technical coefficient and by implication the strongest backward and forward linkages with the economy.

(2) Using the destagflation to regulate the rate of increase in the price level, rather than the absolute level itself. The guidelines could then take the following form: When the level of unemployment is "y" and the general level of prices is at "z", no price will be allowed to rise by more than "z" per cent.

In considering modifications such as the two listed above, it becomes necessary to emphasize the two objectives of the implementation of the destagflation:

1. To increase the opportunities for price competition as an attractive alternative to non-price competition, and to increase the downward flexibility in prices.

2. To arrest and reverse the widespread expectation of a continuing rise in the general level of prices.

The main objection to modifications such as the two listed above is that the objective of arresting and reversing the expectation of a continuing rise in the general level of prices would be weakened. The objective of providing evidence of the possibility of controlling inflation would be pushed further into the future, and hence credibility in the effectiveness of the mechanism would be undermined. The institution of expectation of continuing inflation, needs as dramatic a challenge as is possible to shake its foundations. A society that has experienced over a decade of dramatic rises in the general price level, needs as early a hint as possible of the possibility of arresting the price rise and reducing its rate of increase. The destagflation in its pure form, as originally presented, would satisfy the conditions, if implemented.

Temporal Shifts, Bilateral Reciprocity, Multilateralism, and Diversification in the Structure of World Trade

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1. Introduction

Divergent shifts have recently become evident in the structure of the world trade matrix. The direction of international trade flows seems to have changed substantially and the distribution of their changes has varied significantly. There is a strong movement towards isolationism on the part of some geographic and economic regions of the world and there is evidence of increasing interdependency among others. A general tendency towards bilateral reciprocity for some is also accompanied by growing multilateralism and market diversification. Some developing regions have lost their world market shares of "problem commodities" and others have gone some way to breaking the entry barriers to new markets. Their success in achieving a new level of market diversification is a positive indicator of their trade performance.

The object of the paper is to identify and examine the divergent trends in the structure of world trade through the analysis of market share coefficients. The temporal shifts in market shares and the properties of the distribution of these shares are analysed for each major geographical economic region of the world. A statistical attempt is made to detect and locate the direction of these shifts, measure their magnitudes, and analyse their distributional properties from the point of view of increasing or decreasing self reliance, interdependency, multilateralism, and trade diversification. The analysis is confined purely to measuring the manifold changes in
the structure of world trade. No attempt is made to test any predictions suggested by trade theory. Such economic testing is found elsewhere in a subsequent study. However, the structural change analysis is done both at the aggregate level as well as by major SITC commodity classes.

The schematic outline of the paper is as follows. Section 2 describes briefly the methodology and the coverage used in the statistical analysis. Section 3 contains the general structure and the directional shifts in the overall structure of the world trade matrix. The direction of gains and losses in terms of these shifts across SITC commodity classes and by economic regions is discussed in Section 4. Section 5 examines the question of general trends regarding bilateral reciprocity, multilateralism, and market diversification leading to the classification of world regions into three groups. Finally, the paper ends with brief summary conclusions and implications.

2. Methodology and Coverage

Total world trade (TW) may be described in the form of a matrix whose typical element \( X_{ij} \) represents the trade flow from country i to country j. That is, \( X_{ij} \) refers to the quantities traded, \( i, j \) to the trading partners.

The trade matrix is a square matrix in view of the fact that the number of trading countries is the same both for \( i, j = 1, 2, \ldots, n \). If the trade matrix is defined strictly for countries all the diagonal elements, \( X_{ii}, X_{jj} \) are zero and if some aggregation takes place such that trading partners are defined as regions, the diagonal elements are non-negative or may be strictly positive as some trade always takes place within a region. Further, the trade matrix implies

\[
\sum_j X_{ij} = X_i = M_i, \text{ total imports of } i. \quad (1)
\]

\[
\sum_i X_{ij} = X_j = M_j, \text{ total exports of } j. \quad (2)
\]

Next, defining the market share coefficient \( a_{ij} \), the share of country i’s exports in the total market of j,

\[
a_{ij} = \frac{X_{ij}}{X_j}, \quad a_{ij} \geq 0 \text{ and } \sum_j a_{ij} = 1, \quad (3)
\]

the trade matrix may be transformed in terms of \( a_{ij} \). Writing \( A \) for the matrix of share coefficients \( a_{ij}(i, j = 1, 2, \ldots, n) \) and \( x \) and \( m \) as column vectors of size \( n \times 1 \) each, we have

\[
x = Am. \quad (4)
\]

Matrix \( A \) particularly, and equation (4) generally, defines the structure of world trade. Since all the quantities in (4) are time dependent, if one has time series on these, one can analyse the structural changes in international trade. The paper focuses on the temporal analysis of A.

Such an analysis of matrix A has been carried in two stages. In the first stage, simple least squares trend coefficients \( (d_{ij}/dt) \) of each element of A are obtained by linearly regressing the \( a_{ij} \)'s over time. Thus the direction and magnitude of shifts in the structure of world trade are examined through the analysis of a matrix of trend coefficients.

Several such trend matrices are obtained, one for each of the major commodity classes (SITC 0, 1, 2, \ldots) and the commodity distribution of gains and losses is examined. The first stage is dealt with in Sections 3 and 4.

In the second stage (Section 5), the aggregate trade structure is examined in terms of shifts in the degree of bilateral reciprocity, multilateralism, and market diversification.

The analysis is done in two steps. Step one investigates the dynamics of regional isolationism and bilateral reciprocity through the study of trend coefficients in bilateral pairs.

From this point of view the elements of the matrix of trend coefficients are arranged in ordered bilateral pairs of corresponding rows and columns (i to j and j to i). In other words, each ordered bilateral pair corresponds to the coefficients of an nth row and an nth column, that is to say \( d_{ij}/dt \) and \( d_{ji}/dt \). The direction of bilateral reciprocity is then determined by the simple comparison of the signs of each pair. Denoting the sign of a pair by \( (+) \), where the upper sign corresponds to the first coefficient and the lower sign to the second (if both are positive, for example, \( d_{ij}/dt \) \( d_{ji}/dt \) \( = (+) \), the following set of six relationships such as increasing dependence, interdependence, divergence and so on, can be distinctly identified:

\[
d_{ij}/dt = d_{ji}/dt = (+) \quad (5)
\]

and if (5) mostly true where \( i \neq j, i \) is breaking isolationist position.

Step two examines the temporal shifts in the structural characteristics of the distribution of market shares \( a_{ij} \)'s across markets j. The distribution of the market shares of each exporter i is individually examined in order to assess the dynamics of the general trade position of i, its tendency to move towards or away from multilateralism and market diversification. Depending upon the positive and negative trends in the distributional characteristics of these shares, i, and j are then classified into three groups.

The structure of the distribution of market shares of each exporter (each row of matrix A) is examined through the temporal analysis of its 'moments' up to third degree. Specifically, these are the mean of the market shares \( \bar{x} \), the coefficient of variation \( cv_x \) and the coefficient of skewness \( csk_x \), defined respectively:

\[
\bar{x} = \frac{\sum x_i}{n} \quad (11)
\]

\[
d_{ij}/dt = d_{ji}/dt = (-) \quad (6)
\]

\[
d_{ij}/dt = d_{ji}/dt = (+) \quad (7)
\]

\[
d_{ij}/dt = d_{ji}/dt = (-) \quad (8)
\]

The time series of these three characteristics of row distributions of the \( a_{ij} \)'s are generated from the time series of matrix A. Next, the growth rates of these characteristics, e.g., \( \beta_{ij} = \frac{(d_{ij}/dt) - (1/t)}{a_{ij}} \) can be calculated.
computed. These growth rates finally establish two criteria for judging its overall standing and strength in trade performance, the degree of multilateralism, and trade diversification.

The first criterion states that the growth rate of the mean of the distribution of market shares indicates directly an overall standing in trade performance. Specifically, \( g_m > 0 \), \( g_m < 0 \), and \( g_m = 0 \) would imply, respectively, improvement, deterioration, and no change in overall trade standing.

The second criterion states that the growth rates of the coefficient of variation and of the coefficient of skewness move jointly and in close agreement with a tendency towards multilateralism and trade diversification. The degree of multilateralism and trade diversification is contended to be growing if the trade shares of an exporter \( i \) in various markets are becoming more and more equalized and symmetrically distributed. More precisely, the negative growth rates of these coefficients jointly indicate an increasing degree of multilateralism and trade diversification. They show that exporter \( i \) is enjoying an increasingly equal share of all markets and is thereby concentrating less and less on a particular one, or few. Such a trend implies that the biases of \( i \) for and against particular markets are disappearing. In short, the second criterion provides for a joint evaluation of dispersion and symmetry of the distribution.²

²Biases may be economic or historic. Some markets may be treated as preferred and the others as inferior.

³Presumably, a coefficient of variance would alone measure the tendency towards or against trade diversification. However, such a measure is superficial and could be misleading. For instance, assume that an exporter \( i \) loses somewhat in the market where it previously held a smaller share (as long as \( a_j > 0 \)) and gains in the market where it had the largest. The degree of dispersion of the distribution of market shares would accordingly increase, but, as a matter of fact, the degree of trade diversification has decreased.

³Coverage: For the purpose of this study, the world has been divided into homogeneous blocks of nations in the form of nine major economic geographic regions. Five of these comprise developing nations, three, the developed industrialized nations outside the socialist bloc, and one, the socialist countries. These regions are: (1) Latin America; (2) Africa; (3) West Asia; (4) South & East Asia; 5. Other Developing Countries; 6. US and Canada; 7. Western Europe; 8. Japan and Other DMEs (developed market economies); and 9. the Socialist Countries.

The analysis is carried out at the aggregate trade level as well as for the commodity classes and countries, with a tendency towards multilateralism and trade diversification.

3. Trends and Shifts in the Structure of Aggregate Trade

In order to identify the recent trends and shifts in the bilateral market share of the nine major regions of the world, the yearly aggregate bilateral trade flows are converted into trade shares and individually regressed against time. The results are listed in Tables 1 and 2. A regional \( 9 \times 9 \) matrix of linear marginal trend coefficients of market shares (together with their mean values over the sample period, below in parentheses), is presented in Table 1; its subaggregates have been summarized in Table 2. The mean values of the \( a_{ij} \)'s in Tables 1 and 2 measure the structure of the world trade, and the marginal trend coefficients track the directional shifts in the given structure.

The summary Table 2 shows the interregional bilateral trend movements in the shares of developing countries, developed countries, and blocs of Socialist Countries. A quick examination of the Table 2 leads to two broad observations.

First, throughout the sample period of the 1960s, approximately 20 per cent of the world trade market at the aggregate level was shared by developing countries, 69 per cent by the industrial countries outside the Socialist bloc, and the remaining 11 per cent was enjoyed by the Socialist Countries. The corresponding trend coefficients indicate that both developing countries and Socialist Countries have been losing their market shares to developed countries by 0.35 and 0.11 per cent, respectively, on the average every year. Furthermore, the intra-bloc trade shares of developing countries and of Socialist Countries are falling, but the intra-bloc share of developed countries is increasing.

Second, over and above these general trends, some broad basic shifts seem to be occurring in the direction of trade. (6) The developing countries are importing smaller and smaller proportions of their imports from developed countries and are becoming increasingly dependent on the Socialist Countries. The Socialist Countries are, in fact, increasing their market share in the developing countries by almost one-third of one per cent every year. Similarly, the developing countries, which are rapidly losing their share in the world market and in the markets of the developed countries, are either successfully maintaining their shares in the markets of the Socialist Countries or are making some slight gains. On the Whole, the bilateral trade relationship between the developing countries and the Socialist Countries is strengthening over time, but the same relationship between the developing and developed countries is weakening. (b) It appears that the developed countries are substituting their marginal imports from the developing countries by imports from within their own bloc. However, the Socialist Countries seem also to be making some inroads into developed markets. (c) And finally, it is evident that as far as the shares in the markets of the Socialist Countries are concerned, the developed countries are making some inroads into developing countries.

⁵For the earlier trends in international trade, see The Bator/Levi Report (1958), which revealed the failure of the exports of the developing countries to grow as rapidly as those of developed countries. The prime reasons assigned were tariffs and other barriers erected by the developed countries.
### Table 2: A Summary of World Market Trade: Marginal Trend Coefficients $a_{ij}$ and Mean Values $a_{ij}$ (Per Cent)

<table>
<thead>
<tr>
<th>Market</th>
<th>Developing Countries (LDC-1-3)</th>
<th>Developed Countries (DME-6-8)</th>
<th>Socialist Countries (9)</th>
<th>World (1-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>Developing Countries (LDC-1-3)</td>
<td>0.86*</td>
<td>0.45</td>
<td>0.063</td>
</tr>
<tr>
<td></td>
<td>Developed Countries (DME-6-8)</td>
<td>0.14</td>
<td>0.3</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>Socialist Countries (9)</td>
<td>0.29</td>
<td>0.05</td>
<td>-0.87</td>
</tr>
</tbody>
</table>

Note: $a_{ij}$s under developing countries should be read as $a_{ij}$. $a_{ij}$s under developed countries and socialist countries should be read as $a_{ij}$. $a_{ij}$s under world should be read as $a_{ij}$.

*Significantly different from zero at the 5 per cent level.

Note: Sums of the marginal coefficients within a column should approach zero and the corresponding sum of mean values must be 100.

The regional distribution of these structural changes may be examined with the help of Table 1. As far as the trade of developed countries is concerned, two noteworthy features about the structure and the structural changes stand out. First, their trade shares indicate a strong tendency towards geographical regionalization. There is a very strong shift in trade patterns from interregional trade to trade within a regional bloc. With the notable exception of one region, namely Japan and other DMEs, whose shares in the United States and Canadian markets is increasing by almost one-half of one per cent every year, the interregional trade shares of developed markets are falling rapidly. The two main geographical regions, North America and Western Europe, which account for about 60 per cent of world trade are becoming more and more isolated and economically self-contained. Western Europe is making a major shift from trade with the rest of the world to intraregional trade. It is gaining the share of its own market by almost nine-tenths of one per cent every year. This trend presumably reflects the prodigious growth in trade (intra-industry as well as two-way) within the European Economic Community.

A second noteworthy and interesting feature of the trade share of developed countries is the shifting trade relations between two giant blocs, namely, Western Europe and North America. Whereas Western Europe is maintaining or slightly enlarging its share of the North American market, it is increasingly importing a smaller and smaller proportion of its imports from North America. This might have interesting implications in the future from political and economic points of view, especially affecting the future trans-Atlantic trade negotiations.

As far as the regional distribution of the structural changes among the developing countries are concerned it is hard to discern a consistent pattern. However, the following observations may be made.

**First**, although the intraregional share of the developing countries as a group is falling, substantial gains are being made by some. It may be noted that a share of 20.3 per cent of

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1For the analysis of intra-industry specialization and two-way trade, see for example, Baldwin (1966); Grubel (1967); Gray (1973); and Popescu and Sorensen (1975).
total imports of developing countries on the average is accounted for by intra-trade, in which the largest portion, 8.2 per cent, is held by South & East Asia. Next in line is Latin America, which controls 5.4 per cent of the market. The remaining 6.7 per cent is shared between Africa, West Asia and Other Developing Countries. However, the relative positions of the developing countries in their intra-trade seem to be in a state of flux. Whereas Latin America and West Asia are seen to be making gains, South & East Asia (the largest share holder) is losing rapidly, and this accounts for the overall net loss in the intra-trade shares of the developing countries. Africa is just about maintaining its share of 2.3 percent.

Second, the overall decline in the share of developed countries of the import markets of developing countries (observed earlier from Table 2) seems to have been accompanied by several shifts within each bloc. North America and Western Europe are losing their shares of almost all developing markets but Japan and Other DMEs are gaining quite rapidly. South & East Asia seems to be getting particularly dependent on Japan, which is adding about 1.4 per cent to its share every year.

Third, examining the interregional flows of exports of developing regions, it appears that there are some gains for Latin America but heavy losses for West Asia, South & East Asia and Other Developing Countries.

Fourth, the share of the developing countries in the market of the developed countries is falling across the board, with the one exception of West Asia, which seems to be enlarging its share of the markets of Japan and Other DMEs. There seems to be a general bilateral decline in the market shares of developing countries and shares of the United States and Canada. The US and Canada are importing a smaller and smaller proportion of their total imports from less developed regions and, as has been already pointed out above, they are also supplying a smaller and smaller proportion of total imports of developing regions. In short, the developed countries in general are importing a drastically smaller proportion of their total imports from developing countries while retaining their own share of the imports of those countries. Japan seems to be the only exception which is importing as well as exporting larger shares. The appearance of this trend (with all its implications of trade gap constraints in growth analysis) has been an important argument in the trade positions proposed and supported by UNCTAD.11

Fifth, the developing countries are barely maintaining their share in the Socialist market. On the whole, out of their share of 20 percent of the world market, the developing countries are losing a little over one percent every three years.

Finally, it is interesting to note that in contrast to the developed market economies, the Socialist Countries are becoming more and more outward looking as far as their trade is concerned. For example, in comparison with the United States and Canada, which are experiencing falling shares in each and every market of the rest of the world, while increasing their intra-trade, the Socialist Countries are rapidly gaining in all other markets, while lowering their share of intra-trade. However, their total share of the world market still remains small.

4. The Distribution of Structural Shifts and SITE Commodity Classes

Nine (9 × 9) matrices of trend coefficients for one/two digit classes were calculated and

11See the several documents submitted by the UNCTAD Secretariat in its three sessions, March-June 1971 and June 1972 in Geneva, March 1973 in Delhi and April 1973 in Colombo. The implications of this trend for the trade gap analysis of development are enormous.

<table>
<thead>
<tr>
<th>Export Region</th>
<th>Market</th>
<th>LDC</th>
<th>DME</th>
<th>SOCIALIST</th>
<th>WORLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food items</td>
<td>(+0 +1 22 +4)</td>
<td>-0.26</td>
<td>-0.92</td>
<td>1.19</td>
<td>-0.58</td>
</tr>
<tr>
<td>Agricultural raw materials</td>
<td>-0.70</td>
<td>-0.77</td>
<td>-0.55</td>
<td>-0.55</td>
<td></td>
</tr>
<tr>
<td>Fuels &amp; lubricants</td>
<td>0.56</td>
<td>0.22</td>
<td>0.35</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.43</td>
<td>-0.09</td>
<td>0.17</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Iron &amp; steel</td>
<td>0.39</td>
<td>0.08</td>
<td>0.07</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td>0.38</td>
<td>0.02</td>
<td>0.11</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Manufactured goods excl.</td>
<td>0.35</td>
<td>0.33</td>
<td>0.53</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Machinery &amp; transport</td>
<td>0.09</td>
<td>0.06</td>
<td>0.08</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>TOTAL (SIC 0-9)</td>
<td>-0.16</td>
<td>-0.95</td>
<td>0.01</td>
<td>-0.35</td>
<td></td>
</tr>
</tbody>
</table>

| Food items    | (+0 +1 22 +4) | -0.83 | 0.85 | 0.14 | 0.51 |
| Agricultural raw materials | 0.51 | 0.36 | 0.54 | 0.40 |
| Fuels & lubricants | 0.62 | 0.48 | 0.55 | 0.22 |
| Chemicals | 0.55 | 0.19 | 2.12 | 0.13 |
| Iron & steel | -0.94 | -0.15 | 0.45 | -0.38 |
| Machinery & transport | -0.94 | -0.06 | 0.68 | 0.18 |
| TOTAL (SIC 0-9) | -0.13 | 0.45 | 0.83 | 0.46 |

| Food items    | (+0 +1 22 +4) | 0.69 | 0.12 | -1.54 | 0.07 |
| Agricultural raw materials | -0.02 | -0.41 | 1.59 | -0.06 |
| TOTAL (SIC 0-9) | -1.3 | -0.45 | 0.67 | -0.18 |

Socialist

Food items | 0.69 | 0.12 | -1.34 | 0.07 |

Agricultural raw materials | -0.02 | -0.41 | 1.59 | -0.06 |

TOTAL (SIC 0-9) | -1.3 | -0.45 | 0.67 | -0.18 |
### Table 3

<table>
<thead>
<tr>
<th>Export Region</th>
<th>LDC</th>
<th>DME</th>
<th>SOCIALIST</th>
<th>WORLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude fertilizers, crude minerals (27, 28)</td>
<td>0.25</td>
<td>0.23</td>
<td>-1.31</td>
<td>-0.17</td>
</tr>
<tr>
<td>Fuels and lubricants</td>
<td>0.07</td>
<td>-0.03</td>
<td>-0.35</td>
<td>-0.31</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.12</td>
<td>0.11</td>
<td>2.29</td>
<td>-0.16</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>0.25</td>
<td>0.07</td>
<td>0.41</td>
<td>-0.09</td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td>0.28</td>
<td>0.02</td>
<td>-1.35</td>
<td>-0.25</td>
</tr>
<tr>
<td>Manufactured goods excl.</td>
<td>0.15</td>
<td>0.08</td>
<td>-2.54</td>
<td>-0.43</td>
</tr>
<tr>
<td>67 + 68 (67 + 68)</td>
<td>0.55</td>
<td>0.23</td>
<td>70.6</td>
<td>11.3</td>
</tr>
<tr>
<td>Machinery &amp; transport</td>
<td>0.24</td>
<td>0.12</td>
<td>76.5</td>
<td>12.9</td>
</tr>
<tr>
<td>TOTAL (SITC)</td>
<td>0.25</td>
<td>0.03</td>
<td>-0.87</td>
<td>-0.13</td>
</tr>
</tbody>
</table>

**Note:** Statistically insignificant at 5 per cent.

Table 3 shows the interregional bilateral trend movements in the shares of the developing countries, developed countries and a bloc of Socialist Countries for total trade as well as by 9 major SITC groupings. The information on the trend coefficients by economic regions and by SITC groupings is also presented graphically in Chart 1. In Chart 1 every SITC category is shown by a bar. Each bar represents three points. The height of the bar at that point measures the size of the trend coefficient of the share of a given region in the world market.

The distribution of aggregate gains and losses by SITC classes can be broadly analysed with the help of Table 3 and Chart 1, and by geographical and economic regions by the information contained in the nine individual commodity or sectoral tables. A few significant observations on the commodity-wise distribution of gains and losses may be pointed out as follows.

First, although the developing countries are losing their total trade share in the world market, there is some evidence of significant but mild gains in specific cases. Their sharpest and most serious loss is registered in the markets for agricultural raw materials (SITC 2) and food items (SITC 0 + 1 + 22 + 23). Simultaneously, the most encouraging trend is recorded in their rising share of manufactured goods, including iron and steel and non-ferrous metals (SITC 6 + 8). Although this gain is very small in size it remains statistically significant and economically noteworthy. And as the recent oil crisis has well demonstrated, developing countries continue to make rapid advances in the fuel market.

Secondly, the declining share of the developing countries in exports of agricultural raw materials appears to have been captured by...
the developed market economies, while their gains in manufactured goods seem to flow from the losses of the Socialist Countries.

Thirdly, the commodity shifts in the market shares of agricultural raw materials and of manufactured goods seem to occur across the board in all markets, such as intra-markets of developing countries and developed markets, as well as Socialist markets. But at a more disaggregated level, the allocation of these changes to various exporting regions as indicated by the nine sectoral tables does not seem to be uniform.

A fourth subject to consider is the distribution of losses and gains in the market shares of agricultural raw materials. The following conclusions emerge: (a) The largest loss is registered in the market share of South & East Asia. It supplied on the average approximately 15 per cent of the total world market throughout the sample period. However, its share has been falling sharply by 0.4 per cent every year. Among the remaining developing regions Latin America has been almost maintaining its share but Africa has been losing its share somewhat. (b) It appears that the fall in the share held by South & East Asia is being entirely captured by Western Europe. (c) One of the interesting indications seems to be that both North America and Western Europe are rapidly moving towards self-sufficiency in their requirements of agricultural raw materials. At present, on the average, about 50 and 41 per cent of the total needs of the United States and Canada and Western Europe respectively are internally provided for. But their shares are increasing in their own respective markets by 1.6 per cent and 1.2 per cent every year. (d) Japan seems to be shifting its imports of raw materials from developing countries to Socialist Countries.

It would be interesting to investigate further whether the loss in the world market share of the developing countries in the export of agricultural raw materials is due to export supply factors or to demand factors on the import side. UNCTAD holds the general consensus that this loss has occurred primarily due to demand factors, and especially the growing barriers to entry in the developed markets. For example, "The main barriers to the commodity exports of developing countries to markets in industrial countries arise from governmental measures of various kinds designed to protect domestic producers from import competition. The two groups of commodities affected principally are temperate zone agricultural products and processed primary commodities, both agricultural and industrial. The range of major commodities—such as sugar, cereals, meat, dairy products, fish, wine, oilseeds, tobacco, cotton and wool—continue to be substantially affected by protective measures in industrial countries."

At this point, one might further add another demand factor. The common agricultural policy of the European Economic Community must also be responsible for this diversion of trade from the developing countries to trade among DMGs. However, if the supply factors turn out to be important, the next question to be investigated is whether some kind of sectoral substitution process between agricultural and industrial products or within the agricultural sector is taking place; and, in the latter case, whether the producers are shifting from production of raw materials to food crops or to other commercial crops.

Finally, as far as the distribution of shifts in the shares of exports of manufactured goods excluding iron and steel and non-ferrous metals are concerned, every developing region seems to be making some inroads in the world market. These gains are very small in magnitude but statistically highly significant. The following main regional tendencies can be clearly traced.

(i) Latin America's share for the sample period has been less than 1 per cent on the average, but it is rising at a rate of 0.05 per cent every year. Latin America is making gains in its own market for manufactured goods in the markets of North America and Western Europe, and is almost maintaining its share in Africa, West Asia, Other Developing Countries, Japan, and the Socialist Countries; but it is losing in the markets of South & East Asia.

(ii) Africa's share of manufactured goods exports in the world market has been 1 per cent on the average, but it continues to gain at the rate of 0.02 per cent. It is gaining in its own market, Japan, and Other DMGs, and the Socialist Countries; it is losing in South & East Asia, the United States and Canada, and Western Europe, and is almost maintaining its share in Latin America and Other Developing Countries.

(c) West Asia has held on the average about 9 per cent of the world market, but is gaining at the rate of 0.03 per cent every year. It is increasing its share in most markets and is holding on to others. The latter category consists of West Asia's own market and the markets of Western Europe and the Socialist Countries. No significant loss has been registered in any market and the gains, even if mild, are all statistically significant.

(d) South & East Asia has held in the last decade about 6.5 per cent of the world market in manufactures and is still gaining at the rate of 0.16 per cent on the average every year. Its largest and most important gain seems to be in the United States and Canada (0.85 per cent), followed by Japan (0.44 per cent) and Socialist Countries (0.29 per cent). It is also gaining in Africa, is losing its share in Latin America but maintaining it everywhere else.

It may in fact be emphasized by examining the relevant sectoral table that manufactured goods exports from South & East Asia to North America seem to be the single most important contributor factor to the overall gains in the share of developing countries in the world market in manufactured goods excluding iron and steel and non-ferrous metals. UNCTAD has also recognized this facet of an increasingly uneven distribution of export gains from manufactures and has rightly warned that on closer examination the picture is much less encouraging. Nonetheless, any recorded gain, in spite of several hiccups must be regarded as an indication of the improving trade performance of the developing countries."
A sixth point to consider is the gains in the share of developing countries in the world market of other manufactures, namely, iron and steel (SITC 67), non-ferrous metals (SITC 68) and transport machinery (SITC 7). South & East Asia and Latin America seem to be making important strides in iron and steel, and Africa in non-ferrous metals. South & East Asia is registering gains primarily in the markets of all developing regions and in the markets of Japan and Other DMFs. Latin America is making gains primarily within its own market. Compared with the world market for iron and steel, in the market for non-ferrous metals, Africa, among all developing regions, has been the major gainer, particularly in the Japanese market and in its own intramarket. Other developing regions are basically maintaining their shares.

Another significant development to be emphasized is the market share of developing countries in the export of machinery and transport equipment is rising in almost all the world regions. The gain is small but quite significant, and mainly reflects an increase in their intra-trade.

The next sector to consider is food. As generally expected, due to their own increasing domestic needs, the developing countries are sending an ever smaller share of food items to the world market. At the same time, however, their share of food items for the Socialist Countries is increasing rapidly. The main exporters are Latin America, Africa and South & East Asia.

Finally, examination of the export shares of the developed regions and Socialist Countries in the markets of the developing regions reveals certain interesting trends. Except for crude fertilizers and minerals (SITC 27 + 28), the developing countries seem to be getting less dependent on the developed regions. The share of the developed regions in the total imports of the developing regions is falling in almost all the categories, including even food items. Furthermore, the dependence of the developing regions on food items is shifting slowly to the Socialist Countries. The same seems to be true in the case of their imports of iron and steel and chemical products. The Socialist Countries are maintaining their share of developing markets in all other commodity groupings. It is important to notice here that while the Socialist Countries are losing their share in the world market of practically all commodities, they all are gaining in the markets of the developing countries.

In conclusion, one might add that the trend towards greater self-reliance, especially in manufactured goods including chemicals, machinery, and iron and steel, however small, is indeed a noteworthy achievement of the developing countries. Furthermore, to the extent this trend is significant it should lead to both increased growth and a wider dissemination of the benefits of growth in the economies of developing countries.

5. Bilateral Reciprocity, Multilateralism, and Market Diversification

As suggested in section 2, the dynamics of regional isolationism and bilateral reciprocity, positive and negative in the sense of bilateral independence or divergence, can be investigated through the study of trend coefficients in bilateral pairs. Accordingly, the bilateral pairs of signs corresponding to the ordered bilateral pairs of trend coefficients have been schematically arranged in the form of a matrix, called BL. The BL matrix has a special structure because of the nature of bilateral relationships. It is not exactly symmetrical. However, its elements below the principal diagonal are closely related to the elements above it: the elements on both sides of the principal diagonal are virtually the same except that the ordering of the signs is reversed. Therefore, the following BL matrix explicitly contains only the elements on one side of the principal diagonal and elements on the principal diagonal.

The BL matrix reveals some interesting patterns. Each element of this matrix can be easily identified with one of the six relationships (1–10) listed above in Section 2. However, for the sake of brevity only the important ones are summarized below.

First, the overall degree of bilateral reciprocity and interdependence among the trading regions seems to be diminishing (recall the tendency towards isolationism noted above on the part of certain regions). Out of 36 bilateral pairs, 9 relationships indicate a strong tendency towards bilateral independence and 11 (of which 3 are statistically not significant in one or both signs) indicate bilateral divergence. The remaining 17 pairs show a growing degree of unilateral dependence.

Second, 4 of the 9 regions are identified with two distinctly opposite global patterns. North America and Western Europe are moving towards regional isolationism in contrast to Japan et al. and Socialist Countries which are moving towards the rest of the world.

Third, the old historical links are giving place to new ones. To cite a few examples, Latin America and North America, South & East Asia and Western Europe, Africa and Western Europe are diverging from each other. In their place, Latin America and South & East Asia are growing bilaterally dependent on Japan and the Socialist Countries but Africa is becoming more interdependent with them. The bulk of the developing countries are indeed moving away from their traditional trade relations with the US and Canada and Western Europe and are moving closer to Japan and Socialist countries.

Fourth, more regions are getting unilaterally dependent on West Asia.

And finally, there is substantial indication of growing mutual isolationism among the developing regions. It is worth noting that nowhere do their trade relations show any visible sign of a significant divergence.

Next we examine the dynamics of multilateralism and trade diversification by markets. Accordingly, as suggested in Section 2, the growth rates of three characteristics of the distribution of $a_{ij}$ across $j$ are computed for each region. The growth rates of these char-

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**Note**: Signs correspond to the trend coefficients of Table 7: the ordering of the regions remains unchanged. The upper sign in (1) corresponds to $a_{ij}$ and the lower sign to $a_{ji}$.
acertainties, the mean, the coefficient of vari-

dation and the coefficient of skewness of all 9 regions have been listed in Table 4. These nine

regions have been classified by increasing, decreasing and mixed pattern judged from the point of view of the degree of multilateralism and trade diversification.

Group A contains those regions which have an increasing degree of multilateralism and trade diversification in their international trade relationships. Latin America, West Asia, South & East Asia and the Socialist Countries fall into this category. It is interesting to note that 3 of the 4 regions falling into this category consist of developing countries. It may also be noted, however, that Latin America and South & East Asia, while moving towards multilateralism and trade diversification, are losing their overall strength in the world market as indicated by the negative growth rate of their mean shares. In contrast, Africa and West Asia are strengthening their trade performance.

Group B contains exporting regions with declining diversification which have shown an increasing tendency to concentrate on some markets. Africa, Other Developing Countries and Japan with other DMEs fall into this class.

Finally, Group C contains the United States and Canada and Western Europe as mixed cases. The coefficient of variation shows no significant change for the United States and Canada but has a positive growth rate in the case of Western Europe. At the same time the coefficient of skewness has a negative growth rate in both cases. These mixed tendencies are perfectly consistent and not entirely unexpected in the light of the strong tendency towards regionalization already noted for these regions. The example of Japan and Other DMEs stands in direct contrast to these regions as far as trade diversification and multilateralism is concerned.

6. Conclusion

To summarize and conclude, investigation of the trends and patterns in the structure of world trade has revealed some major shifts in the direction and distribution of intermarket trade relationships among nine regions of the world. North America and Western Europe, the two giant economic blocs, which account for nearly 62 per cent of world trade, are shifting substantially from interregional trade to trade within their regional blocs. Western Europe in particular seems to be moving rapidly towards isolationism. The Socialist Countries in contrast are becoming increasingly outward looking. Japan is making advances in new markets and strengthening its position in others. The bulk of the developing countries are moving away from their traditional status. Certain markets are losing their 'favoured' position and others are slotting their 'inferior' status. The dependence of developing countries on the western industrialized world is falling in general.

The analysis of the dynamics of bilateral reciprocity confirms the impressionistic judgement that several historical interregional trade relations are yielding place to new ones. The traditional ties of Western Europe and South & East Asia, North America and Latin America are becoming looser. Both Latin America and South & East Asia are moving closer to Japan and the Socialist Countries. Furthermore, the distribution of gains and losses among various trading regions by SITC commodity classes brings out important factors. The developing regions which have lost the world market in 'problem commodities,' especially agricultural raw materials, are making mild but significant gains in exports of manufactured goods, including machinery and transport equipment, iron and steel and non-ferrous metals. The developing regions are gaining in almost all the world markets in exports of machinery and transport equipment. The prime gainers are Latin America and South & East Asia in exports of manufactures as such, and Africa in exports of non-ferrous metals. Western Europe and North America are becoming increasingly self-sufficient in their needs of agricultural raw materials and this seems to account for the major losses of the world market shared by developing regions. In this regard UNCTAD's general position seems to be vindicated.

The two proposed criteria based on the growth pattern of 'moments' up to third degree of the distribution of market share leads to the classification of nine regions into three groups. Latin America, West Asia, South & East Asia and the Socialist Countries are all increasing the degree of multilateralism and diversification in their exports markets. Such trends are implicit indicators of their strong growth performance. In contrast, Africa and Other Developing Countries are experiencing smaller degrees of multilateralism and trade diversification. Japan seems to fall in the latter category. Both Western Europe and North America indicate mixed patterns.

Finally, it should be mentioned that the major structural changes in world trade matrix noted above have been the result partly of autonomous market and non-market forces and partly of national policies. An econometric analysis of the sources of these changes is crucial to the understanding of international economic issues, the formulation of trade and development strategy, and the making of consistent forecasts of world trade. Such an analysis, however, is the subject of another paper.17

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TABLE 4. Dynamics of Multilateralism and Trade Diversification

<table>
<thead>
<tr>
<th>Export Region</th>
<th>Mean Share</th>
<th>Mean Growth Rates (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>Latin America</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td>West Asia</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>South &amp; East Asia</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>Socialist Countries</td>
<td>31.8</td>
</tr>
<tr>
<td>Group B</td>
<td>Africa</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>Other Developing Countries</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Japan and Other DMEs</td>
<td>8.9</td>
</tr>
<tr>
<td>Group C</td>
<td>US and Canada</td>
<td>22.2</td>
</tr>
<tr>
<td></td>
<td>Western Europe</td>
<td>35.3</td>
</tr>
</tbody>
</table>

Note: 1. is the mean of the mean shares 2. is the growth rate of the coefficient indicated as a subindex, is coefficient of variance and us the 'factual' coefficient of skewness. S, CV and SK are the coefficients of the distribution of 3. is computed for each exporting region and for each sample year. All the growth rates are statistically significant at one per cent. The non-significant rates have been listed as zero.

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17As mentioned above this paper has been written from a large project and forms one of the series of papers. One sequel study (1976) has already been completed and two others are in the process. As a matter of fact the construction of the data availability for a complete project was a prime factor determining the level of disaggregations adopted in the paper. Ideally, a further disaggregation of bilateral relationships and a country wide search of patterns of trade creation and trade diversion within each region is extremely important for getting individual country trade policy. However, limited availability of the published data precludes the possibility of such an ambitious and gigantic task as this range.
References

9. UNCTAD, The International Development Strategy in Action, The Role of UNCTAD, TD/99, a report presented by the Secretary General at the Third session of UNCTAD at Santiago, Chile, April 1972.

Appendix Tables

The following set of 9 Appendix Tables is available on request. These Tables contain the marginal trend coefficients $d_{it}$ and mean values $\bar{d}_{it}$ (per cent).

Appendix Table 1 Export Market Shares of Food Items (SITC 0 + 1 + 22 + 4), 1960-1969.
Appendix Table 2 Export Market Shares of Agricultural Raw Materials (SITC 2 - (22 + 27 + 28), 1960-1969.
Appendix Table 3 Export Market Shares of Crude Fertilizers, Crude Minerals, Non-ferrous Ores and Metal Scrap (SITC 27 + 28), 1960-1969.
Appendix Table 4 Export Market Shares of Fuels and Lubricants (SITC 3), 1960-1969.
Appendix Table 5 Export Market Shares of Chemical Products (SITC 5), 1960-69.
Appendix Table 6 Export Market Shares of Iron and Steel (SITC 67), 1960-69.
Appendix Table 7 Export Market Shares of Non-ferrous Metals (SITC 68), 1960-69.
Appendix Table 8 Export Market Shares of Manufactured Goods Excluding Iron and Steel and Non-ferrous Metals (SITC 6 + 8) - (67 + 68), 1960-69.
Appendix Table 9 Export Market Shares of Machinery and Transport Equipment (SITC 7), 1960-69.

Real Inputs, Retained Earnings, and Optimizing Behavior of the Financial Intermediary

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The renewed interest in monetary economics of the past two decades has brought forth numerous theoretical models analyzing the behavior of the financial intermediary. Many of these models have dealt specifically with the behavior of commercial banks in both asset and liability markets. Recently, economists have expanded their scope of analysis to include all types of financial firms. For example, several theoretical models have been developed to analyze the actions of the savings and loan associations [1, 2, 3, 6, 8, 10]. The major thrust of these analyses concerns the deposit rate setting decision for the firm. The firm is typically considered as a monopolist in deposit markets facing a known demand function for its liabilities. The key decision for the firm is to choose a deposit rate that attracts an optimum level of deposits. The proceeds of the liability issue are then used to purchase assets in the form of mortgages. One major objective of this type of analysis has been to pinpoint key variables to be used in econometric deposit rate equations for the Fed-MIT prize model of the economy. The most extensive work done in this area has been performed by Sloan [8]. However, in the majority of the theoretical models, the real input decisions of the firm are ignored.1 The financial intermediary exists for the purpose of accumulating funds from surplus units in the economy and transferring them to deficit units. Its existence is based upon a profitable process of borrowing and relending funds in a more efficient manner than individuals can do themselves. This fundamental intermediation process necessarily requires the firm to hire real resources in the form of labor and capital. Previous theoretical analyses that have ignored this aspect of behavior give a misconceived analysis of the intermediary. The purpose of this paper is to present a new model of the financial intermediary that integrates the financial and real resource decisions of this type of firm into a single framework. This task is accomplished by relying upon the standard tools of microeconomic analysis.

Construction of the Model

The Objective Function

The model views the firm operating in a multi-period time horizon with all parameters known with certainty. The objective of the firm is the maximization of the discounted present value of the dividend stream to owners plus the discounted present value of the net worth of the firm at the end of the time horizon. It is assumed that the net worth would be reflected in the future market value of the firm at that

1 A limited number of models address the concept of transactions costs and the behavior of the financial intermediary [7, 9]. However, none of these explicitly addresses the problem of optimal real input usage in the manner presented in this paper.