Pakistan's Terms of Trade, 1955-60

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The importance of the terms of trade in economic development arises from the fact that they affect a country's import capacity as well as the balance of payments position. The position of most of the underdeveloped countries with respect to their export proceeds and terms of trade is precarious and vulnerable. Though the ratio of exports to national income may not be higher in these countries than in the advanced countries, most of these countries depend excessively on a few export commodities for the bulk of their export earnings. Consequently, export disturbances are a source of serious problems for these countries.

The traditional pattern of Pakistan's foreign trade is similar to that of many other underdeveloped countries. The characteristic feature is a heavy dependence on a small number of export items: Jute and cotton (raw, yarn and manufactures) account for about 80 per cent of Pakistan's total export earnings; while raw wool, tea, hides and skins add another 5 per cent[1]. Though imports are more varied, particular items like machinery and mill work, metals and ores, mineral oils, etc., account for a major share of imports. Lately, with increased home production of consumer goods, a new trend has become evident. Imports of consumer goods have been considerably reduced, and greater emphasis is now being placed on the import of industrial machinery. But the deficit in the balance of trade and the need to service the foreign debt still limits Pakistan's capacity to import the capital equipment necessary for its industrial development.

In view of the fact that Pakistan is a developing economy and that in the initial years she has to depend heavily on foreign savings, changes in the terms of trade of the country are of vital importance. To understand the importance of the terms of trade in this connection, it is necessary to examine several kinds of terms of trade, in particular the commodity and income terms of trade. While commodity terms of trade measure the relative purchasing power of a unit of exports, the income terms of trade measure the total purchasing power of total exports. In addition to the prices of exports and imports (which are considered in the commodity terms of trade),

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1. State Bank of Pakistan, *Report on Currency and Finance*, 1958-59, pp. 189 and 191.

the index of the volume of exports is considered when constructing the income terms of trade. The income terms of trade give a broader view and deal with the more strategic variables (*i.e.*, availability of foreign exchange resources) than the commodity terms of trade.

Discussions centering on whether changes in the foreign trade sector have helped Pakistan's industrialization efforts are generally based on analyses of the movements in the commodity terms of trade, and therefore cannot be entirely conclusive. Deterioration in the commodity terms of trade is quite consistent with 'foreign-trade generated' economic growth, so long as there is improvements in the income terms of trade. This is so, because it is the total import capacity of the country's export earnings rather than the import capacity of each unit of her exports that is relevant for investment decisions.

The purpose of this paper is to construct an income terms of trade index for Pakistan, and to consider how changes in these are related to the country's economic activity and growth. The period covered is 1955-56 (July-June) to 1959-60 with 1954-55 as the base year. Part I deals with the techniques of constructing income terms of trade index for Pakistan. Part II deals with the construction of the income terms of trade index and with a comparative analysis of the movements of the income and the commodity terms of trade indices. Part III examines the possible implications of the statistical findings, and Part IV analyses a number of further implications of the study.

I

The income terms of trade is obtained by multiplying the commodity terms of trade by the index of the volume of exports.

We use the following symbols:[2]

P_X = price index of exports

P_M = price index of imports

Q_X = Quantity index of exports

Then the commodity terms of trade index (T_C) is $P_X/P_M.100$ and the

2. This and other formulae are based on Jacob Viner, *Studies in the Theory of International Trade*, (Jeorge Allen and Unwin Ltd., London, 1955); pp. 558-563.

come terms of trade index (T_i) is $T_c.Q_x$ or $P_x/P_M.Q_x.100$. Date with which to construct an independent index of the volume of exports (Q_x) are not available[3]. It is however possible to use an index of the value of exports to get approximately the same results[4].

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[3]. In Section III, Table 7 an index of the volume of exports has been constructed. For the construction of that index export value figures were divided by the export price index. The approximate values of the export-volume index can be obtained by this method. But, since this is not an independent method, we have instead used export-value figures to construct the income terms of trade index.

[4]. The derivation of the formula used in the text is as follows: By definition

$$T_i = \frac{P_x}{P_M} \cdot 100$$

but $P_x = \frac{p_{x_c}}{p_{x_b}}$ and $P_M = \frac{p_{m_c}}{p_{m_b}}$

and $Q_x = \frac{q_{x_c}}{q_{x_b}}$, where p_{x_c}, p_{m_c} and q_{x_c} are the price of exports, price of imports and quantity of exports in the current year respectively, and p_{x_b}, p_{m_b} and q_{x_b} are the price of exports, price of imports and quantity of exports in the base year respectively.

Now, $p_{x_c} . q_{x_c} = v_{x_c}$ (value of exports in the current year) and $p_{x_b} , q_{x_b} = v_{x_b}$ (Value of exports in the base year) is true by definition for an individual product and is approximately true for most index number formulae. So we write:

$$T_i = \frac{p_{x_c}}{p_{x_b}} \cdot \frac{p_{m_b}}{p_{m_c}} \cdot \frac{q_{x_c}}{q_{x_b}} \cdot 100$$

$$= \frac{v_{x_c}}{v_{x_b}} \cdot \frac{p_{m_b}}{p_{m_c}} \cdot 100$$

$$= \frac{V_x}{P_M} \cdot 100$$

$$T_i = \frac{V_{x_c}}{V_{x_b}} \cdot \frac{1}{P_M} \cdot 100 = \frac{V_x}{P_M} \cdot 100$$

where v_{x_c} is the value of exports in the current year and v_{x_b} is the value of exports in the base year, and V_x is the index of the value of exports.

The income terms of trade index constructed according to this formula is defective in as far as the coverage of v_{x_c}, v_{x_b} and p_m are different. The coverage of v_{x_c} and v_{x_b} are quite general, but that of p_m is limited. But, for our data this margin of error is likely to be insignificant.

The published import price indices are based on the year 1948-49, and the value of exports is not available for that year. The base year selected in this paper is 1954-55 and it is necessary to shift the base year of the import price index from 1948-49 to 1954-55, and then insert the appropriate figure on export value in the above formula. Export-value figures are available for 1954-55 and all subsequent years.

Commodity terms of trade indices are constructed on a quarterly basis by the Central Statistical Office (C.S.O.) of the Government of Pakistan and are published in its *Statistical Bulletins*. The base year is 1948-49. The weighted averages of jute, cotton, wool, tea, and hides and skins are included in the index of export prices, and that of food, drink, tobacco, raw materials and manufactures are considered to construct the index of the import prices. How weights are given is not, however, stated in the Bulletins. To what extent these indices involve inaccuracy because of the exclusion of other exported and imported commodities, cannot be ascertained.

In this paper the commodity terms of trade index is reconstructed on an annual basis by taking the simple averages of the C.S.O's quarterly index. This is done in order to compare with the income terms of trade. Here also, the problems of weighting are involved, but the absence of other relevant data prevents our introducing weights.

II

The annual index of the commodity terms of trade for the years 1954-55 to 1959-60, with 1948-49 as the base year are presented in Table 1 below.

TABLE 1

Indices of Commodity Terms of Trade

(April 1948-March 1949 = 100)

Year (July-June)		Index
1954-55	...	82.8
1955-56	...	67.8
1956-57	...	63.4
1957-58	...	59.1
1958-59	...	53.3
1959-60	...	52.2

Source: Converted to annual series from quarterly series in C.S.O's *Statistical Bulletin*, Vol. 8, October 1960, p. 1346.

These figures show a distinctly downward trend in the commodity terms of trade, although after 1956-57 the rate of decline was very moderate. The index moved against Pakistan by 47.8 per cent in 1959-60, as compared with 1948-49. The decline in the export price index might appear to have been important cause of this deterioration; it fell by 32.9 per cent in 1954-55 relative to 1948-49. But on closer examination of the export price index (as shown in Table 2) it becomes clear that there was a persistent upward movement from 1954 until the early months of 1957, when the index reached 91.0 per cent.

TABLE 2

Index of Export Prices

(April 1948-March 1949 = 100)

Year (July-June)	Index
1954-55	67.1
1955-56	81.4
1956-57	91.0
1957-58	90.2
1958-59	82.5
1959-60	81.5

Source: C.S.O. *Statistical Bulletin*, Vol. 8, Oct. 1960, p. 1346.

After that the index tended to fall, but the rate of decline (.47 per cent monthly) was much less than the rate of increase (.96 per cent) from 1954 to 1957. This fact indicates that, for the most part, fluctuations in the index of export prices have actually moderated, not accentuated, the rate of deterioration of commodity terms of trade.

On the other hand, Table 3 shows that the index of import prices rose very sharply until 1956-57. After that the index continued to rise but at a much slower rate than before. Thus, the deterioration in commodity terms of trade to 1956-57 was due mainly to the sharp upward movement in import prices that more than offset the rise in export prices. The moderate deterioration in the commodity terms of trade from 1957-58 to 1959-60 was due to the fall in export prices combined with a slow rise in import prices.

TABLE 3

Index of Import Prices

(April 1948-March 1949 =100)

Year (July-June)	Index	Year-to-year percentage change of the index
1954-55	81.2	+48.8
1955-56	120.8	+48.8
1956-57	143.6	+18.9
1957-58	153.1	+ 6.6
1958-59	154.9	+ 1.2
1959-60	156.3	+ 0.9

Source: C.S.O. *Statistical Bulletin*, Vol. 8, October 1960. p. 1346.

Commodity terms of trade have been re-computed with the base year 1954-55 and are compared with income terms of trade in Table 4.

TABLE 4

Indices of the Commodity and Income Terms of Trade

(July 1954-June 1955 = 100)

Year (July-June)	Commodity Terms of Trade	Income Terms of Trade
1955-56	81.9	98.0
1956-57	76.6	74.4
1957-58	71.4	61.7
1958-59	64.4	56.8
1959-60	63.0	78.3

Source: Commodity terms of trade index is computed from Table 1.

As can be seen from the table, the income terms of trade underwent persistent deterioration upto 1958-59; improvement occurred only in 1959-60.

The differences between the two series is brought into sharper focus by calculating the year-to-year percentage changes for each series. As Table 5 indicates, both the commodity and income terms of trade of Pakistan deteriorated very markedly during the initial years of the period, and slightly during the later year. The only exception to this declining trend is 1959-60, when the income terms of trade moved strongly in the country's favour. This rise (of 37.9 per cent over the previous year) in the income terms of

TABLE 5

Year-to-Year Percentage Change of the Commodity and Income Terms of Trade

(July 1954-June 1955 = 100)

Year (July-June)	Commodity terms of trade	Income terms of trade
1955-56	—18.1	— 2.0
1956-57	— 6.5	—24.1
1957-58	— 6.8	—17.1
1958-59	— 9.8	— 7.9
1959-60	— 2.2	+37.9

Source: Computed from Table 4.

trade is due to a big increase in the volume of exports following the establishment of the Export Bonus Scheme and other export encouraging measures by the Government[5].

III

We are now in a position to consider some of the implications of the foregoing discussion.

(A) To begin with, in the context of the deterioration in commodity terms of trade, constant income terms of trade would have meant that the loss to Pakistan resulting from an unfavourable change in export and/or import prices was compensated by a proportionately favourable change in the volume of exports. A deterioration in both commodity and income terms of trade means that the fall in price of exports relative to imports is not offset by a rise in the volume of exports so that foreign exchange earnings decline.

From Table 4 it can be seen that while the income terms of trade declined by 21.7 per cent over the period, the commodity terms of trade fell by 37 per cent. This indicates that there must have been some increase in export volume[6]. But the increase in the volume of exports was less than proportionate to the decline in relative prices; otherwise the income terms of trade would have improved.

(B) Secondly, as already noted, the deterioration in commodity terms of trade was brought about by a combination of rising import prices and falling export prices in the later years, and rising import prices outrunning rising export prices in the early years.

(C) Thirdly, in terms of current prices, the value of total exports has risen by 50.7 per cent over this period. The index of export value with 1954-55 as the base, and the total yearly values of exports measured in current prices, are given in Table 6.

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5. Export Bonus Scheme entitles the exporters of certain specified goods to a fixed percentage of the foreign exchange earned by them in the form of transferable vouchers. The scarcity of foreign exchange in the hands of the private importers relative to their import requirements has created an attractive market for the bonus vouchers which are usually transferred at a high premium. In the context of this, if the elasticity of foreign demand for the commodities covered by the Export Bonus Scheme is greater than unity, then the exporters are likely to reduce their price quotations to earn more foreign exchange so long as the premium, at which bonus vouchers are transferred, more than offsets this loss in price.

6. This is confirmed by Table 7, in which the indices of export volume record an average annual increase of 3.7 per cent.

TABLE 6

Change in Export Value

Year (June-July)	Value of Exports (in crores of Rs.)	Indices of Export Value (1954-55 = 100)
1954-55	122.3	100.0
1955-56	178.4	145.9
1956-57	160.8	131.5
1957-58	142.2	116.3
1958-59	132.5	108.3
1959-60	184.3	150.7

Source: C.S.O., *Statistical Bulletin*, Vol. 8, October 1960, p. 1315.

These figures indicate that with the exception of 1955-56 and 1959-60, the value of exports declined in all years. If terminal years are only used the value of exports increased by 50.7 per cent, but it actually declined persistently from 1955 until 1959. Whether or not there was any expansion in the volume of exports can be found by using the following formula:

$$\text{Index of the Volume of Exports} = \frac{\text{Index of the Value of Exports}}{\text{Index of Export Prices}} .100$$

This index is shown in Table 7 with 1954-55 as the base year[7].

This method shows that the volume of exports declined from 1955-56 to 1957-58, and rose in other years. On the average, the index of the volume of exports improved by 3.7 per cent by year but this figure is misleading

7. In as far as the coverages of the index of the value of exports and that of export prices are different (the one being all-inclusive and the other limited) there will be some inaccuracy. But this would be very insignificant.

TABLE 7

Changes in Export Volume

Year (July-June)	Index of the value of exports (1954-55 = 100)	Index of Export Prices (1948-49 = 100)	Index of Export Prices (1954-55 = 100)	Index of Export Volume (1954-55 = 100)
1954-55	100.0	67.1	100.0	100.0
1955-56	145.9	81.4	121.3	120.3
1956-57	131.5	91.0	135.6	97.0
1957-58	116.3	90.2	134.4	86.5
1958-59	108.3	82.5	123.0	88.0
1959-60	150.7	81.5	121.5	124.0

Source: Computed from Tables 2 and 6.

because the volume decreased in several years[8]. The big jump in the volume index in 1959-60 explains the equally big improvement in the income terms of trade for the same year.

Despite the lack of adequate data, one can reasonably deduce that there has been some deterioration in the single factoral terms of trade as well[9].

8. These aggregative statements should not obscure the fact that there had been a wide range of dispersion of individual prices and quantities. While the average of the volume of exports of all items increased, volumes of particular items may have declined. Similarly, while the total volume of imports declined, volumes of particular items may have risen.

9. The single factoral terms of trade can be represented symbolically as:

$$T_{c'f} = \frac{P_X}{P_M} \cdot \frac{1}{F_X}$$

where, $T_{c'f}$ = single factoral terms of trade

P_X/P_M = commodity terms of trade

F_X = index of cost in terms of quantity of factors used per unit of exports.

It seems reasonable to believe that production improvements have not taken place continuously in Pakistan, nor at very high rates. On the other hand, there has been a marked deterioration in the commodity terms of trade. It is unlikely, therefore, that the rise in the index of the reciprocal of export factor cost has been sufficient to counter-balance the decline in commodity terms of trade.

Admittedly, some improvement in productivity has occurred in the export sector. But because of transport bottlenecks and the fragmented nature of the economy, the activities induced by the rise in exports have been seriously handicapped and increases in productivity have been sporadic and limited.

IV

A simple explanation of the movements in the terms of trade can be made in terms of price elasticity of demand for exports[10] and income elasticity of demand for imports[11].

Pakistan is mainly an exporter of primary commodities and an importer of machinery, capital goods and semi-essential consumer goods. The fact that it has to compete with many other countries which export the same commodities (which are substitutable) suggests that the price-elasticity of demand for Pakistan's exports may be greater than unity. It is also reasonable to assume that both the marginal and the average propensities to consume are high in view of the low level of per capita national income. Furthermore, as the country is situated on a low rung of the international-income ladder, it appears to be susceptible to international "demonstration effects". The income-elasticity of demand for imports is, therefore, likely to be high. The high price-elasticity of demand for Pakistan's export partially explains why the income terms of trade have moved less adversely than the commodity terms of trade. The high income-elasticity of demand for imports seems to be a major cause of the vulnerable balance of payments position of the country.

However, this is not the whole story. The declining prices of exports relative to imported goods has undoubtedly served as a stimulant to industrialization. The rising trend of imports prices led to a tightening of import controls, which, in conjunction with the "austerity campaigns", released substantial foreign exchange for productive expenditure. Furthermore, to the extent that the fall in export prices was due to an improvement in productivity, there is reason for satisfaction rather than concern.

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10. The price-elasticity of demand for imports is difficult to measure in a situation where import control measures are operative. Changes in demand for imports are primarily responsive to changes in foreign exchange earnings. This much can be inferred, however: the price-elasticity of demand for imports is likely to be high for semi-essential and luxury goods and low for strategic and essential commodities. The actual volume of imports will fail to indicate this in so far as controls limit response to price incentives.

11. The foreign income-elasticity of demand for Pakistan's exports appears to be less than unity. The basis of this presumption is that the country is an exporter of industrial raw materials, demand for which usually changes less than proportionately to income. This is supported by the fact that while over the last twenty years the income of the advanced countries has increased sharply, total world production of commodities which Pakistan exports (like jute, cotton etc.) has remained almost the same.

Finally, a few words on Pakistan's prospects for increased exports. One important feature to be noted is that, considerable diversification of economic activity has taken place. This in time will reduce the dependence of the economy on a few export items, and consequently, it may become less vulnerable to foreign cyclical fluctuations. Thus far, the main concern of the country has been import substitution. The extent to which exports can be raised will depend on the efficiency with which they are produced, and on the degree of improvement in their quality and on changes in composition.

In conclusion, the findings of this paper must be viewed with caution in the light of the usual criticisms of all terms of trade concepts[12]. Furthermore, the period covered is too short to establish any of the propositions with certainty. As pointed out at the beginning, the purpose of this paper was to examine the trends in Pakistan's income terms of trade during the First Five-Year Plan period, and to consider their implications for the country's economic development. It is quite possible that a more accurate picture would emerge if the period were extended or the base year shifted. A longer period would also provide better insights into the problem of cyclical fluctuations in Pakistan's exports.

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[12]. These objections involve the bias resulting from the choice of the base year, from the methods used for weighting, from omission of changes in the quality of exports and imports, and from the use of aggregation process.