Notes & Comments

A Note on the Structure of Pakistan's Foreign Trade

by

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Developing countries generally are not only concerned with the level of their export earnings but also with the commodity and geographic composition of exports, and, to a lesser extent, of imports. Concern over a high degree of commodity structure in exports is usually based on its presumed association with adverse price movements. A more diversified export commodity structure will reduce the impact on the overall level of foreign-exchange earnings from price fluctuations in any particular commodity. While concentration on a few commodities need not be identified with being a primary commodity exporter, for many developing countries a high degree of commodity concentration is often correlated with the exports of primary commodities [6 ; 9]. The familiar terms-of-trade argument, the belief that the relative price of primary commodity exports will fall, over the long run, as compared to the price of industrial goods imports, provides a second rationale for seeking a diversification in the composition of exports. Even in the short run the prices of most primary products in international trade vary more sharply from year to year than those of most industrial products thus providing an additional incentive for decreasing commodity concentration [5].

A high degree of instability in a country's export earnings is clearly undesirable. To some extent a decrease in the geographic concentration of exports can offset the detrimental effects of a high measure of commodity concentration. Further sales of traditional primary exports to nontraditional markets will help overcome the supposed inelastic demand faced by such exports. And insofar as

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short-run price fluctuations are related to changes in demand in the importing countries, an increase in the geographic diversification perhaps can provide a buffer against such price movements.

Pakistan's policies with regard to exports have concentrated on measures which would lead both to a higher level of export earnings and ensure a greater degree of commodity and geographic diversification[1]. While the rapid rate of growth of exports from Pakistan has received considerable attention, the effect which the export-promotion policies may have had on the composition of exports has been generally neglected. The main focus of this paper is to analyze the changes in the structure of Pakistan's foreign trade and its effects on the stability of export receipts.

Commodity Concentration of Exports and Imports

Measurement of concentration requires as a first step a definition of commodities that is uniform both over time and for imports and exports. Pakistan adopted the Standard International Trade Classification scheme (SITC) only in 1960, thus making comparisons with earlier years difficult[2]. For exports, where fewer commodities are involved, an attempt has been made to re-classify recorded exports for years before 1960, to conform to the SITC commodity classification. For imports, however, the analysis will focus only on the period since 1960.

Selection of a method of classification does not in itself solve the problem of definition. The question remains as to the degree of "fineness" with which commodities are to be defined. The SITC/PSTC classification schemes provide up to 570 items when commodities are classified at the digit level of disaggregation. Admittedly not all items will enter into Pakistan's foreign trade or be quantitatively important. From a practical point of view, using the five-digit level of disaggregation would involve an immense amount of calculations. But practical matters aside, it seems justifiable to select a three-digit (150 commodities) level of aggregation. If fineness in classification were carried beyond this point, commodities that are very close substitutes would be treated as different goods and exports, or imports, that are homogenous would appear as heterogeneous. On the other hand, increasing the level of aggregation beyond 150 commodities would treat distinct commodities as similar products.

The degree of concentration is measured by the Gini-Hirschman coefficient of concentration [3]. The coefficient of commodity concentration for

[1]The various export-promotion schemes that have been adopted in Pakistan are summarized by Hufbauer [4].

[2]For a description of the SITC, *see* [16]. In 1963 Pakistan adopted the Pakistan Standard Trade Classification (PSTC) [12] which, however, is broadly comparable to the SITC classification.

exports is defined as

$$C_{X_t} = 100 \Big/ \sqrt{\sum_{i=1}^{n} \left(\frac{X_{i,t}}{X_t}\right)^2}$$

where $X_{i,t}$ is the value of exports of commodity i in year t and X_t is total export earnings during year t. The concentration coefficient for imports, C_{M_t}, is similarly defined.

The highest possible value of these coefficients is 100 which occurs when exports, or imports, consist of only one good. The value of the concentration coefficients will be lower the more evenly exports, or imports, are distributed over the various possible categories. The lowest value for either coefficient is

$$\frac{100}{\sqrt{n}}$$

where n is the number of different commodities recognized. This value will be reached when all commodities are equally represented in total exports or imports. In the present analysis, using a three-digit level of commodity disaggregation, n=150, so that the lowest possible coefficient for either exports or imports is approximately 8.2.

The coefficients of commodity concentration, for both exports and imports, and the ratio between the latter and the former, are shown in Table I.

TABLE I

COEFFICIENT OF COMMODITY CONCENTRATION

Year	Export (C_X)	Import (C_M)	Ratio (C_X/C_M)
1957/58	62.8	n.a.	—
1958/59	53.6	n.a.	—
1959/60	45.4	n.a.	—
1960/61	53.8	21.3	2.53
1961/62	54.3	20.5	2.65
1962/63	47.8	20.5	2.33
1963/64	49.0	21.5	2.28
1964/65	45.2	22.5	2.01
1965/66	43.1	20.0	2.16
1966/67	42.6	21.4	1.99
1967/68	39.9	22.4	1.78

n.a. means not available.

A number of observations stand out immediately. The commodity concentration index for exports has declined markedly. Although the time span covered by the data is relatively short, the decline of the measured degree of concentration in exports is of such a degree and general consistency that it undoubtedly reflects a real shift in the composition of Pakistan's exports. This is brought out clearly if one looks at exports by broad commodity groups.

TABLE II

COMPOSITIONS OF EXPORTS — PAKISTAN

(*Per cent*)

Year	Raw		Manufactured		All	Total
	Jute	Cotton	Jute	Cotton	others	
1957/58	60.1	15.2	6.4	2.2	16.1	100.0
1958/59	49.4	14.3	11.7	4.0	20.6	100.0
1959/60	39.6	10.3	12.3	12.5	25.4	100.0
1960/61	47.1	7.7	17.5	6.5	21.2	100.0
1961/62	46.1	6.7	17.5	2.2	27.5	100.0
1962/63	39.0	13.0	15.1	3.3	29.6	100.0
1963/64	32.8	14.8	13.9	8.2	30.3	100.0
1964/65	35.1	11.9	12.5	11.5	29.0	100.0
1965/66	31.8	10.2	21.1	9.4	27.5	100.0
1966/67	29.9	9.6	21.1	9.4	30.0	100.0
1967/68	24.3	14.7	21.4	14.3	25.3	100.0

Source: [11]

It is apparent that the major shift in the commodity composition of exports has been away from raw jute. In part, however, this has been substituted for by an increase in jute manufactures. If raw and manufactured jute exhibit similar price and demand behaviour they should more properly be treated as similar commodities for the present analysis whereas at the three-digit SITC/PSTC level they are defined as distinct commodities. Recalculating the export commodity concentration index with raw and manufactured jute combined as one commodity does not noticably change the trend of the index, although it does raise the level of the index by nearly 10 per cent for each year. Thus even if one were to treat all jute, regardless of its stage of processing, as one commodity, the strong decline in the measured level of export concentration persists. It is clear that this diversification in exports represents the introduction and growth of non-jute exports.

A decline in the concentration index of exports is likely to reflect an increased level of diversification in the economy in general and, in particular, in the industrial sector. Michaely [9] found that large developed countries had an average concentration index, also based on a three-digit commodity level of aggregation, of 21.1 as compared to large developing countries which had an average concentration index of 57.9. Pakistan's development has been marked by a rapidly growing industrial sector. While the initial industrial sector was concentrated in simple processing and textile manufacturing, there has been a rapid development of more complex and non-traditional industries since 1955 [14, pp. 60-61]. Thus, the interaction between a vigorous export-promotion policy and the rapid, and increasingly more diversified, growth in the industrial sector has permitted Pakistan to achieve a considerable degree of diversification in its exports.

The change in the commodity structure of exports was to a considerable extent brought about through deliberate government policy. One of the main objectives of Pakistan's export policy has been the promotion of exports of manufactured goods. Numerous policies have been used to stimulate exports. These include tax incentives and export-performance licensing, which entitle certain export industries to additional import licences on the basis of their export performance [4]. Export-performance licensing compensates exporters for the scarcity premium on importable inputs. The key instrument in the export-promotion strategy, however, and the one that has received the most attention, is the export bonus scheme [1 ; 15].

A common feature of all export-promotion schemes in Pakistan has been their discrimination against raw-material exports. In fact, exports of raw jute and cotton were until recenty subject to an export duty. The justification for price discrimination against raw jute and cotton was based on the belief that these commodities faced inelastic world demand and that because of the overvaluation of the rupee, the foreign-exchange benefit of exporting value added in manufactures is higher than that indicated by market prices.

While these policies have had the desired effect of changing the composition of Pakistan's exports, and have lead to a high rate of growth in export earnings[3], a number of these policy measures have been criticized on the grounds that they distort the pattern of resource use towards a less efficient allocation and reduce foreign-exchange earnings[4]. Hufbauer [4] notes that the bonus-voucher system creates a system which provides substantial subsidies to industrial exports, by comparison with agricultural exports, and that as a result value added, at world prices, might be very small. Whatever benefits are likely to accrue to the

[3]Based on a least squares regression estimate of log exports = a + b (time) the annual rate of growth was 8.6 per cent for the period 1957/58 to 1967/68.

[4]*See*, for example, Hufbauer [4], Mallon [7], and Soligo and Stern [15].

economy from its success in decreasing the commodity concentration in exports has apparently not been achieved without cost.

Turning to the degree of commodity concentration in imports it is apparent (see Table I) that this has remained relatively stable. *A priori* one might have expected a decline in the concentration index for imports as well. First, the shift in the composition of exports from traditional primary commodities to manufactured goods might have led to an increase in the imports of some raw materials required for their fabrication. And second, the emphasis on import substitution in Pakistan's development would, if successful, have led to a decrease in the imports of some goods. In part, these two tendencies will offset each other, especially when commodities are defined relatively broadly. It is possible that the use of a finer definition for commodities would have revealed a change in the concentration index for imports.

Finally, the gap between the concentration of exports and imports, as measured by the ratio C_X/C_M, has narrowed over time. The gap in the commodity concentration between exports and imports is mainly a reflection of underdevelopment and a lack of industrialization in particular. In the early stages of economic growth, production and especially the production of goods for exports, is determined largely by the availability of natural resources and climatic conditions. As development proceeds the increasing availability of capital and skilled labour broaden the product range over which a country can effectively compete in the international market. As a consequence exports are no longer confined to a narrow range of goods and the concentration index begins to fall. At the same time, however, it is likely that the concentration index for exports will remain higher than that for imports. The range of goods in which a country's structure of production has achieved a measure of comparative advantage is likely to be narrower than the range of commodities which are imported in response to domestic demand.

To estimate the impact of changes in the concentration of exports on the stability of export earnings, regression analysis was used. Export instability is defined here as short-term fluctuations in export earnings corrected for trend. The necessity for some form of trend correction is evident to avoid interpreting a constant year-to-year increase as indicating instability[5]. The regression equation used, covering the years 1957/58 to 1967/68, is given below:

$$\frac{U_t}{X_t} = -\underset{(0.0005)}{0.00043} + 0.0019\, C_{X_t} \qquad R^2 = 0.61$$

Here U_t is the absolute difference between actual exports (X_t) and the predicted value of exports derived from a semi-logarithmic trend equation on commodity

[5]A large number of alternative trend correction procedures are possible. *See*, MacBean [6].

export earnings, and C_X is the index of commodity concentration in exports. The bracketted figure is the standard error of the coefficient which is significant at the 95-per-cent confidence level. The result provides at least some justification for the belief that, in the case of Pakistan, a decrease in the commodity concentration of exports has reduced the instability of export receipts[6].

The Geographic Concentration of Exports and Imports

The coefficient of geographic concentration is defined in exactly the same manner as the commodity concentration index. Thus

$$G_{X_t} = 100 \sqrt{\sum_{i=1}^{n} \left(\frac{X_{i,t}}{X_t} \right)^2}$$

and

$$G_{M_t} = 100 \sqrt{\sum_{i=1}^{n} \left(\frac{M_{i,t}}{M_t} \right)^2}$$

where G_X and G_M stand for the index of geographic concentration in exports and imports respectively and the other variables are as defined before except that we are now concerned with percentage of exports sold to particular countries or areas and imports by geographic origin[7].

The resultant coefficients of geographic concentration are shown in Table III.

Hirschman [3] who calculated coefficients of geographic concentration of trade for forty-five countries for several years for the period 1913 — 1938, found that exports tended to have a higher degree of geographic concentration than imports. Michaely [9], in his study covering forty-four countries found that, on the average, the degree of geographic concentration between exports and imports was slightly higher for exports than imports. The present analysis, for Pakistan, shows that the degree of geographic concentration is considerably higher for imports than for exports. One possible explanation for this result is the relationship between the import-supplying countries and the aid-donors. Aid-giving countries have increasingly followed a "tied-aid" policy. It is not surprising, therefore, that the United States, Japan, the United Kingdom, and West

[6]By contrast those studies using cross-country data have found very little evidence of any relationship between the stability of export earnings and commodity concentration. *See* [6; 8; 9].

[7]In calculating these coefficients certain geographic areas, *e.g.* EFTA countries, were used when the individual countries within such an area were insignificant in terms of being major suppliers of imports or markets for exports. A total of 17 countries/areas were used in calculating the index. Hence the lowest possible value for the index of geographic concentration is 24.3.

TABLE III

COEFFICIENT OF GEOGRAPHIC CONCENTRATION

Year	Exports	Imports	Ratio
	(G_X)	(G_M)	(G_X/G_M)
1960/61	29.2	35.8	0.82
1961/62	30.4	40.4	0.75
1962/63	29.2	45.9	0.64
1963/64	29.5	47.5	0.62
1964/65	29.8	43.5	0.69
1965/66	30.9	40.3	0.77
1966/67	31.7	37.1	0.85
1967/68	29.7	38.5	0.77

Germany, the major suppliers of external assistance to Pakistan, also account, on the average, for over 55 per cent of Pakistan's total imports[8].

Insofar as aid is tied to the purchase of imports in the donor country, and while more than half of Pakistan's imports are aid financed, the degree of geographic dispersion for imports that can take place is clearly limited. There is evidence that Pakistan might well have benefitted from shifting the purchase of her imports to other countries, at least to some degree. For a number of commodities the prices in the aid-giving country are not internationally competitive[9]. Thus, the most effective use of Pakistan's total external resources would presumably have led to an alternative pattern of supplying countries for imports.

More surprising, however, is the failure of the geographic concentration index for exports to show any downward movement. The Third Plan notes that ". . . a factor which facilitated the expansion of exports was the diversification of export markets. There was a noticeable increase in Pakistan's exports to countries in the Afro-Asian region and the Socialist Bloc" [13, p. 81]. While it is true that the absolute level of exports to these countries and areas did increase, the percentage share of exports purchased by these countries did not show any upward trend. Thus, for example, nearly 5 per cent of exports were sold to China in 1960/61, and 7 per cent in 1964/65, the beginning of the third-plan period. Yet by 1967/68, the share of total exports sold to China had declined to less than

[8] *See* Appendix Tables 1 and 2. By contrast these four countries purchase only 30 per cent of Pakistan's exports.

[9] *See* Haq [2].

4 per cent. The share of exports destined for African and Asian countries has also remained fairly stable over the period 1960/61 to 1967/68. The only exception is the share of exports sold to the United Soviet Socialist Republic, which increased from less than 1 per cent in 1960/61 to nearly 3 per cent in 1967/68. On the whole, therefore, the geographic pattern of Pakistan's export has remained largely unchanged over this period. It is, therefore, unlikely that the geographic concentration of Pakistan's export trade had any effect on the level or stability of its export earnings[10].

Conclusions

The economic development of Pakistan has been marked not only by a highly successful export-promotion policy, in terms of achieving a rapid rate of growth of exports, but has been accompanied by a considerable change in the structure of trade, primarily exports. The diversification of exports is most marked in terms of a change in the commodity structure of exports. In terms of geographic concentration there has been no change in the measured concentration indices. The fact that the geographic concentration of imports exceeds that of exports is largely due to the effects of the "tied-aid" policy followed by the aid-giving countries.

On the whole, Pakistan's export policy has been successful in meeting the objective of diversification in terms of commodities exported. Insofar as this has helped to increase the demand for exports and reduced the risk of fluctuations in export earnings, it has benefitted the economy. It is possible, however, that the deliberate policies instituted to diversify exports have moved Pakistan away from precisely those commodities in which its endowment of productive resources makes it best suited. If such a distortion in terms of resource allocation has indeed occurred the cost of achieving a more diversified export structure may well have been very high.

[10]Massell [8] and MacBean [6] in their studies of the instability of export earnings, using cross-section data, found a low correlation between geographic concentrations and fluctuations in export receipts.

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Appendix

APPENDIX TABLE 1

ORIGIN OF PAKISTAN'S IMPORTS: 1960/61—1967/68

(Per cent)

Country/Area	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68
1. United States	23.94% (1)	30.85% (1)	40.12% (1)	42.72% (1)	37.36% (1)	33.10% (1)	29.03% (1)	31.41% (1)
2. United Kingdom	18.65 (2)	20.37 (2)	15.46 (2)	14.34 (2)	13.24 (2)	14.55 (2)	12.94 (2)	13.89 (2)
3. Asian countries, *nes.*	10.91 (3)	6.89 (5)	5.76 (5)	5.32 (5)	5.01 (5)	4.65 (5)	11.87 (3)	5.78 (5)
4. West Germany	8.47 (4)	9.39 (3)	10.40 (3)	10.75 (3)	13.17 (3)	11.53 (3)	8.64 (4)	9.76 (3)
5. Japan ..	7.87 (5)	7.95 (4)	6.75 (4)	6.50 (4)	8.72 (4)	8.64 (4)	2.91 (10)	9.05 (4)
6. Iran ..	4.77 (6)	3.70 (6)	3.69 (6)	3.78 (6)	1.21 (14)	0.66 (14)	2.36 (13)	3.38 (8)
7. India ..	4.05 (7)	3.45 (7)	2.77 (7)	2.13 (8)	2.30 (8)	0.60 (15)	0.04 (17)	0.06 (17)
8. Italy ..	3.22 (8)	2.89 (8)	2.10 (8)	1.81 (10)	2.27 (9)	4.25 (6)	3.84 (5)	3.92 (7)
9. ECM countries, *nes.*	2.45 (9)	2.02 (10)	2.04 (9)	2.48 (7)	2.33 (7)	2.59 (9)	2.48 (12)	2.57 (13)
10. EFTA countries, *nes.*	2.37 (10)	2.68 (9)	1.98 (10)	2.07 (9)	2.07 (10)	3.83 (7)	2.77 (11)	2.70 (12)
11. Canada ..	2.31 (11)	1.52 (11)	1.98 (11)	1.79 (11)	2.36 (6)	2.11 (11)	3.19 (8)	2.44 (14)
12. France ..	2.05 (12)	1.39 (12)	1.71 (12)	1.02 (13)	1.31 (13)	1.19 (13)	2.07 (14)	3.06 (10)
13. Communist countries, *nes.*	0.91 (13)	1.35 (13)	1.10 (13)	0.72 (15)	1.91 (11)	2.69 (8)	3.19 (7)	4.25 (6)
14. Africa ..	0.79 (14)	0.97 (14)	0.53 (16)	0.56 (16)	0.49 (16)	0.37 (16)	0.39 (15)	0.30 (15)
15. USSR ..	0.78 (15)	0.40 (16)	0.58 (15)	0.91 (14)	1.14 (15)	1.55 (12)	3.40 (6)	3.14 (9)
16. China ..	0.48 (16)	0.53 (15)	0.61 (14)	1.16 (12)	1.74 (12)	2.21 (10)	3.02 (9)	2.81 (11)
17. Hong Kong	0.24 (17)	0.30 (17)	0.22 (17)	0.24 (17)	0.32 (17)	0.23 (17)	0.23 (16)	0.21 (16)
Total:	94.26%	96.65%	97.80%	98.30%	96.95%	94.75%	92.42%	98.73%

Note: Bracketed figures indicate rank.

Sources: [10 ; 11].

APPENDIX TABLE 2

MAJOR BUYERS OF PAKISTAN'S EXPORTS: 1960/61 — 1967/68

(*Per cent*)

Country/Area	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68
1. United States	9.15% (4)	9.50% (3)	8.99% (4)	8.81% (3)	7.65% (5)	9.90% (3)	8.73% (4)	8.85% (4)
2. United Kingdom	15.59 (1)	16.01 (1)	14.93 (1)	13.59 (1)	12.32 (1)	11.94 (2)	10.40 (2)	12.68 (2)
3. Asian countries, *nes.*	10.64 (3)	8.79 (4)	11.79 (2)	12.48 (2)	15.70 (2)	13.97 (1)	15.04 (1)	16.33 (1)
4. West Germany	5.06 (8)	5.07 (8)	4.14 (9)	2.73 (12)	2.85 (12)	3.45 (10)	3.36 (11)	3.90 (9)
5. Japan ..	6.84 (6)	5.90 (6)	9.16 (3)	5.34 (7)	5.28 (7)	4.62 (7)	3.52 (10)	8.07 (5)
6. India ..	5.83 (7)	8.21 (5)	8.66 (6)	4.57 (9)	8.85 (4)	0.61 (16)	0.02 (16)	... —
7. Italy ..	2.31 (13)	2.34 (12)	2.74 (11)	2.08 (13)	1.37 (14)	1.98 (13)	2.15 (13)	2.75 (13)
8. ECM countries, *nes.*	7.64 (5)	5.86 (7)	6.57 (7)	4.89 (8)	5.04 (8)	6.91 (5)	4.54 (7)	5.57 (7)
9. EFTA countries, *nes.*	1.89 (14)	2.44 (11)	2.17 (12)	1.88 (14)	1.99 (13)	1.78 (14)	1.79 (14)	2.25 (14)
10. Canada ..	0.38 (16)	0.98 (15)	0.56 (16)	0.89 (15)	0.88 (15)	0.79 (15)	0.56 (15)	0.75 (15)
11. France ..	4.70 (9)	3.85 (10)	4.03 (10)	3.86 (10)	3.10 (10)	3.54 (9)	2.40 (12)	3.22 (11)
12. Communist countries, *nes.*	3.70 (11)	4.04 (9)	1.94 (13)	3.54 (11)	2.91 (11)	3.29 (11)	5.01 (6)	5.37 (8)
13. Africa ..	11.38 (2)	9.88 (2)	8.97 (5)	8.38 (4)	9.08 (3)	8.91 (4)	9.28 (3)	9.00 (3)
14. USSR ..	0.79 (15)	1.03 (14)	1.74 (15)	0.53 (16)	0.47 (17)	2.69 (12)	4.04 (8)	2.89 (12)
15. China ..	4.16 (10)	0.57 (16)	1.90 (14)	6.83 (5)	7.26 (6)	5.21 (6)	6.53 (5)	3.41 (10)
16. Hong Kong	3.50 (12)	1.73 (13)	4.38 (8)	6.26 (6)	4.56 (9)	3.72 (8)	3.84 (9)	6.64 (6)
Total:	93.56%	86.20%	92.67%	86.66%	89.31%	83.31%	81.21%	91.68%

Note: Bracketed figures indicate rank.
... means negligible.

Sources: [10 ; 11].