

# Commodity Exports, Net Exchange Earnings and Investment Criteria

by

NURUL ISLAM\*

Pakistan has experienced in the last decade a significant rate of growth of exports, especially of the manufactured exports. The manufactured exports have grown at an annual compound rate of 15 per cent during the period 1960-67. This significant rate of growth of exports has been associated with a large number of export-promotion measures which have ranged from a wide variety of fiscal concessions to such export-incentive schemes as the export bonus and export-performance licensing as well as the fixation of compulsory export quotas for the individual manufactured exports. The question has been raised from time to time as to the efficacy of the export-promotion measures in terms of the *net* foreign-exchange earnings, defined as the actual increase in export earnings from a unit of export minus the direct and indirect requirements of imports necessary for the production of the unit of export. Since one of the important criteria for the determination of the investment priorities in the field of industry in Pakistan has been the foreign-exchange saving or earning capacity of a particular industrial project [9, p.51], it is important to quantify the contributions to the net foreign-exchange earnings made by the exports of the different manufactured goods<sup>1</sup>. Moreover, it is possible to judge how the existing structure of the export incentives is related to the net exchange-earning capacity of the different industries.

The first systematic attempt to estimate the net foreign-exchange earnings of the individual manufacturing industries was made by Messrs. Soligo and Stern in their pioneering article [9]. This article, however, questions the assumptions underlying their method of estimating the net foreign-exchange earnings; it presents an alternative set of estimates of the *net* exchange earnings on the

---

\*Professor Nurul Islam is Director of the Pakistan Institute of Development Economics. He is grateful to the referees of the *Pakistan Development Review* as well as to Professor Mark Leiserson of Yale University for many helpful criticisms which contributed to an improvement of an earlier draft of this paper. At the time of writing of this paper, the author, on leave from the Institute, was associated with the Economic Growth Center, Yale University.

<sup>1</sup>However, it is not suggested, as discussed later on, that the maximization of net foreign-exchange earnings should be the goal of economic policy.

basis of the *direct* evidence which is available on the export prices or the *gross* foreign-exchange earnings of the manufactured exports. The estimates of the net earnings of the broad industrial groups often conceal important differences within the groups; therefore, supplementary evidence on the intraindustry differences in the net earnings is presented for a few selected industries for which detailed data are available. Furthermore, the net exchange earnings are sought to be compared with the relative domestic costs, *i.e.*, mainly capital costs, as well as with the comparative efficiency, as measured by the degree of effective protection, of the different industrial groups. At the end, the relationship between the net earnings of the different industries and their actual export performance, in terms of their recent rates of growth or their relative importance in the total manufactured exports of Pakistan, is examined, along with some tentative observations on the implications of the above findings for the present structure of the export-incentive measures.

Messrs. Soligo and Stern adopt an indirect method for the measurement of gross foreign-exchange earnings. They measure the net foreign-exchange earnings from export of a unit of final demand of a commodity, which is worth  $D$  rupees in domestic prices, in terms of  $(E-M)$  where  $E$  is the *f.o.b.* export price of the same unit and  $M$  is the total direct and indirect import requirement. In the absence of direct evidence on  $E$ , they derive the estimates of  $E$  in the following way.  $E$  is defined as  $(D-T_d)/(1+P_b)$  where  $T_d$  is the indirect tax on the domestic sale of the unit which is exempted if the unit is sold abroad,  $P$  is the premium on the bonus voucher and  $b$  is the percentage of the export allowed as a bonus. Therefore,  $E$  is derived from the given data on  $D$ ,  $T_d$ , and  $P_b$ . They assume that the receipts per unit of sale are the same in both the domestic and export markets and the entire difference between the foreign and domestic prices is accounted for by the subsidy originating from the export bonus and the exemption of indirect taxes on output.

#### ON AN APPROPRIATE MEASURE OF GROSS FOREIGN-EXCHANGE EARNINGS

The derivation of the *f.o.b.* export price on the basis of the above method ignores the effect of the additional export-incentive schemes such as *a*) export-performance licensing, *b*) exemption from the indirect taxes on the domestic inputs, *c*) exemption from the indirect taxes on the imported inputs, and *d*) rebate on the income tax attributable to the exports, *etc.*<sup>2</sup> Even if the effect of these additional measures is taken into account, the difference between the *f.o.b.* export price and the domestic price may, in many cases, be still more than is accounted for by the combined subsidy originating from all the export-promo-

<sup>2</sup>In a forthcoming study on effective export subsidy, the author estimates that the total subsidy originating from the various measures comes to about 100-125 for some of the manufactured exports.

tion measures because of two important additional factors. First, price discrimination between the home and foreign markets is profitable and possible. The two markets are effectively separated because of quantitative restrictions on foreign trade. The manufacturer exporter faces a highly elastic demand in the export market and a relatively inelastic demand in the domestic market, which is not only protected from competition from without but also is characterized by monopolistic market imperfections within. The consequence of the price discrimination and the imperfections in the domestic market is that the domestic price is higher than the export price plus the export subsidy. The average receipts per unit of export, including subsidy, will be lower in the export market than the average receipts in the domestic market.

Secondly, the exporter may be willing to accept a lower profit on the foreign sales, which is not compensated by a higher rate of profit in the domestic market; in other words, the exporter may not be maximizing profit. The sacrifice of the short-run profits may be worthwhile since a good export performance has become the hallmark of efficiency in the eyes of the government, which is aggressively committed to the policy of export promotion. There are diverse ways in which the general controls and regulations exercised by the government in the matter of the fiscal treatment and the licensing for the import of capital equipment and raw materials for the production in the highly profitable domestic market, affect the profitability of the manufacturing enterprises. In the past three or four years, the Export Promotion Bureau has been in cooperation with the organizations of trade and industry, laying down specific export quotas for the different industries and for the individual enterprises within each industry, non-fulfilment of which is a sufficient ground for incurring the displeasure of the government or indeed a fall from the good grace of the government. Moreover, the direct evidence accumulated so far, and presented in the Appendix on the difference between the domestic and world price, confirms this hypothesis [6]. It is unlikely that an exporter will be able to sell at a price higher than suggested by the price spread between the domestic and world price. On the contrary, it is likely that in the critical years, when introducing a commodity for the first time in the export market, the exporter will charge a price somewhat lower than the ruling world price in order to offset the consumer's preference for the established brand names and historical trade connections. Thus, the maximum price at which the exporters will be able to sell abroad will be indicated by the "world" price for the respective commodity. The data on the world prices, referred to above, are in most cases based on the *c.i.f.* import price and the *f.o.b.* export price is usually less than the *c.i.f.* price, so that the *f.o.b.* export price for the purpose of our present enquiry has been obtained by deflating the world price to the extent of 5 per cent, to allow for freight and insurance<sup>3</sup>.

<sup>3</sup>This seems to be the practice with the Pakistan Tariff Commission as well.

## NET ESTIMATES OF NET FOREIGN-EXCHANGE EARNINGS

It is seen in the light of the above that Messrs. Soligo and Stern overestimate gross foreign-exchange earnings whenever the differential between the domestic and foreign price exceeds the amount of subsidy originating from the bonus scheme and the exemption of exports from the indirect taxes on output. The gross foreign-exchange earnings and hence the net foreign-exchange earnings have thus been recalculated;  $E$  has been defined as  $D/(1+p)$  where  $D$  is the value of one unit of final demand in domestic market prices, and  $p$  is the percentage excess of domestic market price over the world price multiplied by 1.054. Two sets of price ratios have been used; they are based on two independent sources indicated earlier. Each set is based on an analysis of two independent samples of industries for each major industry group. Each ratio refers to a different composition of the major industry groups and it is an average of the price ratios of the constituent industries in each group<sup>5</sup>. Moreover, a number of major industry groups covered in one study are not covered in the other. Thus, the use of the two independent estimates of price ratios provides a larger sample of estimates of foreign-exchange earnings than would otherwise be available. The direct and indirect import requirements per unit of final demand for each industry are the same as those used by Messrs. Soligo and Stern. However, some of the industries covered by them have to be omitted from the present study since the data on world prices for them are not available, as shown in the Appendix. Two sets of revised estimates of the net foreign-exchange earnings are given in the Appendix. Both the sets of the revised estimates of the net foreign-exchange earnings are less, in almost all the cases, than the Stern-Soligo estimates of the net foreign-exchange earnings. Secondly, the higher the price differential, *i.e.*, the differential between world price and domestic price, the lower is the net foreign-exchange earnings. In other words, there is no com-

---

<sup>4</sup>It is important to remember that the domestic prices used in this context are the market prices and hence include the indirect taxes on output and  $p$ , which is the excess of the domestic market price over world price, accordingly includes the indirect taxes. Therefore, the domestic price deflated by  $(1+p)$  in the above yields the estimates of export price excluding indirect taxes. This procedure of estimating the export price and the gross exchange-earnings, therefore, includes the effects of the exemption of the exports from the domestic indirect taxes.

<sup>5</sup>The price ratios are not in any sense exhaustive; they do not represent the averages of all the possible products of each industry since data are seldom available in such a great detail. In many cases the prices relating to a few products are used to represent the entire industry. This suggests the need for the collection of comprehensive data on the import and export prices, which are of critical importance for vital decisions in the field of investment programming, import substitution and export promotion. In some cases, the estimate of the price differential is close to what is suggested by the magnitude of the export subsidy as in the case of the cotton-textile industry — an industry which has a relatively more competitive structure and has enjoyed over the years a considerable expansion of capacity and output with a fall in relative profits and prices. The high-price differential in the case of the apparel industry, in spite of a low price differential of one of its inputs, *i.e.*, cotton textile, can partly be explained by the relative lack of competition in this industry and by the fact that some other inputs in the apparel industry, such as the silk and artificial silk, have the domestic prices which are four to five times higher than the world price. For possible explanations of inertindustry variations in the price differentials, see [2;3].

pensating variation in the import requirements for commodity with a higher price differential so that the lower gross earnings are not offset by the lower import requirements. The highest foreign-exchange earning in the first set of estimates (Soligo-Stern) is 0.96 rupee per unit of export, worth one rupee in domestic prices, of the chemical fertilizer which also yields the highest earning in the second set; the lowest earnings are 0.25 rupee for perfumes, soaps and cosmetics in the first set and in the second set they are 0.03 rupee provided by the plastic products. The most striking differences in the magnitude of the net foreign-exchange earnings between different sets of estimates are the following:

**TABLE I**  
**EXCHANGE EARNINGS PER UNIT OF EXPORT WORTH ONE RUPEE**  
**IN DOMESTIC PRICES**

Industry	Soligo-Stern	Revised estimates	
	I	II	III
Sugar	0.69	0.21	0.20
Silk & artificial silk	0.49	0.04(—)	0.006
Transport equipment	0.48	0.06	0.11
Plastic products	0.42	0.03	0.26
Rubber products	0.45	0.16	0.12

In the first set, eighteen out of twenty-eight industries have about 0.50 as the foreign-exchange earnings per unit of export worth one rupee in domestic prices, whereas in the second set only about nine industries have the net foreign-exchange earnings of the same magnitude. Moreover, in the first set there is no industry with less than 0.25 as net foreign-exchange earnings, whereas in the second set there are nine industries with less than 0.25 as net foreign-exchange earnings and four industries with less than 0.10 as net foreign-exchange earnings.

As between the second and third sets of estimates, the differences in the net foreign-exchange earnings of the same industry group are due to the differences in the composition of the industry group, as has been explained earlier. In most of the cases, the net earnings are lower in the third than in the second set of estimates, excepting in the case of paper and board, transport equipment, plastic products, cosmetics, soaps and perfumes where the third set of estimates is higher than in the second set. In one case, *i.e.*, silk and artificial silk, the third set of estimates turns negative.

It may be interesting to estimate the average foreign-exchange earnings for three broad commodity classifications of industrial groups, *i.e.*, consumer goods, intermediate goods and capital goods. The estimates which follow are

based on the second set of estimates; since they cover a larger number of industry groups than the third set of estimates, they are expected to be more representative, if such a classification is to be made. The average (simple and weighted) net foreign-exchange earnings for the three groups of commodities are given below<sup>6</sup>.

TABLE II  
AVERAGE NET FOREIGN-EXCHANGE EARNINGS

Consumer goods	Simple	Weighted
A. Consumer goods:	0.3608	
1) excluding cotton textiles and printing and publishing	0.3123	0.4667
2) excluding printing and publishing	0.3340	0.5312
B. Intermediate goods:	0.4331	0.5938
1) excluding jute textiles	0.4202	0.3800
C. Capital goods	0.2492	0.2180

The simple average net earnings are the highest for the intermediate goods; this is also true if the earnings are estimated exclusively of the cotton and jute textiles, which were the most important components of the consumer goods and intermediate goods respectively. This is in line with the findings of Messrs. Soligo and Stern. The weighted net earnings for the three groups, including jute and cotton textiles in their respective groups, keep their relative position unchanged. The weighted average earnings of consumer and intermediate goods are higher than the simple average, because the jute and cotton textiles have higher net export earnings than the rest of their respective groups and have also very heavy weightage. The weighted average for capital goods is lower than the simple average. But once the jute and cotton textiles are excluded from their respective groups, the weighted average earnings are the highest for consumer goods; those for intermediate goods are less than that for consumer goods but more than those of capital goods. The conclusion reached by Messrs. Soligo and Stern that the capital-goods industries rank lowest in

<sup>6</sup>The weights are the relative importance of the exports of the different industry groups in the total manufactured exports of Pakistan during the period 1961-64. The calculation of the direct and indirect import requirements and the price differentials between foreign and domestic price relate to 1963/64. Sugar, tea, sports goods, printing and publishing, pens and pencils, footwear, cotton textiles, silk and artificial silk, matches, wearing apparel, plastic goods, cosmetics, and soaps and perfumes constitute the category of consumer goods whereas chemical fertilizers, jute textiles, thread and threadball, tanning and leather finishing articles of paper and board, chemicals and pharmaceuticals, manufactures of paper and board, coal and petroleum products, rubber and rubber products, and paints and varnishes are intermediate goods; capital goods include nonmetallic minerals, transport equipment, nonelectrical machinery, metal goods, basic metals and electrical machinery and appliances. Printing and publishing is omitted from the weighted average of consumer goods, because data on their exports are available.

terms of foreign-exchange earnings remains unaltered. But as between the intermediate goods and consumer goods, the consumer goods rank higher than the intermediate goods in terms of weighted average earnings. But then number of industries in both groups are based on the exportable domestic agricultural raw materials, the domestic consumption of which in lieu of export involves a loss of foreign exchange which is to be set against their gross earnings as shown below.

TABLE III  
CONSUMPTION OF DOMESTIC MATERIALS PER UNIT  
OF FINAL DEMAND

Industry	Direct consumption	Direct and indirect consumption	Domestic materials
Cotton textiles	0.2882	0.3011	Cotton
Jute textiles	0.3407	0.3452	Jute
Woollen textiles	0.1778	0.1904	Wool*
Tanning & finishing of leather	0.3054	0.3290	Hides and skins*

\*Assuming that the consumption of inputs from the sector "all other agriculture" in the input-output table in the case of woollen textiles is wool and in the case of tanning, the hides and skins. The input-output table is the one prepared by Messrs Tims-Stern for the year 1963/64, and which has been used for the estimation of direct and indirect import requirements. The inverse of the table was available from Mr. J. J. Stern, of the Harvard Advisory Service, Harvard University, Cambridge, U.S.A.

The net foreign-exchange earnings of the above sectors, exclusive of the direct and indirect consumption of the exportable domestic materials, are given below<sup>7</sup>.

<sup>7</sup>Column (A) of Table IV excludes only direct consumption and Column (B) of Table IV excludes both direct and indirect consumption. For wool, the estimate of gross earnings was taken from Messrs. Soligo and Stern which is 0.6667 since no independent price ratio was available.

The industries which are heavy users of agricultural raw materials which are concurrently exported have been considered in the above estimates. These four industries have resulted in an increasing domestic absorption of the most important agricultural raw materials exports of Pakistan, i.e., cotton, jute, wool, and hides and skins. The exclusion of the industries other than those based on the domestic utilization of the exportable agricultural raw materials may be justified on the grounds that the focus of the present paper is on the net foreign-exchange earnings of the manufactured exports so that the decline in the foreign-exchange earnings of the non-manufacturing sector only are offset against the increase in the foreign-exchange earnings of the manufacturing sector.

The interindustrial deliveries within the manufacturing sector itself are not considered. For example, the exchange earnings of the apparel industry are not exclusive of the inputs from the textile industry, which might have been exported. The logical extension of this argument is that all the intermediate deliveries from the other sectors into any industry are potentially exportable at a price so that the net foreign-exchange earnings are equal to only the value added in the particular industry in question, measured in international prices, derived by deducting the intermediate inputs in international prices from the value of the gross output in international prices.

industries which constitute each of the major commodity groups<sup>8</sup>. Generalizations based on such broad classifications are apt to be misleading. Moreover, within each industry group such as machinery, chemicals and basic metals, *etc.*, important differences exist between the individual industries. This underscores the need for a more detailed study of each of the industry groups, in terms of their constituents, before any judgment is rendered as to their relative net foreign-exchange earnings. That it is advisable to pursue the investigation in as great a detail as the data and the resources for analysis permit, is evidenced from the following analysis of the net foreign-exchange earnings of a number of narrowly defined commodities derived from an analysis of the *Reports* of the Pakistan Tariff Commission.

The estimates of net foreign-exchange earnings in the industries shown in Table VI do not take into account the indirect import requirements<sup>9</sup>. The gross foreign-exchange earnings per unit of export for each industry have been estimated by the Tariff Commission on the basis of the actual selling price in the export market assumed to be equal to the *c.i.f.* price and not on the basis of a hypothetical export price which is assumed to be less than the domestic price by the amount of export subsidy. To the extent the *f.o.b.* export price is less than the *c.i.f.* price, the estimate of the gross earnings and, therefore, that of the net earnings, suffers from an upward bias. The following Table VI reveals the wide differences between the individual industries or commodities within each industry group, such as metal products, chemicals, and basic metals, *etc.*, in terms of the net foreign-exchange earnings. Within the group of chemicals, for example, the net foreign-exchange earning per unit of export, worth one rupee in domestic rupees, varies from 0.87 to 0.18; in the pharmaceuticals industry, it ranges from 0.96 to 0.03 but in the case of seven products the net earning is negative. Similarly, in the case of the electrical machinery, it ranges from 0.51 to 0.02 while in the case of metal products, it ranges from 0.83 to 0.10.

---

<sup>8</sup>Consumer goods, intermediate goods and capital goods.

<sup>9</sup>Moreover, the direct and indirect import requirements for forty-three industry groups analysed in the Appendix are derived from an input-output table (54 x 54), the direct import requirements in the case of industries given in Table VI are derived from the *Report* of the Tariff Commission on the individual industries.



TABLE VI

Industry group	Range of net foreign-exchange earning for a selected sample in each group	Average of the industry group
Basic metals (3 cases)	0.74—0.67	0.31
Chemicals and pharmaceuticals		
Chemicals (7 cases)	0.87—0.18	
Pharmaceuticals (24 cases)	0.96—0.03	
Pharmaceuticals (7 cases)	(—)0.03—(—) 0.21	
Metal products (10 cases)	0.83—0.10	0.29
Nonelectrical machinery (1 case)	0.63	0.43
Electrical machinery (6 cases)	0.51—0.02	0.35
Nonmetallic minerals (3 cases)	0.47—0.18	0.45
Transport equipment (1 case)	0.31	0.16
Rubber and rubber products (2 cases)	0.54—0.52	0.20

## INVESTMENT CRITERIA AND EXPORT EARNINGS

The contribution to the improvement of balance of payments is one of the criteria in use in Pakistan affecting the selection of industrial investment projects. If the contribution of an industry to an improvement in the balance of payments is measured in terms of the gross foreign-exchange earning, it is not only that its contribution is overestimated but also its contribution relative to the other industries is liable to be misjudged since the relative ranking of the industries in terms of the net earnings is different from that in terms of the gross earnings, as seen in the Appendix. It is in addition relevant to enquire whether the criterion of net foreign-exchange earning is consistent with the criterion conceived in terms of the most economical use of the other scarce factors such as capital or in terms of the overall efficiency of the manufacturing industries in

Pakistan. Reliable and meaningful data on the capital-output ratios of the Pakistani industries are difficult to come by. However, an attempt is made to use the capital-output ratios estimated by Messrs. Khan and MacEwan [5] in order to test whether the ranking of industries by the capital-output ratios is significantly different from the ranking by the net foreign-exchange earnings. The capital-output ratios are not available for all the industries for which the net foreign-exchange earnings are available. Hence, the comparison was restricted to a smaller sample for which data on both the variables are available as shown in the Appendix. A second set of data are available on capital-output ratios in an IBRD study [1], which have been used alternatively to test the similarity or otherwise of ranking of industries by the two criteria of the net foreign-exchange earnings and the capital-output ratio.

There does not seem to be any significant correlation between the ranking of industries by any of the two sets of the capital-output ratios and by foreign-exchange earnings. The rank coefficient is 0.348 on the basis of the first set of capital coefficients and  $-0.073$  on the basis of the second set of capital coefficients. They are not, however, statistically significant at 5-per-cent level. Thus, an industry which yields large net foreign-exchange earnings may involve either low or high capital requirements. In the former case the industry meets both the criterion whereas in the latter case the advantage of high foreign-exchange earnings is offset by a greater use of another scarce factor, *i.e.*, capital. There are, on the one hand, such industries as cotton, jute textiles, and chemical fertilizers, which have high foreign-exchange earnings and high capital-output ratios, and, on the other, there are such industries as pharmaceuticals and miscellaneous chemicals, basic metals and metal goods, which have low foreign-exchange earnings and low capital-output ratios. There are, of course, industries like sugar, other textiles (silk and artificial silk), transport equipment, rubber and rubber products, which have high capital-output ratios and low net foreign-exchange earnings. The above conclusion about basic metals and chemical fertilizer would not be valid if the second set of capital-output ratios is used.

However, if the competitive efficiency of an industry is judged by the degree of effective rate of protection, then the net foreign-exchange saving is negatively correlated with the degree of effective protection. In other words, an industry which is internationally more competitive earns more net foreign-exchange per unit of exports. The lower the degree of effective protection, the lower usually is the excess of the domestic price over the world price and hence the higher is the magnitude of gross foreign-exchange earnings. The negative rank correlation coefficient between the degree of effective protection and net foreign-exchange earnings is  $-0.444$  and it is significant at 5-per-cent level. Thus, the choice of industries by the criterion of net foreign-exchange earnings would imply or involve the choice of industries with a lower degree of effective protection. However, it does not necessarily involve the choice of industries which

involve a smaller use of domestic resources such as capital per unit of foreign-exchange earnings. In other words, the relevant question regarding the appropriate criterion for the selection of industries is whether an industry which earns per unit of export the highest amount of net foreign exchange and has at the same time the lowest effective degree of protection, also yields the highest returns in international prices to the scarce factors like capital. In other words, an industry may require a low degree of effective protection in the sense that its value added in domestic prices very nearly equals its value added in international prices but it may still fail to provide adequate returns to scarce factors, measured in international prices. This leads to the conclusion that the calculation of the rate of return on capital industry-wise has to be made in international prices, to decide whether the rate is adequate and then to make interindustry comparison in terms of rates of return. In this calculation, capital equipment, *etc.*, itself would also be valued in international prices [8].

#### NET EXCHANGE EARNING, EXPORT GROWTH AND EXPORT INCENTIVES

It may be interesting to enquire whether the export performance of the various industries is correlated with their ability to earn foreign exchange, defined as the net foreign-exchange earnings per unit of export. There is no significant correlation between the net foreign-exchange earnings of a manufactured export and its rate of growth over time or its relative ranking or importance among the manufactured exports of Pakistan, defined as the proportion of the total manufactured exports earned by the particular industry. The rank correlation coefficient between the net foreign-exchange earnings and the rate of growth of exports during the period 1960-67 is negative and is  $-0.287$  but it is not significant at 5-per-cent level. The rank correlation coefficient between the net foreign-exchange earnings and the ratio of the particular export to the total manufactured exports of Pakistan during the period 1961-64 is  $0.362$  but it is not significant at 5-per-cent level, even though it is significant at 10-per-cent level. Thus, there is no evidence that the exports with a higher net foreign-exchange earnings per unit are growing faster or that they provide higher proportion of the total exports of Pakistan.

A suggestion has sometimes been made that the magnitude of export subsidy to the individual exports should be proportional to their net foreign-exchange earnings [7]. While it is readily granted that the magnitude of export subsidy should *not* be proportional to the gross foreign-exchange earnings, the reverse is believed to be the appropriate policy insofar as net foreign-exchange earnings are concerned. In other words, the higher the net foreign-exchange earnings per unit of export, the higher should be the magnitude of subsidy. Under this policy, it is suggested, the foreign-exchange earnings would be maximized. In the first place, there is an obvious and a simple limitation to this policy insofar as the average net foreign-exchange earnings are different from

the marginal earnings. In the case of the export commodities with a very low elasticity of export demand, the marginal earnings would be considerably lower than the average so that an export commodity with a low average earning but with a high elasticity of export demand may contribute a larger foreign-exchange earnings at the margin than the former and, thus, deserves the same subsidy as the one with a higher average but a lower marginal earning. In Pakistan, the major distinction in the case of the manufactured exports is between the jute and cotton textiles, on the one hand, and the newer manufactures, on the other. The latter receives a larger bonus than the former, even though there are items within the second category of exports, some of which earn on the average higher and some other, which, on the average, earn lower foreign-exchange earnings per unit of exports than the cotton and textile industries. There is a presumption that the price elasticity of export demand for cotton textiles, even though Pakistan supplies a small share of the world market, is low because of the quota restrictions on Pakistan's exports to her major importers under the International Textile Agreement. In the case of the jute textiles, Pakistan operates in an oligopolistic market dominated by India so that the possibility of a retaliatory action in response to a considerable price-cut by Pakistan is ever present. Thus, one may suggest that newer manufacturers which suffer neither from the limitation of quotas under an international agreement nor from the danger of oligopolistic market, face a competitive world market as they constitute a very small share of world trade in the individual commodities. Thus, the newer manufacturers even when their average earnings are lower than the jute and cotton textiles justifiably receive a higher bonus with a view to accelerating the rate of expansion of the export earnings per unit of subsidy. The newer manufacturers with higher average earnings are justified in receiving a higher subsidy. But if the maximization of exports or net foreign-exchange earnings is to be accepted as the objective, then one would not expect the same rate of bonus with a few exceptions, as it now prevails, for all the newer manufacturers which face a highly elastic export demand but between which there is a considerable difference in terms of the average export earnings, ranging from 0.90 to 0.02 per unit of export. The same rate of subsidy is justified if these wide differences in the average earnings, in fact, imply very similar or roughly equal marginal earnings. In order to justify such a presumption, the differences between their elasticities of demand would have to be much larger than appears plausible or realistic, especially since all of them presumably face a higher elastic demand at the ruling world price.

This brings us to the second limitation to the policy of fixing rates of export subsidy in proportion to the amount of net foreign-exchange earnings. The maximization of foreign-exchange earnings or exports is by itself not the objective of economic policy. In a developing economy like Pakistan, the objective of economic policy, with reference to which the instruments of policy such as the export-promotion measures are used, is the increase in national in-

come, subject to such restraints among other things as the expansion of employment, socially tolerable distribution of income and equilibrium in the balance of payments, including foreign capital flow. It is in respect of the last mentioned restraint that the net foreign-exchange earning assumes a critical importance. Foreign exchange is a necessary input in most income-generating activities as the latter require imported inputs; at the same time, the exporting activity generates foreign exchange and requires the inputs of the scarce domestic inputs such as capital, skill and natural resources. The relevant question under consideration is how to devise or orient the export-subsidy schemes in terms of an appropriate differentiation, if any, between the individual exports. The requirements of the scarce domestic resources differ as between the different exports so that the cost in terms of the domestic resources of the marginal net foreign-exchange earning differs between the different exports. The principle of the cost minimization for a given output suggests that the exports of which the marginal net exchange earning involves lower costs should expand faster. Moreover, as on the demand side, so also on the supply side, there are differences between the individual exports in terms of the elasticity of supply so that while the average domestic cost of an export may be lower than that of another, the marginal cost may be higher than or equal to that of the latter.

If  $MC_A$  and  $MC_B$  are the marginal domestic costs of exports A and B, and  $MR_A$  and  $MR_B$  are the net marginal foreign-exchange earnings per unit of exports, then  $MR_A / MC_B$  and  $MR_B / MC_B$  are respectively the marginal exchange earnings per unit of marginal domestic costs of A and B. If  $(MR_A / MC_A) > (MR_B / MC_B)$  an additional unit of foreign exchange from the export of A costs less than that from export of B. So long as  $(MR_A / MC_A) \cdot E < 1$  where E is the effective rate of exchange, including the export subsidy, there will be no export of A since the marginal cost exceeds the marginal revenue<sup>10</sup>. Under these circumstances, there will be no exports of B either; the effective exchange-rate which equates the domestic currency equivalent of  $MR_B$  and  $MC_B$  is higher than that which equalizes the domestic currency equivalent of  $MR_A$  and  $MC_A$ . It is possible to argue, however, that for a country like Pakistan which has a small share in the world trade of most commodities, both agricultural and manufactured, excepting in the case of raw jute, the elasticity of demand for most of her exports is likely to be high and is unlikely to be greatly different as between different commodities so that discrimination between them in terms of effective exchange-rate on the basis of differential demand elasticities is unlikely to result in economic gain and, in absence of detail and reliable information regarding the elasticity of demand for the individual commodities, may in fact result in a random selection of effective exchange-rates for different commodities. Therefore, if one assumes high and roughly equal elasticities of demand for most commodities then discriminatory exchange-rates based on

<sup>10</sup>E is the amount of local currency per unit of foreign currency.

differential costs and elasticities of supply of different exports can be justified on the grounds that an exchange rate which would bring forth the supply of higher costs but more elastic exports would result in high rents being earned by the low cost but inelastic export sector. A low exchange rate for the latter sector which would mop up the excess rents without adversely affecting supply can then be introduced. In terms of our previous example, as exports of A expand,  $MC_A$  increases so that there is an increase in the effective rate required to enable its exports to take place. As this happens, at some points exports of B become profitable. If the exports of A are not adequate at the previous rate of exchange to meet the total foreign-exchange requirements of the economy, the exports of B take place as the effective exchange-rate increases. Thus under a system of unified rate of exchange, A earns excess rents.

Whether in the situation outlined above, the effective exchange-rate of A should be distinguished from that of B and be set at a lower level is a matter of value judgement regarding the appropriateness of the distribution of income between the two sectors, A and B; it also depends upon other macroeconomic implications, including the effects on savings in the context of economic growth, of the differential rents in the different sectors. The possibility of such a successful discrimination between the individual export commodities is partly limited by the lack of a detailed knowledge of the elasticities of supply of the individual export commodities. But in one instance there is a clear case for discrimination, *i.e.*, when the elasticity of foreign demand is less than one so that the marginal revenue is negative with the result that an expansion of export would involve a fall in the total foreign-exchange earnings of the commodity, or that its elasticity of demand is significantly lower than the rest so as to yield a discernable gain from discrimination. Thus, on the basis of static allocative criteria, the occasions when the departures from a unified exchange rate for exports are justified are not many.

On dynamic grounds one may argue that if some sectors generate higher rates of saving and thus contribute more to investment and growth than others, they should receive a higher effective exchange-rate than others. A higher effective exchange-rate which would enable higher profits to be earned in the "growth-promoting" sectors may, therefore, be justified as a second-best method. While the distinction often made between the agricultural and the manufacturing sectors on the basis of the latter's higher propensity to save and invest may or may not be appropriate, depending upon the particular circumstances of a country, an argument for discrimination between the individual manufacturing industries on this basis appears far-fetched. However, a strong case for discriminatory exchange-rates for the different exports can indeed be made out on the basis of the infant-industry argument, *i.e.*, the existence of differences in the degree of infancy between the different industries. The manufacturing industries in Pakistan are at different stages in the process of growing up into maturity.

The "infancy" of an industry and its process of "learning by doing" is related not only to the manufacturing operations and selling in the domestic market but also to the field of the export marketing, which involves problems and costs different in kind and degree from that of the domestic marketing. The newer manufacturers are likely to face higher costs and greater obstacles in the presence of the established producers operating in the world trade and in the face of the consumers' preference for the brand-names with which the latter are already familiar. While a broad distinction between the old and newer manufacturing industries, as is made in Pakistan between the jute and cotton textiles, on the one hand, and the rest of the new manufactures, on the other, seems defensible, any attempt at a detailed discrimination between the individual industries on the basis of "differential infancy" would require an amount of knowledge of the individual industries which is not easily available in practice; such discriminatory treatment is often liable to be based on other extraneous and apparently plausible but logically untenable arguments.

An illustration of this is the argument for the higher subsidies for the industries suffering from an excess capacity. This is based on the reasoning that since the fixed costs in the short run can be neglected because the already installed capacity which is unutilized involves no social costs, the marginal variable costs of expanding the exports of the industries suffering from an excess capacity are low compared with those with no excess capacity operating on the upward rising slope of the average cost curve. But then if the reasoning is correct, what is necessary is for the individual industries is to follow the principle of the marginal cost pricing in the export market. If the firms with excess capacity maximize profits, they would produce and sell so long as marginal revenue exceeds marginal cost. While in the domestic market they would earn excess profits because of the monopolistic market structure, the export price may just cover marginal cost in the highly competitive export market under a unified exchange rate; the firms with excess capacity will sell more than those without excess capacity since their marginal costs are low and decline as output and sales expand. If the excess capacity is due to the shortage of imports, such as the imported raw materials and spare parts, the appropriate policy is an increase in the supply of the necessary imports, at a uniform price which represents their social opportunity costs equally to all the firms or industries. In any case there does not appear any justification for a discriminatory export subsidy in favour of the firms with excess capacity.

#### CONCLUDING REMARKS

At present the major focus of the export-incentive schemes and the exchange-rate policy in Pakistan is on a rapid expansion of the manufactured exports. An appropriate measure of their gross and net foreign-exchange earnings is of considerable significance in this context. The alternative estimates

of the net foreign-exchange earnings of the individual manufactured exports; which are presented above on the basis of a direct and new evidence on their export prices and their gross earnings, are less, in some cases substantially less, than the earlier estimates. They are further reduced if the loss of exports of the agricultural raw materials necessary for the production of the manufactured exports is taken into account. Furthermore, the relative ranking of the individual manufactured exports in terms of the gross exchange earnings is different from that in terms of net earnings. The net foreign-exchange earnings of the different industries are correlated neither with their capital costs per unit of output nor with such an overall index of efficiency as measured by the "effective rate of protection". A discriminatory promotion of the industries with large net foreign-exchange earnings may involve the encouragement of the inefficient industries or the industries with the higher capital costs unless a sufficient care is taken to examine the costs of earning the foreign exchange in terms of the scarce domestic resources. The manufactured exports with a higher net foreign-exchange earnings per unit of export do not necessarily enjoy higher rates of growth nor do they contribute a larger proportion of the aggregate foreign-exchange earnings from the manufactured exports, as judged by the recent experience.

The design of an appropriate export-incentive scheme or of an exchange-rate policy which seeks to distinguish between the individual manufactured exports on the basis of their differential elasticity of supply and/or demand and on the basis of their differential "infancy" involves a difficult exercise, partly in view of the lack of adequate knowledge about the relevant variables and partly because these criteria for differentiation are not always rigorously defined and closely examined in each case. It is necessary that the considerations, if any, underlying the departures from a unified exchange rate for the exports within the manufacturing sector itself are clearly spelled out; the considerations of static allocative efficiency and the dynamic considerations of growth need be kept separate and be carefully identified in the particular cases of differentiation. In the absence of such an examination the danger of an inefficient or more costly industry receiving a higher rate of export incentives, thus contributing to a mis-allocation of resources, cannot often be avoided. This article does not provide an exhaustive analysis of all the relevant factors in the particular circumstances of Pakistan; it offers a few observations on some of the often-discussed considerations for the multiple exchange-rates for exports in Pakistan.



## REFERENCES

1. I.B.R.D., *The Industrial Development of Pakistan*. (Washington: International Bank for Reconstruction and Development, June 1966).
2. Islam, N., "Comparative Costs, Factor Proportions and Industrial Efficiency in Pakistan", *Pakistan Development Review*, Vol. VII, No. 2, Summer 1967.
3. Islam, N., *Tariff Protection, Comparative Costs and Industrialization in Pakistan*. Mimeographed Research Report No. 57. (Karachi: Pakistan Institute of Development Economics, January 1967).
4. Islam, N. and I.O. Malik, *The Comparative Costs of the Manufacturing Industries in Pakistan: A Statistical Study*. Mimeographed Research Report 58. (Karachi: Pakistan Institute of Development Economics, June 1967).
5. Khan, A.R. and A. MacEwan, "A Multisectoral Analysis of Capital Requirements for Development Planning in Pakistan", *Pakistan Development Review*, Vol. VII, No. 4, Winter 1967.
6. Lewis, S.R. and S.E. Guisinger, *Measuring Protection in a Developing Country: The Case of Pakistan*. Memorandum 6. (Williamstown, Massachusetts: Center for Development Economics, Williams College, December 1966).
7. Mallon, Richard, "Export Policy in Pakistan", *Pakistan Development Review*, Vol. VI, No. 1, Spring 1966.
8. OECD Development Centre. Bellagio Conference on Industrialization and Trade. March 1968. *Industry Studies*.
9. Soligo, R. and Joseph J. Stern, "Some Comments on the Export Bonus, Export Promotion and Investment Criteria", *Pakistan Development Review*, Vol. VI, No. 1, Spring 1966.

## Appendix

### NET FOREIGN-EXCHANGE EARNINGS PER UNIT OF FINAL DEMAND

(Worth One Rupee in Domestic Prices)

Industry	(1)	(2)	(3)		(4)	(5)	
	Soligo-Stern exchange earnings	Price differen- tial	Revised estimate		Price differen- tial	Revised estimate	
	I	I	II		II	III	
	Net		Gross	Net		Gross	Net
Jute pressing	99.75						
Cotton ginning	97.07						
Chemical fertilizer	96.04 (1)	1.15 (23)	0.82816 (1)	0.7886 (1)			
Tea	89.25 (2)	1.39 (21)	0.68516 (3)	0.6740 (2)			
Rice milling	75.73						
Sugar	69.30 (3)	4.27 (2)	0.22304 (25)	0.2135 (21)	4.55	0.20931	0.1998
Sports goods	68.42 (4)	1.60 (18)	0.59523 (6)	0.5807 (5)			
Dyeing, printing and finishing of textiles	67.28						
Jute textiles	67.43 (5)	1.46 (20)	0.65231 (4)	0.6084 (4)			
Knitting	64.32						
Thread and threadball making	62.08 (6)	1.73 (15)	0.55051 (10)	0.4726 (10)			
Wood, cork and furniture	61.84						
Pens, pencils and related products	59.61 (7)	2.55 (6)	0.37348 (20)	0.3134 (12)			
Footwear	59.38 (8)	1.66 (16)	0.57372 (9)	0.5132 (8)	1.64	0.58072	0.5202
Tanning and leather finishing	58.60 (9)	1.56 (19)	0.61050 (5)	0.5068 (9)			
Printing and publishing	57.15 (10)	1.23 (22)	0.77429 (2)	0.6561 (3)			

*Islam: Exports, Exchange Earnings, and Investment Criteria*

(6)	(7)	(8)	(9)	(10)	(11)
Rate of effective protection	Capital income ratio I	Capital income ratio II	Capital income ratio III	Rate of growth of exports (1960-67)	Proportion of total manufactured exports (1961-64)
117 (7)	2.41 (6)	13.123	25.7415 (1)	0 (21)	1.08 (9)
-10 (27)				0 (21)	0 (25)
235 (2)		2.012	3.8488 (9)	0 (21)	0 (25)
48 (21)				10 (20)	2.68 (4)
105 (8)		2.462	4.4729 (7)	12 (18)	54.86 (1)
62 (20)				59	0.31
				51 (8)	0.89 (11)
		1.682	2.7828 (13)	16	0.01
71 (18)				56 (4)	0.14 (19)
46 (23)	1.56 (12)			36 (13)	1.55 (5)
85 (11)				55 (5)	4.11 (3)
18 (24)	2.23 (7)				

## NET FOREIGN-EXCHANGE EARNINGS PER UNIT OF FINAL DEMAND

(Worth One Rupee in Domestic Prices)

(Contd.)

Industry	(1)	(2)	(3)		(4)	(5)	
	Soligo-Stern exchange earnings	Price differen- tial	Revised estimate		Price differen- tial	Revised estimate	
	I	I	II		II	III	
	Net		Gross	Net		Gross	Net
Cotton textiles	55.62 (11)	1.56 (19)	0.61050 (5)	0.5510 (7)			
Baking products and confection	55.31				1.03	0.92464	0.8019
Articles of paper and board	54.74 (12)	1.94 (12)	0.49092 (14)	0.4137 (11)	1.57	0.60661	0.5294
Non-metallic mineral products	53.26 (13)	2.54 (7)	0.37495 (19)	0.3190 (16)	2.10	0.45351	0.3975
Pharmaceuticals and mis- cellaneous chemicals	52.71 (14)	1.81 (14)	0.52618 (12)	0.3820 (13)	{ 1.96 } { 1.58 }	{ 0.60277 } { 0.48590 }	{ 0.3400 } { 0.4568 }
Cigarettes and tobacco products	51.96						
Manufacture of paper and board	50.71 (15)	1.94 (12)	0.49092 (14)	0.3667 (15)	2.35	0.40526	0.2811
Optical goods	49.75						
Matches	49.71 (16)	1.62 (17)	0.58789 (7)	0.5650 (6)	2.45	0.38872	0.3658
Coal and petroleum pro- ducts	49.64 (17)	2.07 (9)	0.46009 (16)	0.3683 (14)			
Silk and artificial silk	49.58 (18)	4.50 (1)	0.2116 (23)	0.0395 (27)	5.75	0.16563	-0.0065
Transport equipment	47.64 (19)	3.49 (3)	0.2729 (24)	0.0607 (25)	2.94	0.32393	0.1117
Woollen textiles	47.37						
Non-electrical machinery	46.21 (20)	1.89 (13)	0.5039 (13)	0.2762 (18)	1.59	0.59898	0.3712

(6)	(7)	(8)	(9)	(10)	(11)
Rate of effective protection	Capital income ratio I	Capital income ratio II	Capital income ratio III	Rate of growth of exports (1960-67)	Proportion of total manufactured exports (1961-64)
88 (9)		4.610	7.8514 (4)	31 (15)	17.19 (2)
				100	0.22
79 (13)				35 (13)	0.06 (21)
77 (15)	3.67 (2)	3.469	6.5416 (5)	11 (19)	0.93 (10)
75 (16)		1.213	2.1391 (17)	39 (12)	0.50 (14)
		0.781	1.2433 (18)		
79 (13)	1.73 (11)	6.615	11.8370 (2)	-5 (22)	1.45 (7)
10 (25)				43 (10)	0.001 (24)
-7 (26)	2.72 (5)			0 (21)	0 (25)
119 (6)				298 (1)	0.02 (23)
257 (1)	3.00 (4)	5.082	8.3614 (3)	40 (11)	1.66 (6)
		2.880	5.3620 (6)	19	3.03
78 (14)	5.06 (1)	*1.915	3.2009 (11)	33 (14)	1.20 (9)

\*Could only get figures for machine total and they are used both for electrical and non-electrical machinery.

## NET FOREIGN-EXCHANGE EARNINGS PER UNIT OF FINAL DEMAND

(Worth One Rupee in Domestic Prices)

(Contd.)

Industry	(1)	(2)	(3)		(4)	(5)	
	Soligo-Stern exchange earnings	Price differen- tial	Revised estimate		Price differen- tial	Revised estimate	
	I	I	II		II	III	
	Net		Gross	Net		Gross	Net
Canning and preserving of fruits and vegetables	45.86	1.60			1.72	0.55371	0.3226
Salt	45.32						
Leather goods	45.28						
Rubber and rubber pro- ducts	44.94 (21)	2.53 (8)	0.3764 (18)	0.1662 (23)	2.89	0.32954	0.1193
Alcoholic beverages	44.19				3.25	0.29304	0.2641
Metal goods	43.27 (22)	1.95 (11)	0.4884 (15)	0.2424 (20)	2.30	0.41408	0.1681
Electrical machinery and appliances	43.22 (23)	a) 1.60 (18) b) 4.08	0.5952 (6)	0.3839 (12)	2.01	0.47382	0.2625
Wearing apparel	42.64 (24)	3.25 (5)	0.2930 (21)	0.0407 (26)			
Plastic products	41.88 (25)	3.36 (4)	0.2834 (22)	0.0281 (28)	1.95	0.48840	0.2553
Paints and varnishes	39.04 (26)	2.02 (10)	0.4715 (15)	0.2575 (19)	1.70	0.56022	0.3462
Non-alcoholic beverages	33.67						
Basic metals	32.28 (27)	1.66 (16)	0.5757 (8)	0.2130 (22)	1.55	0.61444	0.2537
Perfumes, cosmetics and soaps	25.13 (28)	1.94 (12)	0.4335 (17)	0.1545 (24)	1.07	0.89007	0.6112

## NOTES AND SOURCES

Capital-income ratio 4. Rate of growth and relative importance of trade computed from C.S.O. *Foreign Trade Statistics* and *Monthly Statistical Bulletins* for various years and E.P.B. *Foreign Trade of Pakistan*.

Price differential I [6]

Price differential II [4]

Effective rate of protection [4]

Capital-income ratio II [1]

Capital-income ratio III — Adjusted from capital-income ratio II.

The figures with brackets under each column indicate the rank.

(6)	(7)	(8)	(9)	(10)	(11)
Rate of effective protection	Capital income ratio I	Capital income ratio II	Capital income ratio III	Rate of growth of exports (1960-67)	Proportion of total manufactured exports (1961-64)
				95	0.04
				4	0.26
	1.92 (10)	0.635	1.0073 (19)	50	0.037
122 (5)	2.07 (9)	2.039	3.7437 (10)	20 (17)	0.34 (16)
				157	0.065
133 (3)	1.92 (10)	1.256	2.2611 (16)	30 (15)	0.74 (12)
47 (22)	2.09 (8)	*1.915	*3.2009 (11)	56 (4)	0.48 (15)
127 (4)				52 (7)	0.53 (13)
87 (10)				66 (3)	0.05 (22)
72 (17)				53 (6)	0.25 (18)
84 (12)	3.41 (3)	1.564	2.7526 (14)	47 (9)	0.08 (20)
64 (19)				91 (2)	0.32 (17)

\*Could only get figures for machine total and they are used for electrical and non-electrical machinery.