

# Structural Determinants of Trade in Manufactures Among Third World Countries\*

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The purpose of this paper is to investigate the underlying determinants of trade in manufactures within the Third World, with a view to assess its future prospects. The significance of the level and growth of such trade is enhanced by a number of factors. The expectation of an increase in trade in manufactures among the developing countries is an important plank in the proposals for a new international economic order. The Lima Declaration of 1975 for a target increase in developing countries' share in world production of manufactures from the present 8 per cent to 25 per cent by the year 2000 is predicated on a significant increase in trade among the developing countries themselves.<sup>1</sup> Increased mutual trade appears to be the first essential step toward greater cohesion and economic interaction among the developing countries. The recent surge in protectionism in industrial countries, particularly against the relatively labor-intensive exports of manufactures from the developing countries, reinforces the need to develop alternative markets within the developing countries themselves. Possibilities of

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<sup>1</sup> For a critical evaluation of the Lima Declaration and its implications for mutual trade in manufactures among the group of developing countries, see Ahmad (1977).

trading with each other may mean that they have to be less dependent on exports to rich countries for the viability of their manufacturing sectors, even though the rapidly industrializing developing countries will continue to look to the markets of the rich countries, despite immediate problems of "access." All these factors have perhaps contributed to the rapid growth of intra-trade among the developing countries. In a more fundamental sense, however, long-run structural factors connected with the appearance of industry in hitherto unindustrialized countries offers a fruitful source of explanation for the recent growth of such trade.

Part I of the paper discusses the general properties of the relationship between industrialization and the growth of mutual trade among developing countries. Part II sets forth the econometric model and discusses the estimated results. Some concluding observations are contained in Part III.

## I

Developing countries' total exports of manufactures (SITC 5-8, less 67 and 68) amounted to \$37.6 billions in 1976. Of this, fully two-thirds, i.e., \$25.3 billions were destined for the industrial and the socialist countries, while roughly \$12.0 billions' worth were sold to other developing countries. Nevertheless, developing countries' exports of manufactures to each other more than doubled in value between 1972 and 1976. As shown in Table 1, the major markets for their exports of manufactures in a number of developing countries are other developing countries.<sup>2</sup> This is particularly true for countries such as Brazil, Argentina and Chile, which are members of LAFTA. But even countries such as Hong Kong, South Korea and Singapore, which are major exporters of manufacturers to the industrial countries, sell a sizable proportion of their total exports of industrial goods to other developing countries. The other notable feature of intra-Third World trade in manufactures is the diversity in its industrial composition. Nearly half of this trade in 1976 was in a wide variety of products under SITC 6 and 8, a third in machinery and equipment (SITC 7), while chemical products

<sup>2</sup> These and the following data are compiled from United Nations, *Commodity Trade Statistics*, various years, and are supplemented in a few cases with data from national sources.

(SITC 5) accounted for one-sixth of the total. Thus, intra-developing countries' trade in the recent past has been increasing both in volume as well as in industrial composition.

Table 1

EXPORTS OF MANUFACTURES FROM SELECTED DEVELOPING  
COUNTRIES TO OTHER DEVELOPING COUNTRIES  
AND TO THE WORLD, 1974-76

Exporting Country	Total Manufactures' Exports		
	Developing Countries (\$ millions)	World	Share of Exports to Developing Countries (%)
El Salvador	261	268	97.3
Costa Rica	94	100	94.0
Brazil	1470	2114	69.5
Chile	53	81	65.4
Argentina	317	590	62.3
Indonesia	34	56	60.7
Singapore	1594	2903	54.9
Colombia	102	195	52.3
Pakistan	243	683	35.6
India	1015	2866	35.4
Thailand	51	145	35.2
Philippines	97	306	31.7
Mexico	541	2043	26.5
Korea	1175	6273	18.7
Hong Kong	1177	6951	16.9
Yugoslavia	399	3241	12.3
Total	8623	28734	30.0

Source: UNCTAD, *Trade in Manufactures of Developing Countries and Territories*, and United Nations, *Commodity Trade Statistics*, various years.

### *Industrialization and Mutual Trade*

The role of industrialization in fostering mutual trade among the developing countries can be visualized in two different ways.

Firstly, the process of industrialization is expected to increase the degree of complementarity among the group of developing countries as cross-country differences in the size and composition of industrial structures are heightened by differentiated and uneven progress. This sort of complementarity, clearly accentuated by differential response to international economic conditions, is to be expected in a group of countries as large and heterogeneous as the Group of 77. Such a differential and uneven development of industrial structures implies that intensive trade between the relatively more industrialized and the industrially backward nations of the Third World has considerable potential. Recent econometric investigations by Amsden (1976) uncover partial evidence of complementarity between the Third World economies, which lends support to the hypothesis that industrialization is expected to enhance mutual trade between the developing countries. The eight "semi-industrialized" countries chosen for her study were found to export large volumes of manufactures to other developing countries and between them they exported a wide range of products.<sup>3</sup> One might infer, therefore, that Third World countries will experience an increase in exports of manufactures to each other as long as industrialization of their domestic economies follows a characteristically complementary pattern.

Secondly, the emergence of industrial activity in developing countries, largely in response to domestic pressures for structural changes, provides an obvious precondition for exports, viz., the provision of industrial capacity.<sup>4</sup> The fact of the growing availability of industrial capacity alone would suggest that in a random sequence of events, quite apart from the influence of underlying systematic forces, one is likely to find a growing number of developing countries exporting an increasing proportion of manufactures to other developing countries. In a more important sense, however, the growth of industrial activity in the developing countries is likely to foster a pronounced intra-industry specialization in the production of manufactured products even among countries assumed to be at identical levels of development.

Accordingly, it is unlikely that country A will produce shoes

<sup>3</sup> Amsden's analysis identifies Mexico, Argentina, Brazil, Spain, Yugoslavia, India, Hong Kong and Taiwan as the eight "semi-industrialized" developing countries.

<sup>4</sup> For some theoretical considerations relating to domestic capacity and exports, see Ahmad (1979).

but no textiles, while country B produces textiles but no shoes; rather, each of the countries is likely to specialize in a certain type of product within each of the two industries. In a manner first suggested by Linder (1961), such a qualitative specialization in broadly similar but "differentiated" products is likely to lead to intensive trade among countries with similar structures of incomes and demand. In the real world of non-homogeneous products, a very large part of trade among countries takes place in highly differentiated tariff-line items. The early efforts at industrialization in developing countries were characterized by a parallel development of a broadly similar range of industries being protective barriers. This inauspicious circumstance for the growth of mutual trade may recently have been lessened as the industrial structures in many developing countries begin to acquire a greater diversity in product composition.<sup>5</sup> Such a diversity of industrial composition is already in evidence with respect to developing countries' exports of manufactures to the industrial countries where they are becoming increasingly competitive exporters of manufactures.

Thus, on both counts, the emerging industrial structures of the developing countries would seem to be conducive to mutual trade expansion. The simple, two-factor Heckscher-Ohlin model would suggest that mutual trade among developing countries would take place between countries with the least similar capital-labor ratios, i.e., between the semi-industrialized and the industrially lesser-developed countries. In a world as large as the one encompassing the developing countries where supplies of productive factors, their productivities and techniques of production differ, there are bound to be tendencies in individual countries' production to concentrate on certain manufactured products and not on others. The trade pattern suggested by these differences means that a developing country may concentrate on a relatively narrow range of manufacturing activities in its trading sectors whose factor requirements closely resemble the factor quantities domestically available. By implications, it will import those products whose factor requirements if they were to be produced domestically

<sup>5</sup> Intra-industry specialization of this sort may in part have been encouraged by economic integration among various groups of developing countries. Willmore (1972) and Morawetz (1974) provide evidence that intra-industry specialization in the Central American Common Market, leading to the emergence of larger and more specialized firms, has enhanced their ability to export to extra-union countries as well.

would significantly diverge from its factor supplies. All this suggests that there are strong theoretical reasons to expect that the heterogeneous collection of developing countries will gradually develop a wide range of manufacturing activities. Needless to say, the degree of concentration in an individual developing country's production structure dictated by factor supplies may be blunted by the influence of transport costs, tariff policies and the actual or the perceived need for balanced growth, and thus widen the range of domestic industries. In addition, following Linder's hypothesis, developing countries by virtue of having a similar structure of demand for manufactured goods are likely to increase the intensity of their trade with each other.

## II

An empirical test of the foregoing hypothesis is impeded by the absence of a satisfactory theory to explain the relationship of industrialization to trade, as well as the lack of adequate time series data.<sup>6</sup> Therefore, an eclectic approach based on the presumed relationship of a number of structural factors seemed more promising. It is nearly axiomatic that the relationship between industrialization and trade is inherently a circular process, full of feed-backs and interdependencies. While industrialization enhances trade by broadening the range of intra-industry specialization, trade in turn favourably influences the prospects and diversity of industrial production through dynamic effects arising from economies of scale and stimulus to investment and technology. Such lessons of experience dictate an approach that avoids rigid assumptions about causation and an unduly categorical explanation of complex relationships.

Abstracting from the factors concerning the structure of the economy, import demand functions in the developing countries would be influenced by usual factors, such as relative prices, real incomes and transport costs. However, from a structural standpoint, supply considerations bearing on the capacity and the

<sup>6</sup> However, there is considerable historical evidence to suggest a close correspondence between the growth of industrialization and mutual trade in manufactures among the developed industrial countries. See Kuznets (1964, 1967), Maizels (1970), and Hufbauer (1970).

degree of industrialization, in conjunction with real incomes, would seem to provide an indication of long-run trends. In order to capture the more significant of these factors, the following cross-section regression equation was estimated by ordinary least squares method.

$$\log X_i = \log \alpha_i + \beta_{1i} \log W_i + \beta_{2i} \log D + \beta_{3i} \log Y + \beta_{4i} \log E_i + \beta_{5i} \log M_i + \log U_i \quad (1)$$

where the symbols have the following meaning:

$X_i$  = export of *i*th product from the developing countries to other developing countries;

$W_i$  = weight of product *i* in the total manufacturing output of the developing countries;

$D$  = "degree of industrialization" variable, viz., the weight of the manufacturing sector in the total GDP of the developing countries;

$Y$  = per capita income in the developing countries;

$E_i$  = export of *i*th product from the developing countries to the developed countries;

$M_i$  = import of *i*th product by the developing countries from the developed countries;

$U_i$  = random disturbance term.

The coefficient  $W_i$  reflects the influence of capacity to produce particular manufactures on the behavior of sectoral exports, while the "degree of industrialization" ( $D$ ) refers to the more general connection between industrial activity and mutual exports. A positive sign on coefficients  $\beta_1$  and  $\beta_2$  would mean that the growth of manufacturing capacity in individual sectors as well as the general level of industrial activity in the economy have a favorable impact on exports of manufactures within the group of developing countries. Per capita income  $Y$  reflects the pure income effect on intra-developing countries' trade, even though its uneven distribution in many of the countries blunts somewhat its explanatory role. The last two variables, i.e., trade relations with the developed countries, were included to test for "trade diversion" which might explain the pattern of developing countries' trade with each other. Negative coefficients on  $E_i$  and  $M_i$  would imply that developing countries' exports to each other simply divert to themselves their existing exports to the developed countries and that their imports from each other are at the expense of their imports from the

developed countries which are traditional suppliers of the bulk of their imports of manufactured products.

The estimated coefficients of equation (1) are presented in Table 2. The coefficients for the "degree of industrialization" and per capita income were found to be positive and statistically significant for each of the disaggregated sectors as well as for the manufacturing output as a whole. These results seem to confirm the hypothesis that mutual exports are positively correlated with the extent of industrialization in developing countries. The positive correlation for per capita income is not very surprising, in view of the fact that income elasticities of demand for imports of manufactures generally tend to be high, regardless of where the imports originate.

The variables with respect to developing countries' trade in manufactures with the developed countries were included to test for the possibility of "trade diversion." The statistically significant coefficient for exports to developed countries suggests that mutual exports are not at the expense of developing countries' traditional exports to industrial countries. There could be a number of explanations for this. Firstly, the major proportion of increase in intra-developing countries' trade in manufactures is likely to arise through trade creation, i.e., through a switch in the source of supply from domestic producers in individual countries to producers in other developing countries. Secondly, it is plausible that an increase in export capability due to increased exports to developed countries will favorably affect the exports in general, including exports to other developing countries.

The coefficients for imports from developed countries are significantly positive only for SITC 7 and SITC 6 and 8, implying that mutual imports from each other in these sectors do not substitute for imports from the developed countries. One plausible explanation is that the unusually large growth of demand in developing countries for capital equipment and assorted industrial goods during recent years has been able to absorb imports from all sources. This could be due to the fact that an increasingly large number of multinational firms established in developing countries are major exporters of manufactured goods to countries in Asia and Latin America. There was no evidence of a generally pervasive trade diversion, indicating a displacement of developing countries' traditional sources of supply of imports of manufactures.



Table 2  
ESTIMATED REGRESSION COEFFICIENTS OF EQUATION (1)

Manufacturing Sectors	Intercept (1)	"Capacity" (2)	"Degree of Industrialization" (3)	Regression Coefficients			R <sup>2</sup> (7)
				"Per Capita Income" (4)	"Exports to Developed Countries" (5)	"Imports from Developed Countries" (6)	
SITC 5-8 (Total Manufactures)	-7.324	0.012 (0.70)	0.151 (4.66)*	0.027 (3.13)*	0.002 (2.39)*	-0.007 (0.19)	0.67
SITC 5 (Chemicals)	-2.019	-0.535 (1.56)	0.746 (3.21)*	0.364 (5.45)*	0.083 (1.52)	-0.261 (1.80)	0.48
SITC 7 (Machinery and Transport Equipment)	0.955	0.118 (2.78)	0.182 (3.77)*	0.366 (6.92)*	-0.535 (2.64)*	0.013 (2.86)*	0.29
SITC 6 & 8 (Other Manufactured Goods)	2.632	0.721 (0.90)	0.851 (4.13)*	0.123 (4.23)*	0.759 (4.57)*	0.022 (2.78)*	0.79

Note: Figures in parentheses denote t-values, R<sup>2</sup> is adjusted for degrees of freedom, and starred values represent significance at the 95 per cent level.

## III

This paper has examined the cross-section behavior of trade in manufactures of 60 developing countries with their Third World trading partners. This examination was undertaken with a view to extract some plausible indication of the underlying structural factors that are likely to affect the growth of such trade. These results should not be interpreted as designating any particular set of "causes" of trade; they are merely in the nature of possible variables where one should look for long-term indicators. Nevertheless, these results do lend considerable support to the hypothesis that industrialization and income growth in developing countries are likely to have a beneficial effect on mutual trade in manufactures. Moreover, they alert one to the necessity of taking into account possible trade diversions vis-a-vis developing countries' trade with the developed world, although our analysis did not uncover any systematic tendency toward such diversions. The attention to long-run structural factors does not imply short-run determinants of exports, such as relative prices and real income, are insignificant.

It is futile to draw policy implications from an analysis whose focus is on basic connections between structural variables and trade. However, it is clear that our results highlight the need for appropriate trade and tariff policies for developing the full potential of mutual trade within the Third World.

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