 36

WESTERN HEMISPHERE



2. Behavior of commodity composition of imports: 1970-84

(a) Changes in commodity composition

In Section III it was suggested that different kinds of imports respond differently to the variables described above. Ideally, it would be desirable to statistically test the hypothesized relationship between each category of imports and the variables that affect it with careful consideration of dynamics, of expectations, and of simultaneity problems. However, reliable data for empirical testing of such relationships are extremely difficult to obtain for large groups of countries or for long periods. Using the World Bank Trade System, a sample of 49 developing countries with the most complete information on import values in current U.S. dollars at 3-digit SITC level was constructed. 1/ Even for this group only 22 countries had no gaps in the data for the period under consideration. To fill in the gaps for the remaining 27 countries, Recent Economic Development reports (IMF) and Country Economic Memoranda (WB) were relied upon, with adjustments to achieve consistency with World Trade System data.

Since data on import volumes were not available, nominal imports had to be deflated to obtain an approximate measure of real imports. 2/ Fundamentally, therefore, it is difficult to place a high degree of confidence on consistency and reliability of data on real import composition, presented below. The resulting composition of imports in real dollar terms between 1970 and 1984 is presented in Table 6, while Table 7 and Charts 37-39 present the behavior of the growth rates of the three categories of real imports. The data reveal that whereas in the period of import expansion of the 1970s capital and intermediate goods were the main beneficiaries, the burden of adjustments during the period of import compression of the 1980s fell most heavily on consumer goods, whose growth rate declined by more than 35 percent between 1981 and 1984. As shown in Table 6, the share of intermediate goods expanded at the expense of consumer goods after 1981, with the share of capital goods imports remaining roughly stable. These data support the notion that developing countries shifted the burden of import compression to consumer goods for fear of the negative investment and output consequences of restricting imports of capital and intermediate goods.

1/ The sample includes: Algeria, Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cyprus, Ecuador, Egypt, El Salvador, Greece, Guatemala, Honduras, Hong Kong, Indonesia, Israel, Ivory Coast, Jamaica, Jordan, Korea, Liberia, Madagascar, Malasia, Malta, Mauritius, Mexico, Morocco, Nicaragua, Pakistan, Peru, Philippines, Portugal, Senegal, Solomon Islands, Sri Lanka, St. Lucia, Syrian Arab Republic, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uruguay, Venezuela, and Yugoslavia.

2/ This was done by deflating all categories of nominal imports by industrial countries export price index.

Table 6. Categories of Imports for a Sample of 49 Developing Countries: 1970-84

(In billions of U.S. dollars and Percent)

	Consumer Goods	Percent of Total	Intermediate Goods	Percent of Total	Capital Goods	Percent of Total
1970	11.6	26.8	17.8	43.9	11.1	27.5
1971	12.8	28.3	19.8	43.9	12.6	27.9
1972	14.5	28.7	21.8	43.1	14.3	28.3
1973	20.2	28.9	31.2	44.7	18.4	26.4
1974	29.0	25.7	58.9	52.3	24.9	22.1
1975	32.9	25.9	61.1	48.0	33.3	26.2
1976	34.5	25.2	63.9	47.2	36.9	27.3
1977	40.6	25.3	75.6	47.1	44.4	27.6
1978	49.6	26.5	85.6	45.7	52.1	27.8
1979	55.7	24.8	11.1	49.2	58.6	26.1
1980	70.6	25.0	14.3	50.6	69.3	24.5
1981	79.2	25.1	16.1	51.0	75.5	23.9
1982	66.3	23.2	15.2	53.1	67.9	23.7
1983	62.2	23.4	13.7	51.6	66.4	25.0
1984	58.9	22.0	14.6	54.4	63.0	23.6

Source: World Bank Trade System.

49 DEVELOPING COUNTRIES: GROWTH RATE OF IMPORT CATEGORIES

(In percent)

CHART 37: GROWTH RATES OF REAL IMPORTS OF CONSUMER GOODS

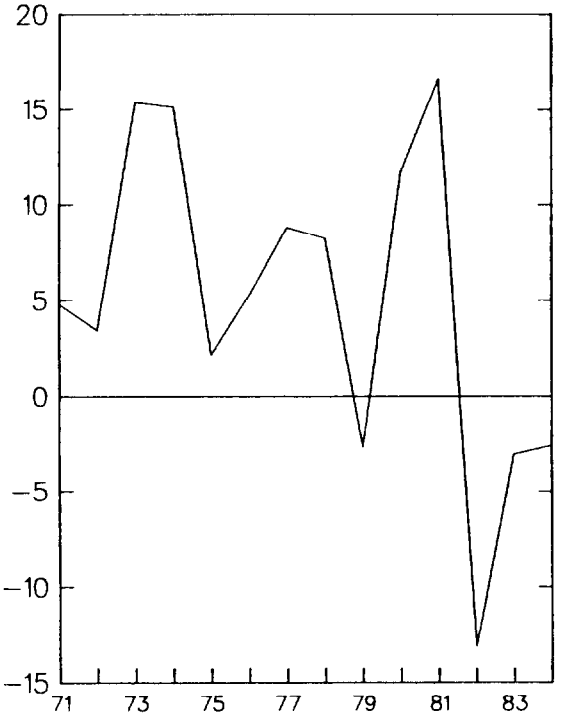


CHART 38: GROWTH RATES OF REAL IMPORTS OF INTERMEDIATE GOODS

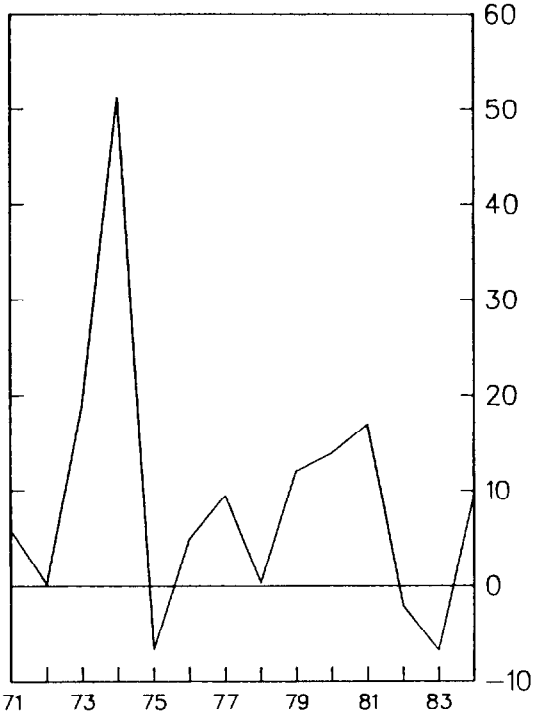


CHART 39: GROWTH RATES OF REAL IMPORTS OF CAPITAL GOODS

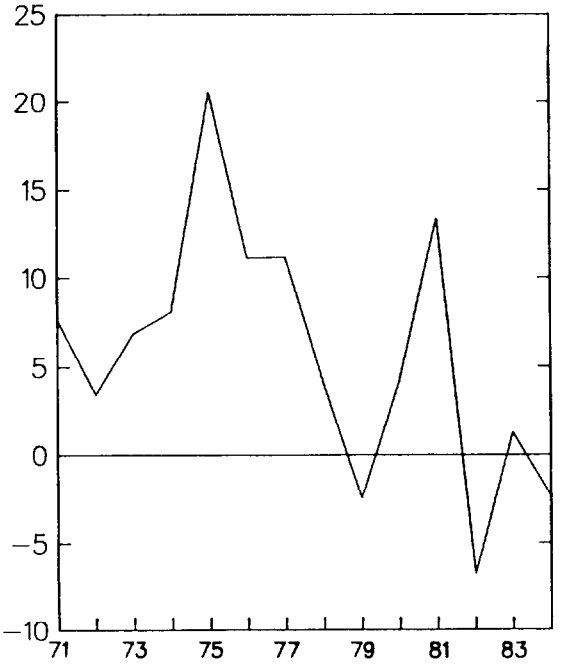


Table 7. Growth Rates of Real Imports for a Sample of 49 Developing Countries, 1970-84 1/

(In Percent)

	Consumer Goods	Intermediate Goods	Capital Goods	Total Goods
1971	4.8	5.8	7.6	6.0
1972	3.4	0.1	3.5	2.0
1973	15.4	18.9	6.9	14.5
1974	15.1	51.3	8.1	29.4
1975	2.2	-6.8	20.5	1.6
1976	5.3	4.9	11.1	6.6
1977	8.8	9.4	11.2	9.8
1978	8.2	0.3	4.1	3.4
1979	-2.7	12.1	-2.5	4.1
1980	11.7	14.0	4.2	10.9
1981	16.6	17.0	13.3	16.0
1982	-13.2	-2.1	-6.8	-6.0
1983	-3.0	-6.9	1.3	-4.1
1984	-2.6	9.5	-2.4	3.7

Source: World Bank Trade System and International Monetary Fund, World Economic Outlook.

1/ Imports are expressed in real terms deflated by industrial countries' export unit values in U.S. dollars.

Table 8. Categories of Imports for the 15 Heavily Indebted Countries: 1970-84

(In billions of U.S. dollars and Percent)

	Consumer Goods	Percent of Total	Intermediate Goods	Percent of Total	Capital Goods	Percent of Total
1970	4.1	23.2	8.2	46.1	5.5	30.7
1971	4.6	22.6	9.4	46.1	6.4	31.3
1972	5.1	23.0	9.9	44.7	7.2	32.4
1973	7.1	23.6	14.0	46.7	8.9	29.7
1974	10.4	20.5	28.5	56.2	11.8	23.3
1975	12.6	21.6	28.7	49.3	17.0	29.1
1976	13.1	22.2	28.2	47.8	17.7	30.0
1977	15.6	22.5	32.8	47.2	21.0	30.3
1978	18.3	23.1	36.5	46.1	24.5	30.9
1979	21.7	22.4	48.0	49.6	27.1	28.0
1980	29.7	24.0	60.3	48.8	33.6	27.2
1981	31.6	22.8	70.1	50.4	37.3	26.8
1982	22.5	20.1	62.4	55.8	27.1	24.2
1983	18.6	20.8	48.5	54.4	22.1	24.8
1984	14.2	17.1	51.1	61.7	17.5	21.2

Source: World Bank Trade System.

Table 9. Growth Rates of Real Imports for the 15 Heavily Indebted Countries, 1970-84 1/

(In Percent)

	Consumer Goods	Intermediate Goods	Capital Goods	Total Goods
1971	5.2	7.8	10.1	7.9
1972	1.8	-3.1	3.2	—
1973	14.4	16.8	2.5	12.0
1974	17.7	63.0	6.3	35.5
1975	9.0	-9.2	29.3	3.5
1976	4.8	-1.5	4.7	1.7
1977	10.2	7.4	10.0	8.8
1978	3.8	-1.2	3.0	1.2
1979	2.8	13.9	-4.0	5.8
1980	20.5	10.6	9.3	12.5
1981	10.8	20.8	15.3	16.9
1982	-26.3	-7.7	-24.8	-16.5
1983	-14.6	-19.7	-15.3	-17.6
1984	-21.5	8.3	-18.8	-4.6

Source: World Bank Trade System and International Monetary Fund, World Economic Outlook.

1/ Imports are expressed in real terms deflated by industrial countries' export unit values in U.S. dollars.

It was indicated previously that external borrowing played an important role in influencing fluctuations in the import-output linkage, and that this influence was discernible most strongly for the 15 heavily indebted countries. The data (Appendix Table 10) also show that import compression of the early 1980s was much more severe for this group of countries. When total imports are disaggregated for this group, it is observed (Table 8) that for most years during the period 1970-84 capital and intermediate goods had a larger share in imports than was the case for the larger sample. When the behavior of the growth rates of imports of three categories is considered for this group (Table 9 and Charts 40-42), the period of heavy external borrrowing--i.e., 1975-80--shows a much faster growth rate of imports of consumer and capital goods than of intermediate goods, with the growth rates of consumer goods imports exceeding that of capital imports for most years during the 1970s. The burden of the adjustments during the import compression years of 1982-84 fell most heavily on both consumer goods and capital goods. Clearly, the substantial reduction in imports of capital goods will have a serious impact on investment in these countries. 1/ The recovery of intermediate goods imports in 1984, obviously at the cost of huge reductions in capital goods and consumer goods imports, suggests that inventories of these goods may have been depleted to a minimum level and further depletion may have been avoided to forestall further negative impacts on output. The increase in the relative share of intermediates after 1981 is much more pronounced for this group of countries than for the sample as a whole.

(b) Regression results

Demand equations were estimated for the three categories of imports for individual countries as well as for country groupings to assess the empirical relevance of the factors discussed in the previous section in affecting the import intensity of output in developing countries. When considering the individual country results it must be kept in mind that in addition to the low degree of confidence placed on the accuracy of the data, there are only 12 observations (1970-81) per country. In addition, the exogenous variables are highly correlated among themselves. Given the number of variables considered, estimates can be expected to be very imprecise--i.e., standard errors should be large. For this reason, the discussion below will focus primarily on the sign patterns of coefficient estimates. To avoid commpounding these problems, dynamic considerations and expectational issues will largely be ignored.

1/ See IMF (1983) pp. 140-44, Zaidi (1985), UNCTAD (1985), Inter-American Development Bank (1984) and IMF (1985) p. 63. See also Charts 1 and 2 of the Appendix.

15 HEAVILY INDEBTED COUNTRIES: GROWTH RATE OF IMPORT CATEGORIES

(In percent)

CHART 40: GROWTH RATES OF REAL IMPORTS OF CONSUMER GOODS

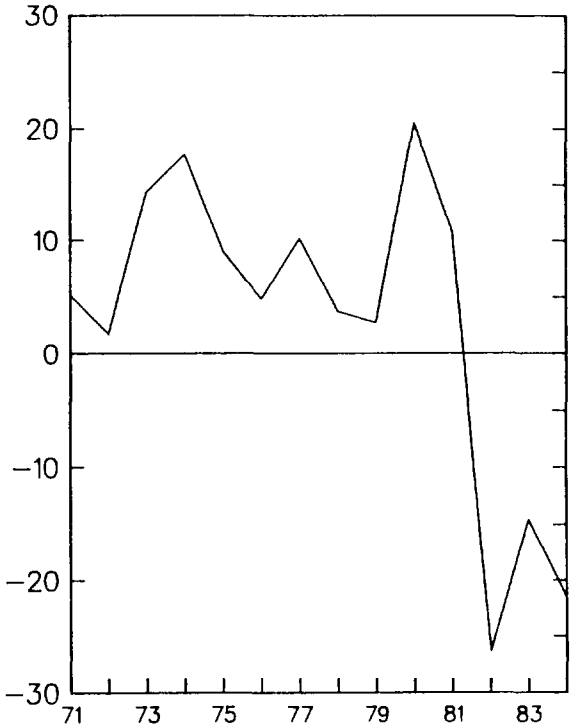


CHART 41: GROWTH RATES OF REAL IMPORTS OF INTERMEDIATE GOODS

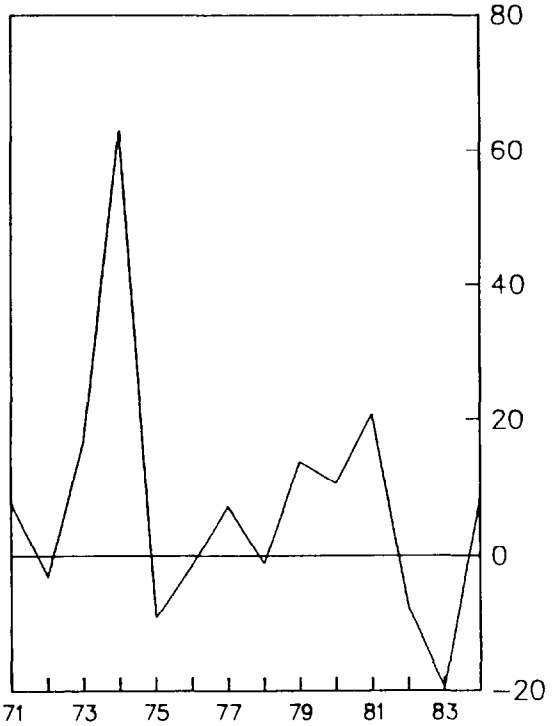
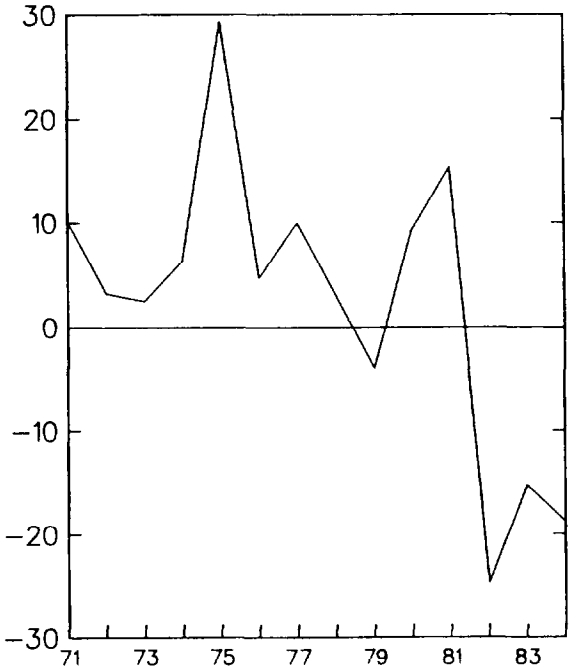


CHART 42: GROWTH RATES OF REAL IMPORTS OF CAPITAL GOODS



i. Country estimates

Based on the analysis of the theoretical section, the terms of trade, real exchange rates, real interest rates, and real output were identified among key variables affecting demand for consumer goods imports. The estimated demand equations for each of the 47 developing countries 1/ of the sample are presented in Table 29 of the Appendix. The terms of trade carries the theoretically expected positive sign for 33 of these countries, and in the case of 12 of these countries the coefficient of this variable is significant. 2/ For these countries the magnitude of the coefficient varies from a low of about 0.02 for Indonesia to a high of 1.85 for Argentina. The coefficient of the real exchange rate has the correct positive sign for 33 country equations of which 11 are significant, and its magnitude ranges in value from a low of 0.04 for Sri Lanka to a high of 2.86 for Bolivia. The real interest rate performs most poorly among the non-output variables, with the correct (negative) sign in only 18 cases. The magnitude of the coefficient of determination for the consumer goods import demand equation varies from a low of 0.14 for Sri Lanka to a high of 0.99 for Hong Kong. In a majority of cases (44 out of 47), however, the coefficient of determination is higher than 0.50. In view of the quality of the data and the limited number of observations, these results are reasonably supportive of the arguments presented in Section III. The higher import intensity of output growth in the period before 1982 can partly be attributed to the favorable evolution of terms of trade described above and to the management of exchange rates.

Table 30 of the Appendix presents the results of regressions estimating the demand for intermediate goods imports for each of the 47 countries in the sample. The independent variables included are again the terms of trade, the real rate of interest, the real exchange rate and real output. The terms of trade variable was not accorded an important role in the context of intermediate goods in Section III, and it has the correct sign in only 20 cases, of which 9 are significant. For the real interest rate, the coefficient has the correct sign for 25 countries, of which only four are significant. Strongest results were obtained for the real exchange rate, which carries the correct sign in 28 cases, of which ten are significant. The coefficient of real GDP has the correct positive sign for 44 countries, of which 37 are significant. The magnitudes vary from a low of 0.08 for Ecuador to a high of 5.81 for Togo. The individual country results thus strongly support the view in Section III that intermediate imports are closely related to real output. Though some support exists for the roles of other variables, and in particular for

1/ Exchange rate data were not available for two of the 49 countries, hence they were deleted.

2/ At the 90 percent level.

the real exchange rate (with 28 correct and 19 incorrect signs), the evidence is weaker in this case than in the case of consumer goods.

The equation for capital goods imports includes the terms of trade, real interest rates, the real exchange rate, and real GDP as explanatory variables. It can be observed from Table 31 of the Appendix that in 35 cases the terms of trade carries the correct sign, of which 12 are significant. Real GDP has the correct sign for 45 countries, of which 34 are significant. Surprisingly, the real interest rate bears the correct sign in only 18 countries, none of which is significant. Finally, the real exchange rate has the predicted positive sign in 26 cases.

In view of the limitations of the data, the statistical results for individual countries can be interpreted as broadly supportive of the framework presented in Section III. Real output is clearly the most important explanatory variable in the demand for all categories of imports. However, the import intensity of output growth has been subject to the systematic influence of other variables. Terms of trade movements have been the most important of these during the 1970-81 period. As expected, the influence of terms of trade changes has been most pronounced on imports of consumer and capital goods. Although the crude statistical methods used do not permit the identification of the channel through which terms of trade changes have exerted their effects, a reasonable interpretation is that terms of trade improvements during the decade of the 1970s were viewed as permanent and thus stimulated both consumption and capital accumulation through expectations of higher future incomes. Changes in real exchange rates have also played a role in stimulating imports of consumer goods and, to a less certain extent, of intermediate goods. The results of this section, however, have failed to confirm the empirical role of real interest rate changes.

ii. Pooled regression results

In order to ease the limitation of few degrees of freedom, import demand equations were estimated by pooling the data. Since in this way the number of observations are increased, lagged dependent variables are introduced as additional explanatory variables to allow for at least some rudimentary dynamics. The countries in the sample were classified by financial criteria and by area. The results are presented in Tables 32-34 of the Appendix. It should be noted that since all the countries in the sample are capital importing countries, the resulting estimated equations are identical to those for the category of developing countries.

In the consumer goods import demand equation, the terms of trade carries the correct sign for all groups except for Asia and is significant for three of the six regions, confirming the results of the country

regressions. 1/ The magnitude of its coefficient varies from a low of 0.02 for official borrowers to a high of 0.70 for the Middle East. However, the real exchange rate has the wrong sign for 6 of the 13 groups considered. A puzzling feature of these results is that real GDP has the wrong sign for three groups, and all of these are major borrower types, i.e., countries with debt-servicing problems, 15 heavily indebted countries, and the Western Hemisphere. The lagged dependent variable carries a positive sign and is significant in all equation, and the magnitude of its coefficient varies from a low of 0.67 for Africa to a high of 0.84 for market borrowers, suggesting the importance of partial adjustment.

Table 33 of the Appendix presents the results of estimation of demand equations for intermediate good imports. As can be seen from that table, the terms of trade variable generally has the correct positive sign, and is significant for Africa and the Middle East. Real GDP has the correct sign for all country groupings, but is significant for the Middle East only. For this set of equations, the real rate of interest carries the correct negative sign for all country groupings except for the Middle East and is significant for ten of the country groupings. Finally, the real exchange rate carries an approximately equal number of correct and incorrect signs. As with the consumer goods equations, the lagged dependent variable suggests the importance of lags. Its coefficient is significant and has positive signs for all equations. It ranges in value from a low of 0.79 for small low-income countries to a high of 1.02 for Asia. The lowest value of the coefficient of determination for this demand equation is 0.73 for the 15 heavily indebted countries and its highest value is 0.90 for Asia.

Finally, the results for the demand equation for capital goods imports are presented in Table 34 of the Appendix. Again, the terms of trade variable has the correct sign for the majority of country groups (10 out of 14). It is significant for small low-income countries, Africa and the Middle East. Real GDP has the correct sign for all groups except the 15 heavily indebted countries and the Western Hemisphere, but is significant for the Middle East only. As with individual country results, the real rate of interest variable performs poorly, bearing the wrong sign for all groups except for official borrowers, Asia and Sub-Saharan Africa. The lagged dependent variable is significant for all groups and the value of its coefficient ranges from a low of 0.71 for the Middle East to a high of 0.92 for Asia.

1/ The coefficient of the terms of trade variable for Asia is essentially zero.

3. Summary

The individual country estimates of the demand equations for the three types of imports are mixed. Considering the small degrees of freedom and the low confidence that must be placed on the data, this is to be expected. A stronger indication that these factors have played an empirically relevant role emerges from the evidence yielded by the pooled regressions. For these regressions, the results are quite favorable for the larger groups of countries. In the case of the developing countries aggregate, all explanatory variables carry the expected signs in the demand equations for consumer and intermediate goods imports and the coefficients of determination are 0.72 and 0.79, respectively. In the equation that estimates the demand for imports of capital goods for the entire sample, all explanatory variables have the correct sign except the real rate of interest. Unfortunately, even for this largest group, parameter estimates exhibit a substantial amount of imprecision. Taken together, the individual country results and the pooled regressions provide suggestive, though by no means persuasive evidence that changes in the terms of trade, in international real interest rates, and in domestic exchange rate management may have played important empirical roles in affecting the variations in the import intensity of output growth documented in Section II during the period leading up to the international debt crisis, and that these effects have operated in the directions outlined in Section III. The most adverse finding is the absence of a real interest rate effect on imports of either consumption or capital goods in either the individual country or pooled regressions. The strongest support was provided for the terms of trade variable, especially in the consumer and capital goods equations. With regard to the real exchange rate, the evidence is mixed.

V. Concluding Remarks

Over the 1973-81 period, the rate of growth of import volume exceeded the rate of growth of real output in developing countries by almost 4 percentage points. As documented in Section II, the relationship between these two variables shifted abruptly during the debt crisis years 1982-85. Although output growth slowed markedly for most groups of developing countries, the rate of expansion of import volume declined much more steeply. This decrease in the import intensity of output growth is observed even for groups (Asia and the non-debt problem countries) that maintained their pace of output expansion.

As argued in the introduction, prospects for export growth and the availability of external financing for developing countries over the medium term are such as to indicate that the growth of real imports in these countries will have to proceed at a moderate pace. Rates of expansion at 1973-81 levels--averaging about 8 3/4 percent per year--seem

out of the question over the medium term. If this figure is to be scaled back substantially, then it is important to establish what limits the lower growth of imports place on prospects for expansion of real output. If the 1973-81 relationship between the rate of growth of import volume and that of real output is to be used as a benchmark, then the prospects for developing countries--which have in many cases already experienced substantial reductions in per capita real incomes--are dire indeed.

This paper has argued that the use of the 1973-81 period as a benchmark is not warranted, on either empirical or theoretical grounds. Empirically, Section II demonstrated that although output expansion and import volume growth have tended to move together over time and across groups of countries, the long-term relationship between these variables is not immutable. The six-year period 1967-72 exhibited a much lower average import intensity of output growth than did the period 1973-81. Moreover, output growth was actually somewhat higher for developing countries as a group in the former period. Secondly, changes in the import intensity of output growth have tended to be very unstable over shorter periods of time. Changes in real output are able to account for only a small proportion of the variation in import volume. Other variables clearly come into play. Among such variables, Section III identified the terms of trade, the real exchange rate, commercial policy, and the real interest rate. The theoretical discussion also pointed out that changes in the import intensity of output growth are likely to depend on the causes of changes in output, and that dynamic elements tend to complicate the contemporaneous relationship between the growth of imports and that of output, as do foreign exchange rationing and changes in public investment.

Causes of the "import bulge" during the 1970s were empirically investigated in Section IV. The period was unusual in that terms of trade changes were generally favorable for developing countries and real interest rates were low. In addition, the period was characterized by several episodes of substantial real exchange rate appreciation among important groups of developing countries. Empirical tests of the relationship between these variables and the import intensity of output growth during the period were predictably weak, but generally favorable, indicating that these factors may indeed have helped to account for the import "bulge". 1/ It follows that any discussion of changes in the import intensity of output growth over the medium term must take such variables into account.

In addition, such a discussion must also provide an interpretation of the behavior of imports during the 1982-85 period. Although no direct

1/ See also Cline (1984), pp. 170-180.

evidence has been provided in this paper to account for the behavior of imports during this period, most of the import demand equations estimated above exhibit large negative residuals after 1981. That is, although growth rates of real GDP have slowed in many countries and for most groups of countries, and though terms of trade experience has been adverse and real interest rates have been high, the level of real imports has been even smaller than would be predicted from these developments. Section III suggests an interpretation for this observation--many developing countries have adopted restrictive commercial policies and rationed foreign exchange in response to recent developments in the international economy. The evidence in Section IV on the commodity composition of imports supports this view (see also Khan and Knight (1986)).

The medium-term evolution of the growth of import volume relative to that of output depends, as emphasized above, on prospects for exogenous variables such as the terms of trade and international real interest rates, as well as on the medium-term behavior of policy variables such as the real exchange rate and public sector investment. Consider first the likely medium-term evolution of the import intensity of output growth without taking into consideration external financing constraints. In the absence of new commodity price booms and a return to negative international interest rates, and assuming realistic exchange-rate management on the part of debtor countries, a repeat of the import "bulge" of the 1970s would not be envisaged. Moreover, the import-intensity of GDP growth can also be restrained by other policy measures on the part of developing countries: by maintaining generally positive real interest rates (thereby avoiding overstimulation of the demand for capital goods); by taking import requirements into account in the choice of public sector investments; by making public investment decisions on strict rate-of-return considerations; and by appropriate pricing policies with regard to import-substituting goods (such as domestically produced foodstuffs). This is all not to say, however, that protectionist policies are helpful in this regard, because such policies discourage exports, thereby diminishing foreign-exchange availability, and an outward-oriented set of policies that serve to stimulate exports may be, over the long-term, the best way of maintaining the level of imports required for an adequate growth performance.

The lower level of the import intensity of output growth observed during 1967-72 would appear to be a more reasonable approximation to the prospective medium-term relationship among these variables. However, to the extent that quantitative restrictions on imports and foreign exchange rationing are removed, import intensity would tend to overshoot is medium-term path in the short run (Section III) as stocks of consumer and producer durables are restored and both consumers and firms move back to their notional import demand curves. The most likely scenario for the future--at least over the medium term--would therefore be for a significantly lower import intensity of output growth than occurred in the 1970s, even in the absence of external financial constraints. The financing requirements for

growth are therefore not likely to be as large as would appear from the application of import-intensity "rules of thumb" based on the pre-debt crisis experience.

Nevertheless, whether this will make it possible to achieve reasonable output growth rates in indebted developing countries in the presence of external financial constraints will depend on the severity of these constraints as well as on the growth of industrial-country markets. Clearly, with sufficiently tight external financing constraints, even a reduction in the import intensity of output growth to more "normal" levels would leave serious problems. If external financing constraints remain severe and growth in industrial countries fails to accelerate, policymakers in indebted developing countries will be forced to choose between more ambitious real exchange rate targets and continued low rates of economic expansion.

Table 10. Developing Countries: Growth Rates of Real Output and Real Imports--1967-1984
(Average annual percentage change)

	1967-1972 (Average)	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Developing countries														
Output 1/	6.1	7.8	5.2	5.0	4.9	6.2	5.1	4.3	3.5	2.2	1.6	1.4	4.2	3.2
Real imports	7.0	15.0	15.1	4.5	7.4	9.3	7.1	4.7	8.5	6.7	-4.1	-2.7	1.7	-1.1
Difference	0.9	7.2	10.0	-0.5	2.5	3.1	2.1	0.4	5.0	4.6	-5.7	-4.0	-2.4	-4.3
By region														
Africa														
Output	5.8	4.6	1.9	4.5	2.5	3.5	1.1	3.2	3.7	1.8	0.8	-1.7	1.7	2.0
Real imports	5.6	10.6	15.0	10.2	1.5	7.7	4.2	-3.8	8.7	10.9	-8.3	-10.3	0.2	-7.0
Difference	-0.2	5.9	13.1	5.7	-1.0	4.2	3.2	-7.0	5.0	9.2	-9.0	-8.6	-1.5	-8.9
Asia														
Output	5.2	8.7	3.7	6.7	2.8	8.0	9.1	4.4	5.5	5.5	5.0	7.6	7.9	6.0
Real imports	6.0	20.2	8.2	-4.3	11.7	9.1	16.3	13.3	10.2	3.4	-0.3	8.1	5.5	5.6
Difference	0.7	11.6	4.6	-11.0	9.0	1.1	7.2	8.9	4.7	-2.1	-5.3	0.5	-2.5	-0.4
Europe														
Output	6.2	5.5	4.5	4.8	7.6	5.4	5.4	3.8	1.5	2.3	2.4	1.1	3.5	2.2
Real imports	9.3	13.2	7.8	-4.5	6.7	8.4	0.8	5.4	0.5	2.2	-7.8	2.3	8.0	4.8
Difference	3.1	7.7	3.3	-9.2	-0.9	3.0	-4.6	1.6	-1.0	-0.1	-10.1	1.3	4.5	2.6
Middle East														
Output	9.5	9.8	9.6	4.5	8.9	7.0	1.7	2.3	-2.2	-1.8	-0.2	0.1	0.9	-1.2
Real imports	9.3	22.6	36.8	29.9	12.2	12.5	3.1	-3.7	9.4	16.0	5.9	-2.9	-7.0	-14.0
Difference	-0.3	12.8	27.3	25.4	3.3	5.5	1.4	-6.0	11.6	17.8	6.0	-3.0	-7.9	-12.8
Western Hemisphere														
Output	5.9	7.9	6.7	3.3	5.7	5.3	4.1	6.1	5.3	0.9	-1.0	-3.1	3.2	3.7
Real imports	7.1	6.8	16.5	-2.3	1.5	7.7	5.6	7.9	9.8	2.5	-17.7	-22.3	3.0	0.6
Difference	1.2	-1.2	9.8	-5.6	-4.2	2.5	1.5	1.8	4.5	1.6	-16.7	-19.1	-0.1	-3.1
By financial criteria														
Capital importing countries														
Output	5.7	7.3	4.5	5.1	4.2	6.2	5.7	4.8	4.7	3.1	2.1	1.7	4.8	4.1
Real imports	6.9	13.9	11.6	-0.5	5.5	8.7	7.9	7.1	7.7	4.3	-6.4	-2.1	4.2	2.5
Difference	1.2	6.6	7.0	-5.6	1.4	2.5	2.2	2.3	3.0	1.3	-8.5	-3.8	-0.5	-1.6
Market borrowers														
Output	6.5	8.3	4.9	4.1	5.8	5.7	4.6	6.1	4.5	2.2	0.4	-1.0	3.5	2.9
Real imports	8.6	14.7	13.1	0.1	8.5	8.3	8.2	7.4	9.0	6.3	-7.2	-5.5	2.2	-2.0
Difference	2.1	6.3	8.1	-4.0	2.7	2.5	3.6	1.3	4.5	4.2	-7.5	-4.5	-1.3	-4.9
Official borrowers														
Output	3.2	2.5	5.3	2.6	5.8	4.4	3.6	2.1	3.0	3.4	2.1	1.7	3.2	1.8
Real imports	2.8	3.5	8.7	-4.0	8.4	7.5	6.5	1.4	-0.6	-1.0	-1.8	0.5	1.8	-1.7
Difference	-0.4	1.0	3.4	-6.7	2.6	3.1	2.9	-0.7	-3.5	-4.3	-3.9	-1.3	-1.4	-3.5
Countries with recent debt-servicing problems														
Output	5.5	6.1	5.4	4.1	5.2	5.3	3.5	5.4	4.5	1.2	-0.1	-2.5	2.6	2.9
Real imports	5.9	7.8	19.2	0.7	2.2	7.1	4.9	4.6	5.4	3.8	-14.3	-15.0	1.8	-1.4
Difference	0.5	1.7	13.9	-3.4	-3.0	1.9	1.3	-0.9	0.9	2.5	-14.2	-12.5	-0.8	-4.2
Countries without debt-servicing problems														
Output	5.8	8.5	3.7	6.1	3.1	7.1	8.0	4.1	4.8	4.9	4.3	6.1	6.9	5.3
Real imports	7.7	19.1	5.9	-1.6	8.4	10.0	10.4	9.0	9.3	4.7	-0.7	6.1	5.5	4.3
Difference	1.9	10.6	2.2	-7.6	5.3	2.8	2.4	4.9	4.6	-0.2	-5.0	0.0	-1.5	-1.0
By miscellaneous criteria														
Fifteen heavily indebted countries														
Output	6.1	7.9	5.5	4.3	5.1	5.6	3.4	6.1	4.9	0.7	-0.5	-3.5	2.1	3.3
Real imports	7.2	8.4	22.7	4.5	3.8	11.6	4.1	7.1	8.0	3.6	-16.5	-21.5	-2.2	-0.2
Difference	1.1	0.5	17.3	0.2	-1.3	6.0	0.7	1.0	3.2	2.9	-16.0	-18.0	-4.3	-3.4
Small low-income countries														
Output	3.0	2.6	4.6	1.9	5.3	4.9	3.6	2.8	3.0	2.8	2.2	2.4	4.1	4.1
Real imports	1.2	4.3	6.4	-9.3	-1.3	5.6	19.3	-0.8	1.5	-4.5	1.0	-3.4	5.7	0.8
Difference	-1.8	1.8	1.8	-11.2	-6.6	0.7	15.7	-3.6	-1.5	-7.3	-1.2	-5.8	1.5	-3.3
Sub-Saharan Africa														
Output	4.6	2.0	5.1	0.1	3.8	1.4	1.9	2.1	2.9	2.2	0.6	0.1	2.3	2.6
Real imports	4.7	4.0	7.5	-4.2	-1.5	5.3	10.4	-3.3	5.1	-0.4	-4.5	-8.2	-1.1	-0.9
Difference	0.1	2.0	2.4	-4.4	-5.3	3.9	8.5	-5.4	2.2	-2.6	-5.0	-8.3	-3.4	-3.5

Source: International Monetary Fund, World Economic Outlook.

1/ Real gross domestic product.
2/ Import values deflated by the relevant import price index.

Table 11. Developing Countries: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	7.1	15.4	4.1	8.0	14.2	-3.3	-2.0	2.7	-0.4
Export volume (annual percent change)	8.4	6.8	-5.6	11.4	-1.9	-11.7	-4.4	6.5	-3.4
Import unit value (annual percent change in U.S. dollars)	5.8	30.8	9.7	10.4	-4.7	-4.2	-4.4	-2.5	-3.1
Export unit value (annual percent change in U.S. dollars)	5.2	59.3	2.1	10.1	0.2	-0.2	-0.4	—	-0.2
Terms of trade (annual percent change)	-0.6	28.5	-7.7	-0.3	4.9	4.0	4.1	2.5	2.9
Purchasing power of exports	8.4	23.1	-9.5	10.7	6.0	-6.7	-0.2	7.7	-0.4
Net external borrowings (billions of U.S. dollars)	44.1	61.5	61.3	82.1	135.4	109.9	83.7	65.8	49.3
Interest payments (billions of U.S. dollars)	7.1	10.1	12.0	25.7	62.3	72.4	68.9	76.4	74.8
Average exchange rates (annual percent change)	-2.5	-1.8	-2.1	-0.9	4.8	2.7	0.3	1.9	6.0
Foreign exchange availability (annual percent change)	9.9	22.3	-10.3	10.7	8.8	-8.4	-3.1	4.8	-2.2
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 12. Capital-Importing Developing Countries: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	6.8	13.5	-1.1	8.2	12.2	-5.6	-1.4	5.3	2.9
Export volume (annual percent change)	8.0	6.8	-3.3	12.5	1.4	-6.4	2.0	11.0	-1.4
Import unit value (annual percent change in U.S dollars)	5.7	31.2	9.7	10.3	-4.7	-4.2	-4.4	-2.5	-3.1
Export unit value (annual percent change in U.S. dollars)	4.2	39.6	0.8	8.9	--	-0.2	-0.2	--	-0.2
Terms of trade (annual percent change)	-1.6	8.4	-8.9	-1.5	4.7	4.0	4.2	2.5	2.9
Purchasing power of exports	7.1	9.9	-8.8	10.7	8.4	-1.9	4.8	11.6	1.6
Net external borrowings (billions of U.S. dollars)	40.7	48.5	66.3	83.6	132.7	105.0	78.2	59.4	43.8
Interest payments (billions of U.S. dollars)	5.8	8.8	10.8	24.7	61.6	71.7	68.1	75.1	73.6
Average exchange rates (annual percent change)	-2.5	-2.1	-2.4	-1.0	4.3	2.0	-0.4	1.2	6.2
Foreign exchange availability (annual percent change)	8.4	9.3	-4.6	10.4	11.8	-5.4	0.1	7.5	-0.6
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 13. Market Borrowers: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	8.6	13.7	-0.1	7.4	6.6	-7.3	-5.1	2.4	-3.4
Export volume (annual percent change)	7.7	6.2	-4.3	7.3	0.6	-2.6	9.9	11.6	3.7
Import unit value (annual percent change in U.S. dollars)	5.1	33.1	8.0	10.9	2.9	-3.0	-4.0	-0.8	-1.8
Export unit value (annual percent change in U.S. dollars)	5.8	45.7	-0.4	15.2	0.7	-5.4	-6.2	0.4	-5.9
Terms of trade (annual percent change)	0.7	12.6	-8.4	4.3	-2.2	-2.4	-2.2	1.3	-4.2
Purchasing power of exports	9.2	12.3	-9.4	10.4	1.4	-5.1	4.6	11.3	-0.6
Net external borrowings (billions of U.S. dollars)	27.0	35.0	43.7	55.5	87.1	66.2	45.4	29.0	13.5
Interest payments (billions of U.S. dollars)	3.7	5.7	7.3	18.9	49.3	57.1	53.4	58.9	56.6
Average exchange rates (annual percent change)	-2.6	-0.2	-3.5	-0.2	5.1	0.6	-5.0	6.7	17.3
Foreign exchange availability (annual percent change)	11.1	11.6	-6.4	10.1	6.4	-8.7	-1.0	6.1	-4.0
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 14. Official Borrowers: 1/ Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	2.0	6.1	-4.1	4.4	-0.8	-1.6	-0.9	0.5	-1.2
Export volume (annual percent change)	3.1	-2.4	-2.8	1.0	-5.0	-4.1	1.0	-2.7	4.8
Import unit value (annual percent change in U.S. dollars)	6.0	32.3	12.2	11.7	5.2	-4.4	-4.5	-1.5	-3.9
Export unit value (annual percent change in U.S. dollars)	1.6	39.3	1.3	12.8	1.5	-6.4	-3.0	3.3	-5.0
Terms of trade (annual percent change)	-4.4	7.0	-10.9	1.2	-3.7	-2.0	1.6	4.7	-1.1
Purchasing power of exports	-0.9	0.3	-9.5	5.8	-5.8	--	3.5	0.3	2.7
Net external borrowings (billions of U.S. dollars)	7.1	8.1	11.2	10.7	10.8	11.0	10.6	8.9	8.6
Interest payments (billions of U.S. dollars)	0.5	0.8	1.0	1.5	2.2	2.6	2.7	3.4	3.1
Average exchange rates (annual percent change)	-2.4	1.4	0.5	-0.9	6.9	3.0	2.2	-1.9	1.6
Foreign exchange availability (annual percent change)	-0.2	3.4	-4.1	4.5	-6.0	0.4	2.0	-2.9	1.7
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

1/ Not including China and India.

Table 15. Countries with Debt Servicing Problems: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	5.5	15.2	-0.1	7.2	9.9	-13.4	-13.0	2.1	-1.0
Export volume (annual percent change)	6.4	7.6	-7.3	13.2	-5.1	-10.6	0.2	7.8	-3.1
Import unit value (annual percent change in U.S. dollars)	6.1	29.0	11.2	10.6	-4.8	-4.2	-4.4	-2.5	-3.1
Export unit value (annual percent change in U.S. dollars)	3.3	39.2	1.0	8.5	--	-0.1	-0.1	--	-0.1
Terms of trade (annual percent change)	-2.8	10.2	-10.2	-2.1	4.8	4.1	4.3	2.5	3.0
Purchasing power of exports	4.4	13.2	-12.8	10.6	3.0	-8.1	3.3	10.1	0.1
Net external borrowings (billions of U.S. dollars)	21.9	31.3	42.5	53.5	89.3	70.4	40.3	31.5	12.2
Interest payments (billions of U.S. dollars)	3.4	5.5	6.9	15.8	42.1	50.4	46.9	50.6	48.1
Average exchange rates (annual percent change)	-2.0	-5.2	-2.1	-0.1	6.3	1.2	-1.7	0.5	11.6
Foreign exchange availability (annual percent change)	7.0	13.8	-8.2	10.2	9.9	-11.4	-7.1	5.7	-6.2
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 16. Countries Without Debt Servicing Problems: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	8.2	12.1	-1.7	8.5	7.7	0.2	7.0	5.5	5.6
Export volume (annual percent change)	9.5	6.0	0.8	7.7	6.8	1.0	9.3	13.1	5.2
Import unit value (annual percent change in U.S. dollars)	5.2	33.4	8.2	10.8	1.0	-3.7	-5.0	-0.9	-3.7
Export unit value (annual percent change in U.S. dollars)	5.4	40.1	0.6	13.2	0.7	-4.0	-5.6	0.3	-5.4
Terms of trade (annual percent change)	0.2	6.7	-7.7	2.4	-0.4	-0.3	-0.7	1.2	-1.7
Purchasing power of exports	10.0	7.0	-4.9	10.2	6.7	2.6	6.4	10.9	3.3
Net external borrowings (billions of U.S. dollars)	19.4	18.0	24.8	30.8	41.0	32.6	35.8	25.9	29.5
Interest payments (billions of U.S. dollars)	2.4	3.3	3.9	8.9	19.5	21.4	21.1	24.5	25.5
Average exchange rates (annual percent change)	-3.1	1.5	-2.8	-2.0	1.9	3.0	1.1	2.0	-0.1
Foreign exchange availability (annual percent change)	10.0	5.4	-0.8	10.0	7.2	-0.2	6.7	7.2	4.0
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 17. The Fifteen Heavily Indebted Countries: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	8.5	15.3	4.1	6.2	3.7	-16.3	-21.2	-2.3	-5.8
Export volume (annual percent change)	4.5	1.0	-8.9	4.0	-2.4	-5.1	6.6	9.6	2.5
Import unit value (annual percent change in U.S. dollars)	4.9	31.7	9.4	10.9	4.4	-2.7	-2.9	-0.8	4.8
Export unit value (annual percent change in U.S. dollars)	6.7	57.3	-0.3	17.5	1.5	-6.8	-6.4	1.6	-5.5
Terms of trade (annual percent change)	1.8	25.6	-9.7	6.7	-2.9	-4.0	-3.4	2.4	-10.2
Purchasing power of exports	7.6	16.2	-13.7	9.5	-2.1	-11.4	-0.4	12.2	-6.8
Net external borrowings (billions of U.S. dollars)	16.6	23.2	26.8	40.6	61.4	46.5	24.0	15.1	4.1
Interest payments (billions of U.S. dollars)	2.6	4.3	5.6	13.4	37.1	43.6	40.7	43.8	41.2
Average exchange rates (annual percent change)	-3.3	-2.2	-5.2	0.9	7.0	-1.7	-11.0	14.7	38.3
Foreign exchange availability (annual percent change)	10.8	15.1	-10.9	10.2	4.6	-15.0	-12.4	5.0	-12.6
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 18. Low Income Countries: 1/ Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	0.5	5.4	-9.9	5.2	-3.5	1.7	-2.9	4.8	2.8
Export volume (annual percent change)	2.7	-4.4	0.4	2.2	-1.6	-1.5	2.9	-0.9	13.3
Import unit value (annual percent change in U.S. dollars)	5.5	31.3	11.8	11.2	1.5	-4.9	-4.9	-0.9	-3.6
Export unit value (annual percent change in U.S. dollars)	1.6	34.0	-3.5	13.3	-6.3	-8.1	1.2	6.8	-8.1
Terms of trade (annual percent change)	-3.9	2.7	-15.2	2.1	-7.8	-3.2	6.1	7.7	-4.5
Purchasing power of exports	-1.3	-4.1	-12.5	6.6	-5.4	1.8	9.0	3.4	6.2
Net external borrowings (billions of U.S. dollars)	5.7	6.4	7.7	8.2	8.7	8.9	8.1	6.7	7.5
Interest payments (billions of U.S. dollars)	0.3	0.4	0.5	1.0	1.5	1.7	1.8	1.9	2.1
Average exchange rates (annual percent change)	-3.4	-0.2	-2.4	-0.5	7.1	1.7	0.4	-3.2	-2.3
Foreign exchange availability (annual percent change)	-1.6	1.0	-10.0	5.6	-4.6	2.0	4.1	-1.5	7.3
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Republic of China.

Table 19. Africa: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	6.0	12.4	9.3	3.0	11.4	-8.1	-9.9	-0.6	-6.7
Export volume (annual percent change)	6.9	1.6	-9.6	3.9	-15.6	-6.7	3.1	5.5	9.0
Import unit value (annual percent change in U.S. dollars)	6.1	28.0	14.3	12.5	-3.0	-4.6	-3.9	-4.1	-4.2
Export unit value (annual percent change in U.S. dollars)	3.3	55.6	2.7	17.6	-0.8	-8.0	-6.2	-2.1	-7.6
Terms of trade (annual percent change)	-2.8	27.6	-11.6	5.1	2.2	-3.4	-2.3	2.0	-3.4
Purchasing power of exports	4.2	18.9	-14.7	7.3	-11.2	-9.1	0.6	6.4	5.1
Net external borrowings (billions of U.S. dollars)	6.9	7.9	15.5	13.7	16.8	21.7	16.9	8.1	4.9
Interest payments (billions of U.S. dollars)	0.4	0.8	1.1	3.5	5.8	7.1	7.3	8.1	8.3
Average exchange rates (annual percent change)	-2.1	-0.7	1.4	1.1	5.3	1.1	-0.2	-3.3	-3.4
Foreign exchange availability (annual percent change)	5.5	18.7	-6.2	5.4	-5.3	-3.4	-3.9	-3.0	1.5
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 20. Asia: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	6.6	13.8	-4.4	12.0	7.3	0.9	8.4	5.3	7.4
Export volume (annual percent change)	10.4	6.7	3.3	11.1	8.5	1.0	10.7	13.8	5.2
Import unit value (annual percent change in U.S. dollars)	4.7	35.3	5.9	10.4	2.5	-4.2	-4.3	0.7	-4.3
Export unit value (annual percent change in U.S. dollars)	4.4	40.3	-2.9	12.1	-0.1	-4.3	-4.4	1.8	-6.1
Terms of trade (annual percent change)	-0.3	5.0	-8.8	1.7	-2.6	-0.1	-0.1	1.1	-1.9
Purchasing power of exports	9.0	8.3	-3.3	13.5	6.5	3.0	9.5	11.2	3.3
Net external borrowings (billions of U.S. dollars)	10.3	8.6	13.1	19.2	34.9	28.0	27.5	20.4	21.3
Interest payments (billions of U.S. dollars)	1.4	1.7	1.9	4.9	11.1	12.3	12.6	15.2	15.5
Average exchange rates (annual percent change)	-4.7	1.9	-5.7	-4.9	1.5	2.1	-1.4	2.3	-0.3
Foreign exchange availability (annual percent change)	7.3	7.7	-0.4	14.1	7.9	-0.2	8.3	7.4	3.3
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 21. Europe: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	7.9	13.4	-5.6	7.8	0.7	-7.4	2.2	5.8	7.1
Export volume (annual percent change)	12.6	16.5	3.3	16.3	2.3	-0.8	-0.1	6.9	0.8
Import unit value (annual percent change in U.S. dollars)	6.9	26.9	11.7	10.4	-4.9	-4.2	-4.5	-2.5	-3.1
Export unit value (annual percent change in U.S. dollars)	2.0	14.4	3.2	4.6	--	--	--	--	--
Terms of trade (annual percent change)	-4.9	-12.5	-8.5	-5.8	4.9	4.2	4.4	2.5	3.1
Purchasing power of exports	11.5	3.0	-6.5	7.1	7.9	0.9	2.1	9.3	4.9
Net external borrowings (billions of U.S. dollars)	5.8	5.9	7.8	12.3	10.7	4.7	7.1	5.3	6.5
Interest payments (billions of U.S. dollars)	0.6	0.8	0.9	2.5	7.2	7.6	6.7	7.4	7.9
Average exchange rates (annual percent change)	-2.2	-19.1	-3.8	-2.1	2.0	-0.3	-8.2	-6.2	1.6
Foreign exchange availability (annual percent change)	11.4	1.4	-4.8	7.9	2.8	-5.9	4.9	6.5	5.8
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 22. Middle East: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	9.6	27.0	30.0	6.2	16.8	5.7	-2.2	-6.4	-14.1
Export volume (annual percent change)	10.2	4.4	-9.5	-0.7	-17.6	-19.7	-9.3	-4.4	-8.9
Import unit value (annual percent change in U.S. dollars)	6.1	28.7	9.9	11.2	-0.2	-4.4	-4.0	-1.8	-2.7
Export unit value (annual percent change in U.S. dollars)	9.9	132.3	4.5	24.9	13.4	-2.3	-12.1	-2.1	-1.9
Terms of trade (annual percent change)	3.8	103.6	-5.4	13.7	13.6	2.1	-8.1	-0.3	0.8
Purchasing power of exports	15.7	75.4	-10.6	10.6	-2.9	-15.2	-12.8	-4.9	-8.1
Net external borrowings (billions of U.S. dollars)	7.9	18.5	2.4	3.3	5.9	9.3	7.8	9.7	5.9
Interest payments (billions of U.S. dollars)	2.0	2.6	2.6	2.6	4.8	6.4	6.2	7.0	7.1
Average exchange rates (annual percent change)	-1.7	5.1	-1.6	-0.1	7.4	9.2	8.3	7.0	0.6
Foreign exchange availability (annual percent change)	19.9	71.6	-19.4	10.5	-3.1	-13.6	-12.9	-3.8	-9.6
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 23. Western Hemisphere: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	8.0	11.4	-2.4	5.9	2.6	-17.7	-23.3	2.2	-7.2
Export volume (annual percent change)	2.9	-0.2	-7.2	3.7	6.0	-2.4	8.3	8.2	0.7
Import unit value (annual percent change in U.S. dollars)	4.8	33.4	10.0	10.8	5.1	-1.7	-3.3	-1.3	6.9
Export unit value (annual percent change in U.S. dollars)	6.7	49.8	1.4	16.2	0.5	-7.1	-6.0	2.1	-5.5
Terms of trade (annual percent change)	2.0	16.4	-8.6	5.4	-4.6	-5.4	-2.7	3.5	-12.4
Purchasing power of exports	5.3	9.6	-12.8	9.3	3.8	-10.0	0.4	11.9	-10.7
Net external borrowings (billions of U.S. dollars)	14.5	22.6	24.3	35.4	58.0	38.3	18.7	16.8	6.6
Interest payments (billions of U.S. dollars)	2.6	4.3	5.5	12.3	33.5	39.0	36.1	38.6	36.0
Average exchange rates (annual percent change)	-1.6	-1.2	-2.9	-0.3	5.5	2.1	-0.8	7.4	26.5
Foreign exchange availability (annual percent change)	9.8	10.0	-10.9	10.1	11.8	-17.5	-12.4	8.8	-16.4
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 24. Sub-Saharan Africa: Factors Affecting Imports

	1970-72 Average	1973-74 Average	1975	1976-80 Average	1981	1982	1983	1984	1985
Import volume (annual percent change)	5.2	5.8	-5.1	3.4	0.2	-4.2	-8.0	-2.8	0.5
Export volume (annual percent change)	3.9	-1.2	-3.0	0.9	-1.9	2.8	0.7	6.0	6.6
Import unit value (annual percent change in U.S. dollars)	6.8	27.4	14.7	11.7	-3.7	-4.7	-3.8	-2.5	-2.3
Export unit value (annual percent change in U.S. dollars)	0.9	37.2	-1.6	13.9	-9.0	-8.4	-2.2	2.0	-4.7
Terms of trade (annual percent change)	-5.9	9.7	-16.3	2.2	-5.3	-3.8	1.6	4.5	-2.4
Purchasing power of exports	-0.9	5.2	-13.9	3.4	-4.5	-1.3	2.7	8.9	4.4
Net external borrowings (billions of U.S. dollars)	3.1	4.4	6.7	7.0	9.4	8.9	8.0	4.2	4.6
Interest payments (billions of U.S. dollars)	0.3	0.5	0.7	1.4	2.1	2.4	2.5	2.6	2.7
Average exchange rates (annual percent change)	-2.2	-0.5	1.6	1.2	5.7	1.4	-1.3	-5.1	-2.8
Foreign exchange availability (annual percent change)	1.3	7.0	-6.5	3.6	-1.2	-2.3	-0.6	-3.5	5.0
Industrial countries' growth rate (annual percent change)	3.7	3.2	-0.5	3.5	1.4	-0.4	2.6	4.8	3.0

Sources: International Monetary Fund, Direction of Trade, International Financial Statistics, and World Economic Outlook.

Table 25. Relationship Between Difference in Growth of Real Imports and GDP and Terms of Trade: 1967-1985

	Constant (t)	Terms of Trade (t)	SEE D-WAT	R^2 AR^2
Developing countries	0.268	0.191	3.074	0.451
	(0.358)	(3.735)**	1.863	0.418
By financial criteria				
Capital-importing developing countries	0.048	0.478	3.001	0.439
	(0.067)	(3.650)**	1.844	0.406
Market borrowers	0.420	0.440	3.544	0.370
	(0.492)	(3.157)**	1.834	0.333
Official borrowers 1/	-0.832	0.276	3.012	0.270
	(-1.204)	(2.513)*	2.040	0.228
Countries with debt-servicing problems	-1.594	0.464	5.018	0.330
	(-1.341)	(2.894)*	1.726	0.291
Countries without debt-servicing problems	0.893	0.637	3.423	0.360
	(1.102)	(3.091)**	2.121	0.322
Fifteen heavily indebted countries	-1.878	0.420	6.146	0.368
	(-1.251)	(3.144)**	1.472	0.331
Low income 1/	-1.517	0.089	5.951	0.017
	(-1.110)	(0.536)	2.166	-0.041
By area				
Africa	-0.472	0.265	6.139	0.224
	(-0.320)	(2.214)*	2.077	0.178
Asia	1.309	0.802	4.580	0.337
	(1.240)	(2.942)**	1.924	0.298
Europe	1.102	0.145	4.848	0.008
	(0.857)	(0.362)	1.868	-0.051
Middle East	2.197	0.130	9.570	0.298
	(0.948)	(2.686)*	1.628	0.257
Western Hemisphere	-2.139	0.413	6.282	0.224
	(-1.414)	(2.217)*	1.539	0.179
Sub-Saharan Africa 2/	-0.960	0.041	5.253	0.005
	(-0.796)	(0.280)	2.105	-0.054

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Reublic of China.
2/ Excluding Nigeria and South Africa.
** Significant at the 1 percent level.
* Significant at the 5 percent level.

Table 26. Relationship Between Difference in Growth of Real Imports and GDP and Change of Interest Rates: 1967-1985

	Constant (t)	Change of Interest Rates (t)	SEE D-WAT	R^2 AR^2
Developing countries	1.265	-0.074	3.958	0.089
	(1.392)	(-1.288)	1.328	0.035
By financial criteria				
Capital-importing developing countries	0.787	-0.149	3.551	0.215
	(0.965)	(-2.159)	1.740	0.169
Market borrowers	1.292	-0.096	4.277	0.082
	(1.316)	(-1.232)	1.592	0.028
Official borrowers 1/	-0.684	-0.106	3.285	0.133
	(-0.905)	(-1.613)	1.794	0.082
Countries with debt-servicing problems	-0.700	-0.058	6.075	0.018
	(-0.502)	(-0.558)	1.595	-0.040
Countries without debt-servicing problems	1.601	-0.237	3.356	0.384
	(2.078)	(-3.259)**	2.129	0.348
Fifteen heavily indebted countries	-0.231	-0.050	7.686	0.011
	(-0.131)	(-0.440)	1.299	-0.047
Low income 1/	-1.567	0.018	5.996	0.002
	(-1.137)	(0.164)	2.098	-0.057
By area				
Africa	0.434	0.071	6.869	0.028
	(0.275)	(0.699)	1.699	-0.029
Asia	1.728	-0.319	4.207	0.441
	(1.790)	(-3.661)**	1.696	0.408
Europe	0.988	-0.320	4.316	0.213
	(0.996)	(-2.147)*	2.208	0.167
Middle East	4.152	0.093	11.193	0.040
	(1.617)	(0.837)	0.965	-0.017
Western Hemisphere	-1.078	-0.073	7.049	0.023
	(-0.666)	(-0.635)	1.476	-0.034
Sub-Saharan Africa 2/	-1.025	0.078	5.145	0.045
	(-0.867)	(0.894)	2.062	-0.011

Source: International Monetary Fund, International Financial Statistics, and World Econom Outlook.

1/ Excluding India and the People's Reublic of China.
2/ Excluding Nigeria and South Africa.
** Significant at the 1 percent level.
* Significant at the 5 percent level.

Table 27. Relationship Between Difference in Growth of Real Imports and GDP and Real Exchange Rates: 1967-1985

	Constant (t)	Real Exchange Rates (t)	SEE D-WAT	R^2 AR^2
Developing countries	12.276	-0.110	3.520	0.047
	(0.919)	(-0.893)	1.841	-0.009
By financial criteria				
Capital-importing developing countries	-2.171	0.018	3.558	0.002
	(-0.177)	(0.158)	2.155	-0.057
Market borrowers	7.612	-0.060	4.493	0.011
	(0.503)	(-0.423)	1.724	-0.047
Official borrowers 1/	12.622	-0.127	3.546	0.028
	(0.635)	(-0.674)	2.064	-0.030
Countries with debt-servicing problems	-8.063	0.052	5.255	0.007
	(-0.493)	(0.342)	1.834	-0.051
Countries without debt-servicing problems	5.978	-0.040	4.154	0.006
	(0.414)	(-0.302)	2.244	-0.053
Fifteen heavily indebted countries	-1.402	0.010	7.849	
	(-0.094)	(0.071)	1.322	-0.058
Low income 1/	63.171	-0.588	7.908	0.222
	(2.150)*	(-2.134)	1.542	0.176
By area				
Africa	51.726	-0.521	6.701	0.102
	(1.355)	(-1.351)	1.956	0.050
Asia	8.029	-0.051	5.413	0.037
	(1.005)	(-0.782)	(2.204)	-0.020
Europe	-5.637	0.020	5.302	0.025
	(-1.357)	(0.641)	1.069	-0.032
Middle East	37.363	-0.308	10.419	0.150
	(1.895)	(-1.678)	1.012	0.100
Western Hemisphere	2.682	-0.034	7.346	0.003
	(0.152)	(-0.211)	1.449	-0.056
Sub-Saharan Africa 2/	26.481	-0.277	5.141	0.059
	(0.971)	(-0.999)	2.082	0.003

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Reublic of China.
2/ Excluding Nigeria and South Africa.
** Significant at the 1 percent level.
* Significant at the 5 percent level.

Table 28. Relationship Between Difference in Growth of Real Imports and GDP and Industrial Countries Growth: 1967-1985

	Constant (t)	Industrial Countries Growth (t)	SEE D-WAT	R^2 AR^2
Developing countries	0.465	-0.032	3.606	
	(0.285)	(0.070)	1.770	-0.058
By financial criteria				
Capital-importing developing countries	-2.159	0.624	3.338	0.121
	(-1.429)	(1.485)	2.170	0.069
Market borrowers	-0.431	0.542	4.388	0.057
	(-0.217)	(0.983)	1.650	0.001
Official borrowers 1/	-2.523	0.575	3.409	0.101
	(-1.635)	(1.342)	2.130	0.048
Countries with debt-servicing problems	-3.495	0.327	5.235	0.015
	(-1.475)	(0.496)	1.846	-0.043
Countries without debt-servicing problems	-1.879	1.145	3.490	0.298
	(-1.190)	(2.608)*	2.184	0.257
Fifteen heavily indebted countries	-0.377	0.010	7.850	
	(-0.106)	(0.010)	1.328	-0.059
Low income 1/	-2.015	0.842	8.806	0.035
	(-0.506)	(0.760)	1.287	-0.022
By area				
Africa	2.706	-0.814	6.886	0.052
	(0.868)	(-0.939)	1.766	-0.004
Asia	-2.470	1.411	4.750	0.259
	(-1.149)	(2.362)*	1.925	0.215
Europe	-6.552	1.125	4.883	0.173
	(-2.965)**	(1.831)	1.037	0.125
Middle East	14.148	-3.129	9.434	0.303
	(3.314)**	(-2.636)*	0.936	0.262
Western Hemisphere	-3.288	0.740	7.208	0.040
	(-1.008)	(0.817)	1.543	-0.016
Sub-Saharan Africa 2/	-1.241	0.166	5.288	0.004
	(-0.518)	(0.249)	2.018	-0.055

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Reublic of China.
2/ Excluding Nigeria and South Africa.
** Significant at the 1 percent level.
* Significant at the 5 percent level.

Table 29. Estimation of Demand for Consumer Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R^2
Algeria	1.510 (0.336)	0.481 (2.584)*	0.720 (1.485)	-1.602 -(1.476)	0.004 (1.771)	0.953
Argentina	-6.682 (-0.404)	1.852 (1.873)	-0.307 (-0.140)	1.148 (3.747)*	0.021 (3.023)*	0.823
Barbados	3.233 (2.145)*	0.076 (0.301)	0.825 (3.023)*	-0.963 (-2.607)*	0.003 (1.977)*	0.712
Bolivia	-15.070 (-2.907)*	-2.023 (-2.270)*	3.245 (2.711)*	2.864 (3.236)*	-0.013 (-2.035)*	0.741
Brazil	-0.273 (-0.039)	-0.300 (-0.543)	0.702 (1.881)	-0.069 (-0.067)	-0.007 (-1.167)	0.717
Chile	-10.879 (-2.330)*	0.300 (0.434)	2.623 (4.330)*	-0.287 (-1.097)	-0.001 (-0.336)	0.783
Colombia	-9.299 (-5.142)*	-0.185 (-0.974)	1.242 (4.932)*	1.503 (3.245)	-0.002 (-0.841)	0.941
Costa Rica	-3.791 (-1.409)	0.500 (1.262)	0.785 (2.912)*	0.800 (2.293)*	0.006 1.313	0.608
Cyprus	-5.955 (-2.591)*	0.579 (1.606)	1.485 (8.985)*	-0.417 (-1.020)	-0.006 (-1.606)	0.608
Ecuador	-3.934 (-1.314)	-0.241 (-0.691)	1.219 (4.399)*	0.753 (0.859)	-0.003 (-1.149)	0.896
Egypt	-58.871 (3.059)*	1.654 (2.400)*	4.440 (2.769)*	2.719 (2.214)*	0.006 (0.986)	0.927
El Salvador	-7.370 (-7.551)*	0.426 (5.029)	0.971 (7.794)	0.389 (1.671)	0.002 (1.735)	0.971
Greece	-9.997 (-0.699)	0.506 (0.590)	1.773 (2.208)*	0.119 (0.087)	0.001 (0.388)	0.828
Guatemala	-4.642 (-1.858)	0.142 (0.782)	0.253 (1.331)	1.420 (1.959)*	-- (0.122)	0.757

Table 29 (cont'd.) Estimation of Demand for Consumer Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Honduras	-7.506 (-0.693)	0.282 (0.765)	1.148 (1.953)*	0.444 (0.285)	-- (-0.060)	0.558
Hong Kong	-2.437 (-1.660)	0.276 (5.260)*	1.212 (16.889)*	-0.041 (-0.172)	0.001 (1.624)	0.990
Indonesia	-14.879 (-1.770)	0.002 (0.005)	1.402 (1.812)	0.864 (1.789)	-- (0.037)	0.916
Israel	-3.513 (-0.752)	0.347 (0.848)	1.247 (3.591)	0.157 (0.547)	-0.010 (-5.022)*	0.957
Cote d'Ivoire	-5.538 (-4.553)*	0.186 (0.818)	0.960 (3.084)*	0.533 (1.081)	-0.001 (-0.861)	0.939
Jamaica	-20.833 (-1.842)	-0.331 (0.340)	3.335 (2.433)*	0.425 (0.390)	0.001 (0.088)	0.559
Jordan	-8.101 (-1.031)	1.066 (2.143)*	2.241 (4.125)*	-1.624 (-0.606)	0.001 (0.356)	0.928
Korea	-3.469 (-0.618)	-0.266 (-0.531)	0.728 (2.414)*	0.365 (0.471)	0.002 (0.251)	0.720
Liberia	-0.129 (-0.018)	0.882 (2.042)*	0.979 (1.115)	-1.247 (-3.058)*	0.001 (0.300)	0.596
Madagascar	-0.258 (-0.021)	-0.617 (-1.032)	2.277 (1.615)	-1.744 (-2.041)*	-0.003 (-0.790)	0.587
Malaysia	-13.492 (-2.022)*	0.424 (1.405)	0.871 (3.787)*	1.482 (1.702)	0.001 (0.526)	0.840
Malta	1.829 (0.578)	-0.453 (-1.609)	0.564 (3.200)*	0.370 (0.821)	-0.006 (-2.275)*	0.960
Mauritius	-0.524 (-0.034)	0.610 (1.667)	0.888 (2.129)	-1.325 (-0.441)	-- (0.055)	0.654
Mexico	-6.988 (-2.276)*	-0.154 (-0.288)	1.168 (2.611)*	0.890 (1.423)	-0.007 (-1.210)	0.757
Morocco	5.676 (0.960)	0.812 (4.414)*	0.988 (3.627)	-1.777 (-1.648)	-- (-0.032)	0.898

Table 29 (cont'd.) Estimation of Demand for Consumer Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Nicaragua	-7.494 (-1.140)	0.127 (0.187)	0.904 (1.580)	0.666 (1.183)	0.001 (0.116)	0.512
Nigeria	-20.237 (-4.913)*	0.353 (3.306)*	1.597 (3.924)*	1.506 (4.842)*	0.007 (3.514)*	0.988
Pakistan	0.916 (0.321)	-0.198 (-0.626)	1.036 (2.779)*	0.102 (0.318)	-0.001 (-0.177)	0.740
Peru	-15.073 (-3.130)*	0.828 (2.262)*	2.000 (3.846)*	0.663 (1.940)*	0.010 (3.544)*	0.825
Philippines	-3.921 (-0.881)	0.365 (0.915)	0.832 (2.090)*	0.486 (1.137)	0.002 (0.936)	0.672
Portugal	-13.614 (-3.978)*	1.258 (3.479)*	1.324 (5.046)*	0.670 (2.218)*	0.002 (0.913)	0.812
Senegal	-6.209 (-1.457)	-0.078 (-0.152)	1.390 (2.067)*	0.555 (0.920)	-0.004 (-0.722)	0.499
Sri Lanka	4.806 (0.280)	-0.177 (-0.485)	0.026 (0.019)	0.042 (0.105)	0.001 (0.347)	0.138
Syrian Arab Rep.	-10.923 (-2.021)*	0.065 (0.075)	0.582 (1.624)	2.053 (1.742)	-- (0.002)	0.659
Tanzania	8.111 (1.324)	-0.679 (-0.898)	0.208 (0.419)	-0.557 (-0.654)	-0.007 (-1.215)	0.327
Thailand	-3.292 (-0.657)	0.433 (0.868)	0.878 (2.385)*	0.217 (0.327)	0.004 (0.985)	0.741
Togo	-21.268 (-2.383)*	0.029 (0.124)	3.611 (5.961)*	1.418 (0.941)	0.004 (1.725)	0.874
Trinidad and Tobago	-26.645 (-5.371)*	-0.085 (-0.291)	2.745 (4.753)*	1.292 (3.975)*	0.003 (2.143)*	0.952
Tunisia	4.722 (0.780)	0.463 (2.760)*	0.314 (0.956)	-1.028 (-1.307)	0.001 (0.972)	0.979

Table 29 (concluded). Estimation of Demand for Consumer Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Turkey	-6.211	0.427	1.163	0.302	0.002	0.151
	(-0.514)	(0.353)	(0.816)	(0.178)	(0.167)	
Uruguay	-37.509	0.568	2.961	1.846	-0.004	0.888
	(-3.341)*	(1.136)	(3.237)*	(3.744)*	(-0.477)	
Venezuela	-5.638	0.136	1.972	0.276	0.005	0.979
	(-1.694)	(1.336)	(4.226)*	(0.593)	(3.328)*	
Yugoslavia	1.120	0.157	0.094	0.440	-0.011	0.496
	(0.183)	(0.189)	(0.381)	(0.851)	(-1.995)	

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

* Significant at the 10 percent level.

Table 30. Estimation of Demand for Intermediate Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Interest (t)	Real Exchange Rate (t)	R^2
Algeria	0.675 (0.163)	0.315 (1.840)	0.759 (1.699)	0.002 (0.972)	-1.378 (-1.376)	0.938
Argentina	-16.059 (-1.680)	-0.531 (-0.929)	2.316 (1.821)	0.001 (0.211)	0.324 (1.827)	0.592
Barbados	1.040 (0.475)	-0.555 (-1.516)	1.343 (3.391)*	-0.000 (-0.136)	-0.627 (-1.170)	0.880
Bolivia	-10.015 (-2.830)*	-1.196 (-1.968)*	2.764 (3.384)*	-0.004 (-0.916)	1.506 (2.494)*	0.820
Brazil	-14.982 (-2.481)*	-1.443 (-3.041)*	1.876 (5.844)*	-0.015 (-2.880)*	1.844 (2.089)*	0.940
Chile	-9.803 (-4.918)*	0.654 (2.217)*	2.260 (8.737)*	0.003 (1.666)	-0.410 (-3.671)*	0.938
Colombia	-10.144 (-5.338)*	-0.304 (-1.519)	1.153 (4.354)*	-0.001 (-0.284)	1.934 (3.975)*	0.941
Costa Rica	1.170 (0.748)	-0.228 (-0.990)	1.298 (8.286)*	-0.003 (-0.896)	0.103 (0.509)	0.941
Cyprus	1.752 (0.990)	-0.785 (-2.829)*	1.295 (10.180)*	0.002 (0.550)	-0.460 (-1.462)	0.970
Ecuador	1.318 (0.664)	0.872 (3.761)*	0.082 (0.448)	0.002 (0.817)	-0.221 (-0.379)	0.915
Egypt	-50.181 (-3.710)*	0.963 (1.989)*	3.926 (3.483)*	0.009 (2.150)*	2.614 (3.028)*	0.934
El Salvador	-11.660 (-3.479)*	-0.200 (-0.687)	1.578 (3.689)*	-0.003 (-0.856)	0.861 (1.077)	0.805
Greece	-3.213 (-0.250)	-0.789 (-1.028)	1.377 (1.912)*	-0.006 (-1.930)*	0.486 (0.396)	0.905
Guatemala	-15.857 (-4.745)*	-0.452 (-1.865)	1.737 (6.818)*	0.002 (0.881)	1.699 (1.752)	0.940

Table 30 (cont'd). Estimation of Demand for Intermediate Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Interest (t)	Real Exchange Rate (t)	R^2
Honduras	-8.187 (-1.596)	-0.267 (-1.529)	1.511 (5.424)*	-0.003 (-1.155)	0.545 (0.737)	0.925
Hong Kong	-2.129 (-1.369)	0.034 (0.617)	1.180 (15.517)*	0.002 (1.791)	0.170 (0.675)	0.992
Indonesia	-5.249 (-1.305)	0.728 (3.803)*	0.540 (1.459)	0.005 (1.019)	0.123 (0.530)	0.987
Israel	4.991 (0.919)	-1.797 (-2.701)*	1.512 (4.360)*	-0.008 (-1.764)	0.206 (0.693)	0.955
Cote d'Ivoire	-10.851 (-4.653)*	0.048 (0.111)	2.535 (4.250)*	-0.002 (-0.504)	-0.548 (-0.580)	0.928
Jamaica	11.176 (1.806)	-0.764 (-1.434)	-1.146 (-1.529)	-0.004 (-1.331)	1.214 (2.034)*	0.445
Jordan	-22.667 (-2.464)*	1.231 (2.211)*	2.754 (4.330)*	0.002 (0.457)	0.595 (0.190)	0.953
Korea	-17.011 (-6.127)*	-0.668 (-2.693)*	1.982 (13.291)*	-0.003 (-0.868)	0.824 (2.150)*	0.987
Liberia	36.586 (2.862)*	-1.242 (-1.599)	-2.771 (-1.757)	-0.002 (-0.617)	-1.679 (-2.293)*	0.664
Madagascar	-37.321 (-3.148)*	1.335 (2.359)*	5.130 (3.841)*	0.007 (1.954)*	-0.056 (-0.069)	0.718
Malaysia	-26.332 (-5.283)*	0.914 (4.056)*	1.594 (9.284)*	0.005 (2.819)*	2.098 (3.226)*	0.976
Malta	-3.905 (-0.745)	-0.843 (-1.806)	1.065 (3.647)*	-0.006 (-1.334)	1.393 (1.865)	0.957
Mauritius	-21.364 (-4.035)*	0.133 (1.058)	2.072 (14.432)*	-0.003 (-2.471)*	1.325 (1.282)	0.974
Mexico	-9.866 (-3.302)*	0.771 (1.479)	0.988 (2.269)*	0.010 (1.746)	1.030 (1.693)	0.879

Table 30 (cont'd). Estimation of Demand for Intermediate Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Interest (t)	Real Exchange Rate (t)	R^2
Morocco	3.398 (0.852)	0.164 (1.321)	1.897 (10.329)*	-0.002 (-1.218)	-1.332 (-1.832)	0.981
Nicaragua	-11.415 (-1.993)*	-0.104 (-0.177)	1.360 (2.726)*	0.003 (0.429)	0.840 (1.711)	0.744
Nigeria	-6.502 (-0.705)	0.514 (2.151)*	0.573 (0.629)	0.006 (1.429)	0.684 (0.983)	0.911
Pakistan	-7.044 (-2.431)*	-0.284 (-0.883)	2.351 (6.200)*	-0.005 (-0.754)	0.732 (2.250)*	0.907
Peru	-10.871 (-2.312)*	-0.096 (-0.268)	1.359 (2.677)*	0.001 (0.317)	1.548 (4.639)*	0.807
Philippines	-12.707 (-1.962)*	0.310 (0.533)	2.015 (3.476)*	-- (0.019)	1.020 (1.641)	0.920
Portugal	-14.144 (-3.846)*	0.668 (1.720)	2.247 (7.969)*	0.003 (0.995)	-0.075 (-0.231)	0.934
Senegal	-18.772 (-3.163)*	-0.168 (-0.235)	3.920 (4.187)*	-0.007 (-0.998)	-0.148 (-0.176)	0.735
Sri Lanka	-8.794 (-0.598)	-0.597 (-1.907)*	1.497 (1.280)	-0.003 (-0.717)	0.067 (0.196)	0.893
Syrian Arab Rep.	-20.075 (-5.302)*	0.582 (0.962)	1.543 (6.143)*	0.002 (0.413)	1.173 (1.421)	0.946
Tanzania	-1.194 (-0.311)	-0.411 (-0.868)	0.823 (2.646)*	-0.005 (-1.438)	-0.132 (-0.247)	0.567
Thailand	-10.129 (-5.487)*	-0.401 (-2.184)*	1.769 (13.041)*	-0.006 (-3.678)*	1.425 (5.838)*	0.995
Togo	-40.459 (-3.257)*	0.361 (1.107)	5.810 (6.891)*	0.001 (0.446)	2.717 (1.295)	0.889
Trinidad and Tobago	20.086 (1.326)	1.214 (1.363)	-1.851 (-1.050)	-0.004 (-0.860)	-0.819 (-0.825)	0.517
Tunisia	-7.147 (-1.412)	0.792 (5.663)*	1.058 (3.851)*	0.001 (1.191)	-0.112 (-0.171)	0.994

Table 30 (concluded). Estimation of Demand for Intermediate Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Interest (t)	Real Exchange Rate (t)	R^2
Turkey	-6.398 (-1.240)	-0.182 (-0.353)	2.327 (3.823)*	-0.003 (-0.456)	-0.667 (-0.917)	0.902
Uruguay	-9.085 (-0.988)	-0.730 (-1.782)	1.711 (2.283)*	-0.006 (-0.907)	-0.185 (-0.457)	0.910
Venezuela	(0.749) (0.135)	0.206 (1.214)	1.275 (1.643)	0.002 (0.885)	-0.539 (-0.696)	0.925
Yugoslavia	6.537 (0.933)	-1.864 (-1.960)*	0.913 (3.208)*	-0.002 (-0.317)	-0.208 (-0.351)	0.904

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

* Significant at the 10 percent level.

Table 31. Estimation of Demand for Capital Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Algeria	4.624	0.006	1.764	-4.459	0.005	0.932
	(0.876)	(0.028)	(3.100)*	(-3.502)*	(1.988)*	
Argentina	0.510	1.656	0.592	0.378	0.020	0.734
	(0.034)	(1.855)	(-0.298)	(1.366)	(3.118)*	
Barbados	0.434	-0.126	2.630	-2.771	0.002	0.778
	(0.125)	(-0.218)	(4.200)*	(-3.270)*	(0.624)	
Bolivia	-4.806	0.180	2.300	-0.419	0.005	0.760
	(-0.860)	(0.188)	(1.782)	(-0.439)	(0.688)	
Brazil	-7.957	-0.281	0.884	1.199	-0.008	0.433
	(-0.904)	(-0.407)	(1.888)	(0.931)	(-1.037)	
Chile	-7.906	0.683	1.842	-0.319	0.006	0.786
	(-2.436)*	(1.423)	(4.373)*	(-1.754)	(1.998)*	
Colombia	-6.709	-0.192	0.086	2.514	0.001	0.776
	(-2.304)*	(-0.628)	(0.212)	(3.373)*	(0.275)	
Costa Rica	-3.799	0.586	1.207	0.457	0.004	0.875
	(-2.130)*	(2.232)*	(6.757)*	(1.979)*	(1.106)	
Cyprus	-12.905	0.402	2.015	0.523	-0.007	0.850
	(-2.864)*	(0.568)	(6.221)*	(0.652)	(-0.953)	
Ecuador	-5.130	0.406	1.079	0.536	0.004	0.900
	(-1.359)	(0.922)	(3.088)*	(0.485)	(1.044)	
Egypt	-85.704	-0.680	7.533	4.290	0.004	0.935
	(-4.393)*	(-0.973)	(4.634)*	(3.447)*	(0.625)	
El Salvador	-8.993	0.637	1.927	-1.137	0.001	0.735
	(-1.670)	(1.362)	(2.803)*	(-0.884)	(0.133)	
Greece	37.286	-1.995	-1.294	-3.240	-0.002	0.406
	(1.511)	(-1.351)	(-0.934)	(-1.373)	(-0.369)	
Guatemala	-13.039	0.183	0.887	2.064	-0.004	0.823
	(-3.068)*	(0.595)	(2.740)*	(1.674)	(-1.150)	

Table 31 (cont'd.) Estimation of Demand for Capital Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Honduras	-5.298	0.417	1.485	-0.738	-0.002	0.856
	(-0.665)	(1.539)	(3.434)*	(-0.643)	(-0.404)	
Hong Kong	-3.108	0.148	1.448	-0.017	0.001	0.993
	(-1.839)	(2.449)*	(17.517)*	(-0.060)	(0.729)	
Indonesia	-9.810	0.217	0.896	0.765	0.001	0.921
	(-1.278)	(0.593)	(1.268)	(1.736)	(0.263)	
Israel	-4.949	0.953	0.807	0.313	0.002	0.198
	(-0.403)	(0.886)	(0.885)	(0.415)	(0.381)	
Cote d'Ivoire	-14.055	0.465	1.931	0.644	-0.005	0.907
	(-0.403)	(0.886)	(0.885)	(0.415)	(0.381)	
Jamaica	-30.612	0.279	4.893	-0.576	0.004	0.333
	(-1.307)	(0.138)	(1.723)	(-0.255)	(0.313)	
Jordan	-17.975	1.195	2.916	-0.604	-0.001	0.829
	(-0.985)	(1.081)	(2.310)*	(-0.097)	(-0.164)	
Korea	-17.545	-0.024	1.868	0.600	-0.005	0.980
	(-6.249)*	(-0.096)	(12.389)*	(1.548)	(-1.481)	
Liberia	6.970	1.294	-0.389	-1.203	-0.003	0.608
	(0.687)	(2.098)*	(-0.310)	(-2.068)*	(-0.872)	
Madagascar	-27.043	-0.703	5.888	-1.395	0.011	0.806
	(-1.930)*	(-1.052)	(3.730)*	(-1.458)	(2.552)	
Malaysia	-28.607	0.550	2.080	1.815	0.002	0.977
	(-4.504)*	(1.914)*	(9.508)*	(2.190)*	(1.127)	
Malta	2.459	0.305	0.578	-0.551	0.010	0.826
	(0.244)	(0.340)	(1.031)	(-0.384)	(1.266)	
Mauritius	17.846	0.604	1.540	-6.598	-0.001	0.965
	(2.568)*	(3.661)*	(8.175)*	(-4.861)*	(-0.569)	
Mexico	-5.809	0.862	0.439	0.807	0.006	0.895
	(-2.980)*	(2.537)*	(1.545)	(2.033)*	(1.706)	
Morocco	-27.365	0.972	2.563	4.086	0.013	0.825
	(-2.187)*	(2.497)*	(4.447)*	(1.791)	(3.056)*	

Table 31 (cont'd.) Estimation of Demand for Capital Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Nicaragua	-15.516 (1.730)	-0.024 (-0.026)	2.404 (3.079)*	-0.332 (-0.432)	0.006 (0.602)	0.610
Nigeria	-16.704 (-2.003)*	0.363 (1.676)	1.156 (1.403)	1.701 (2.701)*	0.007 (1.706)	0.956
Pakistan	-7.650 (-2.243)*	-0.713 (-1.881)	1.981 (4.437)*	1.616 (4.220)*	-0.009 (-1.214)	0.870
Peru	-17.701 (-6.172)*	0.728 (3.340)*	2.382 (7.692)*	0.805 (3.956)*	0.006 (3.533)*	0.916
Philippines	-11.537 (-2.998)*	0.895 (2.590)*	1.849 (5.367)*	0.360 (0.974)	0.007 (3.758)*	0.936
Portugal	-8.680 (-2.282)*	1.188 (2.957)*	1.358 (4.657)*	-0.387 (-1.153)	-0.001 (-0.207)	0.776
Senegal	-12.854 (-5.259)*	-0.505 (-1.716)	2.420 (6.274)*	0.994 (2.871)*	-0.008 (-2.799)*	0.895
Sri Lanka	-26.551 (0.784)	0.772 (1.071)	2.673 (0.992)	-0.220 (-0.279)	0.018 (2.220)*	0.711
Syrian Arab Rep.	-17.551 (-0.784)	0.305 (1.071)	1.793 (0.992)	0.301 (-0.279)	0.002 (2.220)*	0.912
Tanzania	-2.393 (-0.645)	0.873 (1.906)*	1.150 (3.821)*	-1.895 (-3.675)*	0.011 (3.244)*	0.800
Thailand	-12.476 (-3.580)*	0.328 (0.945)	1.584 (6.186)*	1.433 (3.109)*	0.001 (0.176)	0.957
Togo	-59.776 (-3.045)*	0.008 (0.016)	6.480 (4.863)*	6.560 (1.979)*	-- (0.107)	0.776
Trinidad and Tobago	-25.052 (-1.661)	0.152 (0.172)	3.088 (1.759)	-0.003 (-0.003)	0.006 (1.399)	0.853
Tunisia	-18.620 (-1.057)	0.227 (0.466)	2.093 (2.189)*	1.174 (0.513)	0.004 (1.071)	0.889

Table 31 (concluded). Estimation of Demand for Capital Goods Imports (1970-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Real Interest Rate (t)	R2
Turkey	-13.792 (-2.412)*	1.505 (2.631)*	2.325 (3.446)	-0.752 (-0.934)	0.012 (1.666)	0.647
Uruguay	-26.329 (-1.298)	-0.465 (-0.514)	3.157 (1.911)*	0.022 (0.025)	-0.002 (-0.145)	0.799
Venezuela	-1.925 (-0.330)	-0.074 (-0.416)	2.422 (2.963)*	-0.737 (-0.905)	0.007 (2.382)*	0.933
Yugoslavia	-9.071 (-1.288)	0.371 (0.388)	0.912 (3.188)*	0.990 (1.660)	-0.003 (-0.541)	0.880

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

* Significant at the 10 percent level.

Table 32. Estimation of Demand for ~~Consumer~~ Goods Imports: Pooled Regressions (1971-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Exchange Rate (t)	Consumer Goods (-1) (t)	R^2
Developing countries	0.466 (2.052)*	0.044 (1.736)	0.005 (1.199)	0.039 (0.840)	0.809 (34.198)*	0.724
By financial criteria						
Capital-importing developing countries	0.466 (2.052)*	0.044 (1.736)	0.005 (1.199)	0.039 (0.840)	0.809 (34.198)*	0.724
Market borrowers	0.243 (0.842)	0.027 (0.884)	0.004 (0.620)	0.082 (1.295)	0.835 (24.055)*	0.748
Official borrowers 1/	0.993 (1.138)	0.017 (0.187)	0.014 (1.354)	-0.042 (-0.256)	0.789 (15.903)*	0.704
Countries with debt-servicing problems	0.177 (0.582)	0.056 (1.443)	-0.001 (-0.168)	0.115 (1.798)	0.793 (24.617)*	0.730
Countries without debt-servicing problems	1.326 (3.729)*	0.064 (1.813)	0.014 (2.366)*	-0.173 (-2.377)*	0.805 (22.366)*	0.730
Fifteen heavily indebted countries	0.302 (0.847)	0.040 (0.903)	-0.007 (-0.700)	0.090 (1.164)	0.815 (17.662)*	0.748
Low income 1/	1.839 (2.185)*	0.104 (0.758)	0.001 (0.079)	-0.249 (-2.174)*	0.738 (7.292)*	0.596
By area						
Africa	-0.062 (-0.102)	0.192 (3.569)*	0.016 (1.771)	0.120 (0.919)	0.674 (12.281)*	0.783
Asia	1.898 (4.593)*	-0.002 (-0.038)	0.007 (1.119)	-0.195 (-2.630)*	0.776 (12.893)*	0.680
Europe	1.903 (1.537)	0.177 (1.446)	0.034 (1.040)	-0.301 (-1.171)	0.659 (7.144)*	0.555
Middle East	-3.270 (-1.688)	0.702 (2.357)*	0.062 (2.534)*	0.178 (0.780)	0.738 (7.984)*	0.726
Western Hemisphere	0.216 (0.618)	0.035 (0.710)	-0.004 (-0.472)	0.095 (1.341)	0.828 (21.837)*	0.743
Sub-Saharan Africa 2/	0.054 (0.052)	0.256 (2.119)*	0.001 (0.079)	-0.006 (-0.026)	0.727 (9.868)*	0.627

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Republic of China.
2/ Excluding Nigeria and South Africa.
* Significant at the 10 percent level.

Table 33. Estimation of Demand for Intermediate Goods Imports: Pooled Regressions (1971-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Rate of Interest (t)	Real Exchange Rate (t)	Intermediate Goods (-1) (t)	R^2
Developing countries	0.317	0.032	0.004	-0.003	0.004	0.897	0.785
	(1.402)	(1.445)	(1.040)	(-5.420)*	(0.091)	(42.275)*	
By financial criteria							
Capital-importing developing countries	0.317	0.032	0.004	-0.003	0.004	0.897	0.785
	(1.402)	(1.445)	(1.040)	(-5.420)*	(0.091)	(42.275)*	
Market borrowers	0.173	0.040	0.002	-0.002	0.046	0.882	0.761
	(0.582)	(1.461)	(0.342)	(-3.180)*	(0.822)	(27.410)*	
Official borrowers 1/	0.844	-0.045	0.009	-0.004	-0.048	0.904	0.794
	(0.969)	(-0.460)	(0.826)	(-3.526)*	(-0.307)	(21.133)*	
Countries with debt-servicing problems	0.239	0.022	0.004	-0.002	0.076	0.849	0.702
	(0.813)	(0.674)	(0.666)	(-3.284)*	(1.352)	(24.796)*	
Countries without debt-servicing problems	0.764	0.049	0.007	-0.003	-0.142	0.931	0.844
	(2.067)*	(1.525)	(1.277)	(-4.531)*	(-1.975)*	(32.786)*	
Fifteen heavily indebted countries	0.217	0.026	0.001	-0.001	0.065	0.868	0.730
	(0.633)	(0.702)	(0.179)	(-1.601)	(0.981)	(19.806)*	
Low income 1/	2.432	-0.158	0.016	-0.005	-0.185	0.786	0.794
	(2.499)*	(-0.994)	(1.350)	(-3.121)*	(-1.389)	(9.048)*	
By area							
Africa	0.520	0.096	0.010	-0.003	-0.068	0.845	0.833
	(0.972)	(2.128)*	(1.106)	(-3.298)*	(-0.610)	(18.246)*	
Asia	0.688	0.039	0.009	-0.006	-0.195	1.020	0.899
	(1.632)	(0.969)	(1.579)	(-5.556)*	(-2.559)*	(24.667)*	
Europe	2.264	-0.052	0.002	-0.003	-0.257	0.819	0.763
	(1.928)	(-0.424)	(0.096)	(-1.253)	(-1.197)	(10.254)*	
Middle East	-5.790	1.047	0.065	0.005	0.301	0.806	0.872
	(-3.241)*	(3.581)*	(2.983)*	(1.619)	(1.550)	(11.154)*	
Western Hemisphere	0.359	0.005	0.002	-0.002	0.096	0.820	0.628
	(0.940)	(0.108)	(0.296)	(-1.776)	(1.465)	(17.531)*	
Sub-Saharan Africa 2/	0.455	0.107	0.008	-0.003	-0.074	0.854	0.772
	(0.477)	(0.835)	(0.553)	(-2.550)*	(-0.386)	(13.809)*	

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.
1/ Excluding India and the People's Republic of China.
2/ Excluding Nigeria and South Africa.
* Significant at the 10 percent level.

Table 34. Estimation of Demand for Capital Goods Imports: Pooled Regressions (1971-81)

	Constant (t)	Terms of Trade (t)	Real GDP (t)	Real Rate of Interest (t)	Capital Goods (-1) (t)	R^2
Developing countries	0.696	0.012	0.005	0.001	0.833	0.778
	(4.722)*	(0.444)	(0.975)	(1.046)	(40.278)*	
By financial criteria						
Capital-importing developing countries	0.696	0.012	0.005	0.001	0.833	0.778
	(4.722)*	(0.444)	(0.975)	(1.046)	(40.278)*	
Market borrowers	0.641	0.018	0.003	0.001	0.842	0.753
	(3.413)*	(0.564)	(0.521)	(0.652)	(25.704)*	
Official borrowers 1/	1.058	-0.044	0.018	--	0.789	0.770
	(1.695)	(-0.337)	(1.388)	(-0.121)	(20.141)*	
Countries with debt-servicing problems	0.654	0.043	0.001	0.001	0.817	0.760
	(3.332)*	(1.082)	(0.099)	(0.886)	(27.652)*	
Countries without debt-servicing problems	0.716	-0.010	0.007	0.001	0.847	0.787
	(3.051)*	(-0.260)	(1.047)	(0.675)	(27.882)*	
Fifteen heavily indebted countries	0.661	0.035	-0.004	0.001	0.831	0.755
	(2.790)*	(0.829)	(-0.472)	(1.151)	(18.942)*	
Low income 1/	3.060	-0.401	0.003	--	0.724	0.720
	(2.776)*	(-2.084)*	(0.203)	(0.135)	(8.573)*	
By area						
Africa	0.447	0.149	0.017	0.001	0.725	0.777
	(1.612)	(2.595)*	(1.629)	(0.550)	(14.952)*	
Asia	0.701	-0.065	0.004	-0.002	0.915	0.798
	(1.671)	(-1.113)	(0.442)	(-1.112)	(16.943)*	
Europe	-0.185	0.234	0.050	0.004	0.725	0.641
	(-0.249)	(1.582)	(1.490)	(1.516)	(8.266)*	
Middle East	-4.612	1.197	0.065	0.010	0.707	0.839
	(-2.943)*	(3.624)*	(2.811)*	(3.165)*	(10.585)*	
Western Hemisphere	0.714	0.009	-0.001	0.002	0.843	0.783
	(3.080)*	(0.166)	(-0.146)	(1.542)	(24.921)*	
Sub-Saharan Africa 2/	-0.084	0.263	0.012	--	0.725	0.706
	(-0.114)	(1.690)	(0.691)	(-0.050)	(11.814)*	

Source: International Monetary Fund, International Financial Statistics, and World Economic Outlook.

1/ Excluding India and the People's Republic of China.

2/ Excluding Nigeria and South Africa.

* Significant at the 10 percent level.

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