1994

The Effects of Exports and Their Composition on Growth in Developing Countries

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May 20, 1994

I. Introduction[1]

Trade has often been central to many significant issues raised in the development literature. The two that have probably been the most influential and contentious are concerned with the roles of exports and their composition, for growth in developing countries.

The first issue is concerned with the theory of export-led growth. This theory has sought to account for the rapid growth of several export-based developing countries. The empirical evidence has not been clear, however, and this issue continues to be heatedly debated. At the same time, a second issue of longstanding significance in the literature has been the role of export composition for growth in developing countries. Theorists have expressed pessimism over the demand for primary exports relative to the demand for manufactures exports. And recently, the theory of 'export-oriented industrialization' has further purported manufactures exports to be more beneficial than primary exports for the domestic economies of developing countries. However, few empirical studies have been conducted to investigate the significance of export composition for growth and these few, have mainly failed to resolve this issue.

The purpose of the paper then, is to empirically examine the effects of exports and their component of manufactures, for growth in developing countries. In conjunction, the paper seeks also to examine the role of trade policy in these effects. The relevant literature is reviewed in sections II,III, and IV; the model and hypotheses are drawn in section V; and the results and conclusions are made in sections VI and VII respectively.

II. Importance of Trade for Economic Growth

Trade has increasingly become an important part of productive activity for developing countries. It has been vital in allowing these economies to obtain goods and services that would otherwise be unattainable domestically or expensive to produce. Imports are also needed as inputs for production and thus exports are also indirectly responsible for domestic economic activity. Recently, the rapid growth of several export-based developing countries has demonstrated that exports can significantly influence economic growth.

All of these ideas indicate the importance of trade as a vital complement and impetus to domestic economic activity. Given the small size of domestic markets in developing countries, trade can play a significant part in economic growth and development.

2.1 The gains from trade

According to Ricardian trade theory, a country will specialize in the production and export of the good in which it has a comparative advantage and will import that good in which it has a comparative disadvantage. The outcome in this simple two-country model is that both countries will attain a higher level of community welfare than in the absence of trade altogether. Although this model does not incorporate other important elements, it serves to illustrate the "gains" from trade that can be realized. Examples of these potential benefits from trade

are: increased returns to scale due to external markets, improved resource allocation due to specialization, and social welfare gains from exchange of goods. Another theory propounded by Myint (1958) and others, is that trade can act as a "vent for surplus", where previously idle and underemployed resources are utilized for export production, thus stimulating a one-time expansion of production and permitting gains from trade to be attained subsequently.

2.2 Export-Led Growth

The idea of exports as the propelling sector of growth was first developed to describe the path of development of several industrialized countries in the nineteenth century. More recently it has been used to explain the outstanding growth performances of several developing export-based economies. It is contended that aside from the immediate gains from trade realized, export expansion dynamically generates increased production through backward and forward linkages, and this in turn causes employment growth. Increases in income, savings and investment will occur consequently and thereby will further stimulate growth of production. In addition, export expansion will also lead to continuous increases in technological learning and change which will induce further growth. All these effects together multiply the effect of an initial increase of exports on growth.

Many studies have empirically tested the relationship

between exports and growth: Michaely (1977), Tyler (1978), Ram (1985) are a few examples. A significant correlation between the measures of export growth and economic growth in many cases, have been found. However, as Greenaway and Reed (1990) point out, in all these studies, the direction of causality between the two variables has been explained by reference to theory - as evidence that exports induce growth. A more convincing empirical investigation on the issue of causation was done by Jung and Marshall (1985) using the Granger Test of Causality. They found export growth to positively "cause" output growth in only four countries. A debate remains however, on whether exports do indeed, cause growth.

III. Export Composition and Growth

The importance of the composition of exports for growth in developing countries is an issue that has been of great significance in the literature. The contentious body of literature that has collectively been known for its pessimism of external demand for primary exports, provided early on a justification for the popularization of import-substitution policies in many of these countries. The shift in development thought to the more prevalent support of export-oriented strategy has focused attention more on the supply side.[2] This is clearly evident in the idea of export-oriented industrialization which theorizes (with much emphasis on supply-side mechanisms), exports of manufactures to be of greater importance for growth in

developing countries than that of primary products.

Regardless of their different focuses, the theories of
"trade pessimism" and export-oriented industrialization both
infer that exports of manufactures are more advantageous than
primary exports, for growth in developing countries.

3.1 Trade pessimism: emphasis on external demand

Raul Prebisch (1950) and Hans W. Singer (1950) first
expressed their concern over the terms of trade of developing
country exports. They contended that in world markets, primary
commodities faced in the long-term, a declining terms of trade
with respect to manufactured products. Since developing
countries predominately exported primary products and imported
manufactures, it was believed that over time they would
experience deteriorating balance of payments accounts and slower
economic growth as a result.

In papers given at the Wicksell lectures, Nurkse (1962),
also observed similar problems in world demand for primary
commodities. He noted that: "The main point we must recognize is
that this focal center (developed economies)[3]... is not
transmitting its own rate of growth to the rest of the world
through a proportional increase in its demand for primary
products" (1962, p.23). Some of the main reasons given for this
were: 1. Development of substitutes, 2. Low income elasticity of
demand, and 3. The increase in protectionism in industrial
countries.

The linkage between industrial and developing countries was explored further by W.A. Lewis (1980) in his Nobel Prize lecture. Using primary commodities as a proxy for trade of developing countries, he finds their growth rate over a 100 year period to be 0.87 times industrial production growth in developed countries. Although this is a simple and crude calculation, he uses this as further support for the view that growth in developing countries is constrained by the nature of their link with industrialized countries.[4]

Current empirical evidence has shown some support for these contentions. Sarkar and Singer (1991) in examining the income terms of trade of manufactures exports of developing countries relative to that of the developed countries, for the period 1970-1987, found a 4.5% annual average growth in favor of developing countries. Marian Bond (1985) also finds the demand for primary products to be less price and income elastic than for manufactures. Finally in separating the effects of demand, Singer and Gray obtain results to conclude that "Industry-oriented countries perform better in export earnings, benefiting from stronger world demand relative to primary-oriented countries." (1988, p.403). However, in spite of these findings, a complex debate continues to ensue on whether primary product exports do indeed decline in value over time.

3.2 Export-Oriented Industrialization

This theory argues that the most successful exporters among developing countries had achieved unusually high ratios of manufactures in export composition not simply as a result of natural economic transformation, but also due to "shifts in pursued industrialization and trade regimes" (Linneman, 1987, p.1). It is held that manufactures exports confer greater economic gains than primary exports on the supply-side. Exports of manufactures are theorized to create and stimulate greater linkages with the agricultural, services and domestic manufacturing sectors, than exports of primary products. Consequently, the multiplier effect of manufactures export expansion on economic growth is said to be stronger than for primary exports.

The theory however credits some influence to the demand side, by recognizing manufactures exports to be a more dynamic share of world trade than primary exports. Indeed, empirical evidence obtained has reinforced this view. In his study, Riedel (1984) finds the correlation coefficient between developing country manufactures export volumes and GDP in industrialized countries over the period 1960-78, to be significantly greater than for any other product group.

The relatively recent development of this idea has meant that few empirical studies have been conducted to empirically examine its contentions.

IV. Trade Policy and Performance

Most studies have focused on the significance of trade policies in explaining differences in export performance among developing countries. Work by Chenery and Syrquin (1975), derived a measure of trade orientation from residuals obtained from a regression equation predicting exports for each country, and controlled for structural characteristics. Unfortunately, this method does not explain factors that are responsible for differences in trade orientation across countries. A more useful view, more popularly used in empirical studies, has generally defined trade orientation in terms of the set of "incentives" affecting export production. "Inward orientation" is defined as having incentives that are biased against export production, while "outward orientation" is identified as having neutral bias between domestic production and export production.[5]

4.1 Outward orientation: theory and evidence

According to the theory, outward orientation is hypothesized to maximize gains from trade and hasten technological change. Economies of scale can be attained in international markets that may otherwise be impossible in small domestic markets. Also, exposure to international competition will cause more efficient use of resources, thereby leading to greater productivity and at the same time, accelerating technological change. Thus, outward orientation is held to generate both static and dynamic benefits, such that the gains from trade "tend to be of a once-and-for-all

nature" (Evans, 1990, p.44), while competitive pressure to improve technological development encourages continued growth of income.

Studies have used either multiple criteria or single criteria to evaluate trade orientation (Greenaway and Reed, 1990). Multiple-criteria studies include a wide diversity of trade instruments: Greenaway and Nam (1988) use as indicators of protection, direct controls, exchange rate misalignment and export incentives to obtain an overall measure of outward orientation; and Agarwala (1983) uses an index of general price distortion in an economy.[6] Studies using single criteria have determined orientation based on bias in price indicators: Dollar (1992) calculates an index of real exchange rate distortion for a large sample of countries; Bhagwati (1988) also suggests defining trade orientation as the difference between effective exchange rates for exportables and that for importables.

Results from empirical studies have found growth to be higher for outward-oriented economies than for inward-oriented economies. Average incremental capital-output ratios (ICOR), have also been found to be lower in outward-oriented countries (Greenaway and Nam, 1988), and this has been used as evidence, to confirm the fact that resources are more productive in outward-oriented countries.[7] These findings support the theories concerning the merits of outward orientation.

V. The Model

First, the model empirically examines the importance of both total exports and of exports of manufactures, for growth in developing countries. As is apparent in the literature, the empirical evidence is not convincing and these issues remain in much debate. Secondly, the model also seeks to determine the role of trade policy in the influences of exports and manufactures.

5.1 Regression Specification

The variables used to test the main hypotheses are employed together with other explanatory variables in a regression equation on GDP growth. The main equation is as follows:

$$GDPgr_{it} = a + \beta_1 LagMX_{it} + \beta_2 LagXGDP_{it} + \beta_3 LagOIL_{it} + \beta_4 GDPDEV_{it} + \beta_5 I/GDP_{it}$$

where:

GDPgr = Growth of GDP
LagXGDP = Change in exports share of GDP smoothed for fluctuation and lagged one year.
LagMX = Change in manufactures share of exports smoothed for fluctuation and lagged one year
LagOIL = Lagged price index of Oil
GDPDEV = Sum growth of GDP of Developed economies
I/GDP = Gross Domestic Investment share of GDP

The equation is estimated using annual data of 17 developing countries over the period 1970-1985, in a pooled cross-section ordinary least squares (OLS) regression.[8] Quadratic and interaction terms are also employed for LAGXGDP and LagMX, and the GDPDEV variable is included as a proxy of the world business

cycle.

Groupings

In order to test additional hypotheses, countries are categorized according to trade orientation. This is obtained from a comprehensive study done in the World Development Report (1987). The categories used, are defined by the Report below:

Moderately Outward-Oriented - The overall incentive structure is biased toward production for domestic rather than export markets. But the average rate of effective protection for the home market is relatively low and the range of effective protection rates relatively narrow. The use of direct controls and licensing arrangements is limited , and although some direct incentives to export may be provided, these do not offset protection against imports. The effective exchange rate is higher for imports than for exports, but only slightly.

Moderately Inward-Oriented - The overall incentive structure distinctly favors production for the domestic market. The average rate of effective protection for home markets is relatively high and the range of effective protection rates relatively wide. The use of direct import controls and licensing is extensive, and although some direct incentives to export may be provided, there is a distinct bias against exports, and the exchange rate is clearly overvalued.

Strongly Inward-Oriented - The overall incentive structure strongly favors production for the home market. The average rate

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of effective protection for home markets is high and the range of effective protection rates relatively wide. Direct controls and licensing disincentives to the traditional export sector are pervasive, positive incentives to nontraditional exportables are few or nonexistent, and the exchange rate is significantly overvalued.

The period used in this study, 1973-85 is quite similar to that of our model and therefore is a useful approximation of trade policy for the sample countries.

5.2 Hypotheses

The main explanatory variables to be tested, LagMX and LagXGDP, are lagged in order to capture the full multiplied effect of increases in the shares of exports in GDP and of manufactures in exports. Both variables are expected to positively and significantly induce growth as theorized in the literature.

Secondly, since nearly all of the countries selected were oil importers, the effect of significant increases in oil prices that occurred over the period studied, is expected to be strongly detrimental to growth in these countries. The LagOIL variable is thus expected to adversely affect growth.

In addition, the GDPDEV variable is included as a proxy for world business conditions. Developed countries control a large portion of world trade (as can be seen in **Table A1**), and are a major destination for exports of developing countries.

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Therefore, growth or recession in these countries should influence economic conditions, likewise, in developing countries.[9] Thus, GDPDEV is expected to be positively correlated with growth in developing countries.

Finally, the share of gross domestic investment in GDP, is a factor used for production and should therefore positively affect growth.

For regressions of groups classified according to trade orientation, the effect of an increase in the export share of total production, is expected to be strongest for outward-oriented economies than for inward-oriented economies. This is theorized to be due to less disincentives towards export production. The multiplied effect of export expansion is also felt to be greater for this group due to supply rigidities and macroeconomic imbalances associated with inward-oriented economies. Some of these are: disequilibrium in the savings to investment nexus due to negative interest rates, inefficient allocation of factor resources, high and rising rates of inflation that create a more uncertain environment for production, and inefficiencies in production due to widespread state ownership. For expansion in exports of manufactures, growth of outward-oriented economies are also expected to be higher than for inward-oriented economies. The stimulus which manufactures exports convey to the domestic economy through linkages, is expected to be significantly lessened in inward-oriented economies, for the same reasons explained earlier.

TABLE 1
OLS REGRESSIONS (DEPENDENT = GDPGR)

VARIABLES	FULL SAMPLE	Moderately Outward-Oriented	Moderately Inward-Oriented	Strongly Inward-Oriented
CONSTANT	-1.455	4.870	3.460	7.496
	(1.120)	(1.537)	(2.330)*	(3.570)**
LagMX	0.051	0.158	0.054	0.013
	(2.812)**	(2.143)*	(1.977)*	(0.601)
Lag(MX)^2	...	-0.017	-0.001	0
		(3.857)**	(1.551)	(0.828)
LagXGDP	0.070	0.194	0.022	0.053
	.(2.470)*	(3.172)**	(0.516)	(1.231)
Lag(XGDP)^2	...	-0.009	-0.005	-0.007
		(1.888)	(1.789)	(2.708)**
MX*XGDP	...	...	...	...
I/GDP	0.296	0.229	0.181	0.521
	(6.129)**	(1.839)	(2.736)**	(5.039)**
LagOIL	-0.029	-0.056	-0.041	...
	(4.074)**	(3.931)**	(4.585)**	
GDPDEV	0.342	...	...	...
	(2.240)*			
N	272	48	144	48
DW	1.84	1.87	1.98	2.17
F	16.09	13.69	5.73	6.15
Adj. R2	0.22	0.62	0.17	0.35

T-Statistics in parentheses ; Significant at * 5% , ** 1%

Notes: '...' indicates ommitted from regression.

VI. Results

The regression results are shown in **Table 1.** For the total sample, all variables in the initial regression, perform as expected. In particular, for LagXGDP and LagMX, growth is stimulated by the expansion of both factors.[10] The coefficients indicate that a one percentage acceleration in the share of exports in GDP would raise growth by **0.07** percent, other factors equal. A similar expansion in the share of manufactures in exports would, with other factors constant, raise growth by **0.05** percent. These results show that rapid expansion in the shares of exports in GDP and in the shares of manufactures in exports, consequently induce growth. Experimentation with quadratic terms and interaction effects did not greatly affect the findings, and the original equation is retained as the best linear estimator for the total sample.

For the three categories of trade policy also, the results are as expected. The acceleration of both the export share in GDP and manufactures share in exports stimulate growth in moderately outward-oriented countries. With all factors constant, a one percent acceleration in the share of exports in GDP will cause growth to increase by **0.19%**. A similar acceleration in the share of manufactures in exports will induce growth to rise by **0.16%**, for these countries. It is also important to observe that for this group, there is a gradual decline in the rate of acceleration of the manufactured share in exports, and this is shown by its quadratic term. For moderately

inward-oriented countries, only the acceleration of the manufactures share in exports affects growth. Indeed, a one percentage acceleration will cause growth to increase by **0.05%** - a significantly weaker stimulus than for the outward-oriented group. In strongly inward-oriented countries acceleration of the shares of total exports and of manufactured exports have no effect at all.

Thus, as was hypothesized, the influence of rapid expansion in the shares of exports and of manufactures is greatest for countries with less biased policies against exports, and becomes significantly weaker as the trade regime becomes progressively more inward-oriented.

VII. Conclusions

The main objectives of the study were to examine the effects of exports and alongside, the proportion of manufactures in exports, on growth in developing countries. As shown by the results, promotion of exports and of manufactures exports are influential for growth in developing countries. However, their stimulative effect is greatest for countries with less bias against trade. Also, as was suggested earlier, inward-oriented countries are more likely to have inefficient macroeconomic policies, and this may additionally weaken their prospects of attaining growth through encouragement of exports, and of manufactures in particular. Given that the overwhelming majority of developing countries can be regarded as inward-oriented, this

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finding may also explain the weak evidence of past empirical studies. These results lead to the conclusion then, that outward-oriented trade policies are essential for countries seeking to use exports and its component, manufactures, as a means for growth and development. Indeed, this is probably the main factor responsible for the rapid growth of the highly successful export-based economies of South-East Asia (see tables and graphs in appendix).

The widespread celebration of export-led growth strategy has prompted many developing countries to simply expand their exports without changing the incentives that affect export production. This study therefore has a profound policy implication: efficient trade policies are a necessary basis for successful promotion of total exports and manufactures.[11] Finally, the influence of macroeceonomic policies in efforts seeking to promote exports and manufactures, was not explored in the paper and would be a topic for valuable future research.

Notes

1. The paper benefitted tremendously from helpful suggestions and contributions of the following committee members: Drs. Pam Lowry, Fred Hoyte, Robert Leekley, and Mike Seeborg.

2. "Supply" is used generally to mean the domestic environment that affects production; this is largely determined by macroeconomic policies. "Demand" in our context, is a reference towards external influences and conditions that affect the absorption of exports.

3. My words in parentheses.

4. This is not too say that Lewis rules out the possibility of diversification into manufactures for developing countries, but believes that it cannot be done in a significant enough quantity. (see p. 560)

5. An added definition of outward orientation is the case where incentives are biased towards export production. Examples in which this definition would apply are the Asian Tigers (S. Korea, Taiwan, Hong Kong, and Singapore. For the remainder of developing countries, their definitions of trade policy is as discussed.

6. "Price distortion" is interpreted as the deviation from prices that would have been determined freely in the absence of domestic controls.

7. The ICOR is used as a proxy of the efficiency of resource allocation and use. Also can be used as evidence, that factors of production in inward-oriented countries are more misallocated and thence, less productive.

8. The methodology used to calculate LagXSM and LagMSM is shown below:

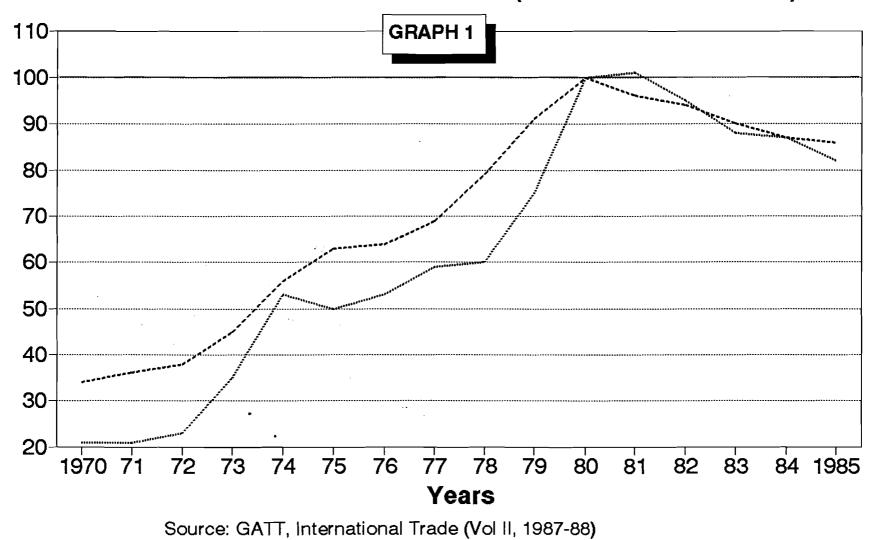$$MA_{it} = \Sigma(X/GDP_{it-1} + X/GDP_{it} + X/GDP_{it+1})/3$$

$$LagXGDP_{it} = [(X/GDP_{it-1} - MA_{it-1})/MA_{it-1}]*100$$

* LAGMX is calculated similarly.

9. This hypothesis is also based on the findings of W.A. Lewis in his Nobel Lecture (1980) where he empirically demonstrates the link between developing and industrialized economies.

10. The coefficients of LagXGDP and LagMX measure the acceleration of each variable against growth. They could either indicate that, for example, the export share in GDP in its effect on growth, is growing at an accelerating rate in the positive or negative directions. In **Table A3** it can

be seen that over the period, most of the sample countries experience increases in both X/GDP and M/X, indicating that the acceleration is in the positive direction.
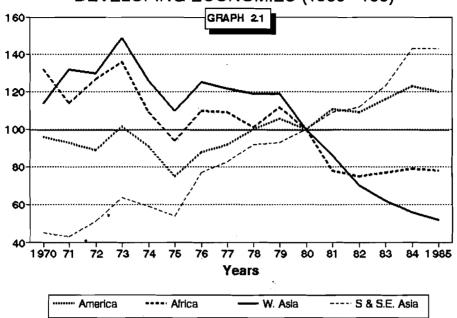
11. The conclusion and policy implications are hesitantly reached given the small size of the sample. However, their significance should not be understated.

WORLD PRICES OF PRIMARY COMMODITY AND MANUFACTURES EXPORTS (Indices 1980=100)

GRAPH 1

Source: GATT, International Trade (Vol II, 1987-88)
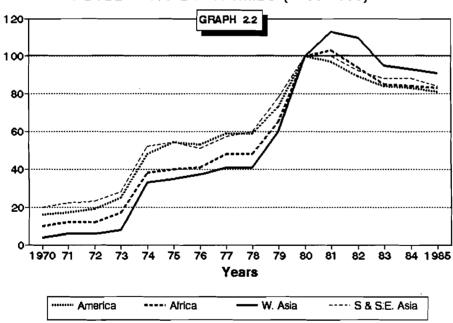
·········· Primary commodities ········· Manufactures

EXPORT VOLUME INDICES FOR DEVELOPING ECONOMIES (1980=100)

GRAPH 2.1

Years

········ America   ·····' Africa   —— W. Asia   ----· S & S.E. Asia

EXPORT UNIT VALUE INDICES FOR DEVELOPING ECONOMIES (1980=100)

GRAPH 2.2

Years

········ America   ·····' Africa   —— W. Asia   ----· S & S.E. Asia

Source: Handbook of International Trade and Development Statistics [UNCTAD, 1990].

TABLE A1
SHARE OF WORLD EXPORTS (%)

BY GROUP & REGION	1970	1980	1985
Developed Economies:			
Europe*	43.2	39.8	39
N. America	18.9	14.2	15.6
Japan	6.1	6.5	9.1
Total**	**70.9**	**62.6**	**65.9**
Developing Economies:			
S. & C. America	5.5	5.5	5.5
N. Africa	1.6	2.3	1.5
Africa (other)	2.4	2.4	1.7
W. Asia	3.4	10.6	5.1
S. & S.E. Asia	4.8	7.2	9.2
Total**	**18.4**	**28.7**	**23.7**

Source: Handbook Of International Trade & Development Statistics [UNCTAD, 1990].
* EEC and EFTA only
** Totals for all groups not of regions

TABLE A2
SHARE OF WORLD EXPORTS BY COMPOSITION (%)

	MANUFACTURES		PRIMARY	
BY REGION & GROUP	1970	1986	1970	1986
Developed Economies:				
Total	**84.4**	**79.3**	**58.7**	**64.1**
Developing Economies:				
S. & C. America	0.9	1.5	13.0	11.8
Africa	0.4	0.4	8.2	4.2
W. Asia	0.2	0.7	1.3	1.5
S. & S.E. Asia	3.3	9.5	8.0	9.2
Oceania*	0.0	0.0	0.4	0.4
Total	**4.9**	**12.1**	**30.9**	**27.1**

Source: Calculated from Handbook Of International Trade & Development Statistics [UNCTAD, 1990]
Manufactures Exports = SITC (5+6+7+8) ; Primary Exports = SITC (0 to 4, + 68).
* zero means figure is less than 0.1

TABLE A3
BASIC DATA FOR SAMPLE COUNTRIES (%)

COUNTRY	AVERAGE GROWTH		I/GDP		X/GDP		M/X	
	GDP	XPT	1970	1985	1970	1985	1970	1985
Argentina	1.3	12.8	21.6	8.5	7.5	12.8	13.9	21.4
Bolivia	1.9	10.6	23.8	12.7	22.6	9.9	3.1	0.7
Brazil	6.3	22.4	20.5	16.7	6.4	11.2	14.2	44.8
Chile	1.8	13.0	16.5	13.7	16.7	23.9	4.4	8.5
Colombia	4.6	12.9	20.2	19.0	10.2	10.2	8.1	18.5
Cote d'Ivoire	4.9	13.4	22.5	12.6	31.4	42.6	6.0	9.0
Guatemala	3.6	10.3	12.8	11.5	15.7	9.4	28.0	28.8
India	4.1	10.9	18.2	26.0	3.8	4.4	52.4	64.1
Kenya	5.6	13.5	24.4	20.1	18.9	16.3	12.1	12.5
Mauritius	4.9	17.3	9.9	23.5	36.6	40.9	2.9	43.7
Mexico	5.2	22.0	21.3	21.9	3.9	12.5	32.5	21.0
Morocco	4.8	12.3	18.5	22.9	12.7	18.3	9.7	40.5
Pakistan	5.8	10.6	15.8	16.8	4.0	9.1	58.8	63.2
Philippines	4.0	13.7	21.2	13.9	14.5	14.0	7.6	57.1
Senegal	2.7	14.1	15.7	13.7	17.6	21.9	18.9	18.7
Sri Lanka	4.7	9.8	18.9	23.8	14.9	22.3	1.7	34.6
Thailand	6.5	17.2	25.6	24.0	10.9	18.6	10.7	39.3

Data Sources: World Tables [WORLD BANK], International Financial Statistics - Supplement on Trade Statistics [IMF].

TABLE A4
Countries Classified by Trade Strategy (1973-85)

MODERATELY OUTWARD ORIENTED	MODERATELY INWARD ORIENTED	STRONGLY OUTWARD ORIENTED
Brazil	Colombia	Argentina
Chile	Cote d'Ivoire	Bolivia
Thailand	Guatemala	India
	Kenya	
	Mexico	
	Pakistan	
	Philippines	
	Senegal	
	Sri Lanka	

Source: World Development Report, 1987 [WORLD BANK]
* Mauritius and Morocco not included in Study.

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