Social Versus Private Profitability in Pakistan's Export of Manufactures

by

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A recurrent theme in much of the writing on development is that the prospects for the export of agricultural products from underdeveloped countries are bleak, and that these countries should, therefore, concentrate on expanding their exports of manufactures. Pakistan, too, has not been immune to such thinking, and over the years the authorities have attempted to stimulate industrial exports through a wide array of incentive schemes. On the one hand these took the form of discouraging agricultural exports by the imposition of export taxes and by compelling the sale of these products at the official—and overvalued —exchange rate. On the other hand, the manufacturing sector was given a much more favourable exchange rate by way of the Export Bonus Scheme, was permitted to purchase its imported component at an artificially low rate through the Export Performance Licensing Scheme, and was exempted from taxation on exports. In addition, businessmen were permitted foreign exchange at the official rate in order to travel abroad to make contacts and conduct market surveys, export credit guarantee schemes were drawn up for manufactured products, while goverrtment-financed participation in foreign trade exhibitions was chiefly designed to provide a shop window for the products of industry.

While much of the resulting growth in manufactures was due to the performance of the "staples", i.e., jute and cotton textiles, nevertheless there was a very considerable expansion in the variety of manufactures being exported. Indeed, much of the export promotion effort, for example the Export Performance Licensing Scheme, concentrated on the so-called "non-traditional" items, that is, manufactures not based on raw jute and cotton.

How far was this encouragement of manufactured exports justifiable from an economic point of view? This question can be made more meaningful by rephrasing it somewhat and asking how far did the incentives to manufactured exports provide encouragement in line with the comparative advantage of the country? In order to examine this, it is necessary to construct a criterion that may serve as a framework within which different commodities may be ranked according to their production and export effects on resource allocation.

Two criteria have been proposed for this. Michael Bruno [4,5] and Anne Krueger [11] have (independently) constructed a measure of the domestic cost

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of earning or saving foreign exchange while another school led by Bela Balassa [3], Harry Johnson [10] and W.M. Corden [6] has focussed on the effective rate of protection afforded to different industries.

The "cost of foreign exchange" calculation may be performed for either the exchange earned by export or saved through import-competing activities. In this paper, we are concerned only with the first measure. For any commodity, *i*, the cost of earning a unit of foreign exchange is defined as the direct and indirect (real) domestic resource costs incurred in supplying it domestically, divided by the net foreign exchange earnings of the commodity (i.e., its price in the international market minus the foreign exchange cost of direct and indirect imported inputs).

Assuming perfect competition and denoting domestic resource costs (i.e., value added) by W, the international price of the commodity by P, the value of imported inputs per unit of output by N and elements of the matrix of direct and indirect input requirements by r_{ji}, the cost of earning a dollar for the *i*-th commodity will be:

$$(1) \quad B_i = \frac{\sum_j W_j r_{ji}}{P_i - \sum_j N_j r_{ji}}$$

The foregoing criterion is used by Bruno as a measure of comparative advantage. He argues that the relative desirability of expanding or starting different activities of export promotion (or import substitution) should be evaluated by ranking them accordingly. Krueger uses the same methodology to estimate the cost of protection in Turkey. This cost equals the saving in domestic resources that can be obtained by expanding relatively efficient export industries and contracting relatively inefficient import substituting activities.

The effective rate of protection is based on the idea that the real protection afforded to factors of production in any industry *i* is the result both of the tariff on the final product as well as the tariffs on the tradable inputs. Put differently, the effective rate of protection expresses the percentage by which the given tariff structure enables value added in the *i*-th industry to exceed value added in that industry under conditions of free trade.

Assuming that domestic prices equal the world market price plus the tariff, and writing Z and T for the effective and nominal rates of tariffs, W and V for value added in the country and in a free trade situation, respectively, and M for the cost of material inputs per unit of output under free trade, the effective rate of protection on the *i*-th commodity can be expressed as:

$$(2) \quad Z_i = \frac{P_i(1+T_i) - \sum_j M_{ji}(1+T_j) - (P_i - M_{ji})}{P_i - \sum_j M_{ji}} = \frac{W_i - V_i}{V_i}$$

The relationship between the cost of foreign exchange criterion and the effective rate of protection has been examined by Balassa and Schydlowsky [2]. They have shown that the cost of a unit of foreign exchange equals unity plus a weighted average of the effective rates of protection, the weights being the contribution of direct and indirect value added to output produced under free trade conditions. In terms of the previous nomenclature:

$$(3) \quad B_i = 1 + \sum_j Z_j \frac{V_j r_{ji}}{\sum_j V_j r_{ji}}$$

It will be seen that the formulae for the cost of foreign exchange and the effective rate of protection will generally give a different ranking of the desirability of domestic industries. Balassa and Schydlowsky further argue that of the two measures the effective rate of protection is preferable, since the cost of foreign exchange criterion may cause an inefficient industry, which buys its inputs in competitive markets, to be ranked higher than an intrinsically efficient industry which is compelled to purchase its inputs from an inefficient, high-cost domestic source. This is because "while the effective rate of protection indicates the relative performance of processing activities, the cost of foreign exchange....is affected by inefficiencies in the manufacturing of the product itself as well as in the production of its inputs" [2, p. 352].

Balassa and Schydlowsky also show that their rejection of the cost of foreign exchange criterion may be expressed in a different manner [2]. This criterion reflects the implicit assumption that (i) *all* existing industries will be maintained, and (ii) the expansion of the output of any one commodity will require increased output of *all* domestic industries providing direct and indirect inputs to it. The objection is thus raised that policy changes do not lead to the substitution of foreign for domestic inputs either in existing or future output. And "one may question the utility of this proposition since policy recommendations should properly cover the inefficient input producing industries also" [2,pp. 352-53].

This objection is well taken, especially when it is applied to policy prescriptions for the future. It is perhaps somewhat less applicable to an analysis of the past, for in this case the possibility of substituting efficient inputs is no longer relevant, for one is confronted with a pattern of events that has already crystallised.

In this paper an attempt will be made to compute the gains or losses to the economy of exporting a unit of manufactures, and this will be contrasted with the gains made by the private exporter. The latter are based on the costs and returns at market prices, while the estimation of social profitability involves the valuation of resources at opportunity cost, i.e. at "shadow prices".

In general, the computations of the resource cost of earning foreign exchange are performed using an input-output table [7]. However, the inter-industry tables that are available for Pakistan are so highly aggregated that their usefulness is limited, both for an accurate estimation of the input costs of particular commodities as well as for policy purposes. The present exercise, therefore,

adopts a much more disaggregated approach to the subject. The basic data on the costs of production of the individual items come from returns submitted by the major manufacturing firms to an industrial survey. In many cases, these were followed by personal interviews in order to elaborate and elucidate the written responses.[1]

A number of queries about the data remain. The chief problem arises when one firm produces more than one product. For some cost items, such as lighting, air-conditioning, it is possible to allocate the total cost between different constituents of output on the basis of the factory floor space devoted to the production of each product. Other overhead costs of management were somewhat arbitrarily split by the executives interviewed. In the absence of a reliable alternative I have gone by their assessment. In any case, these items form a fairly insignificant part of total manufacturing cost.

The item that caused the greatest difficulty, both conceptual and computational, was the question of deciding how much of the firm's fixed investment was to be allocated to each product. In some cases, for example jute sacking and hessian, or cotton yarn and cloth, the investment could be allocated on the basis of spindles/looms employed, and the relative costs of each of these types of machinery. For a large number of items such an allocation could not be made. The only feasible procedure appeared to be either to use data only from single product firms, or, where a single product dominated the output of a firm, to assume that it was the only item made by that concern. The result of these constraints was to reduce the number of items for analysis from nearly 200 to only 19. Fortunately, however, the items covered are quantitatively the most important, and in 1968-69 accounted for about 75 per cent of manufactured exports.

Another problem was the question of domestic raw material inputs. It was clear that in a number of cases these "domestic" materials were imports, but had been purchased from some other importer or from another manufacturer whose import entitlements under the export performance licensing scheme exceeded his actual requirements [8]. In the exercises that follow, these purchases have been shown as if they were domestically produced. Thus, no adjustment has been made for tariffs or scarcity markups on these goods, nor have their values been adjusted by the shadow price of foreign exchange. It is unlikely that this will significantly effect the analysis. First, almost all the industries examined were themselves eligible for imports under the export performance licensing scheme. Hence, even if they required additional imports, these requirements were likely to be small. Second, although the imported component in these "domestic " purchases has not been increased to reflect the scarcity value of foreign exchange, neither has it been reduced by the amount of import duty entering into its price. Indeed, it has been shown that domestic prices of goods imported into Pakistan exceed their CIF plus import duty value by a substantial margin [15,16]. This scarcity markup has also not been deducted from the imports purchased from domestic sources.

Finally, one drawback of not using the input-output approach was that the total direct and indirect inputs into the final cost could not be computed.

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[1]I am grateful to the executives who gave freely of their time and knowledge to discuss these matters. In using the data the firm's anonymity has been carefully preserved, and the views expressed have not been attributed to specific individuals or organisations.

However, given the extremely high degree of aggregation of the inter-industry data that are currently available—the largest has only about 25 manufacturing sectors [12]—and the disaggregated approach adopted here, it was felt that any attempt to incorporate broad sectoral requirements into the costing of individual products would only lead to a distortion of the results.

Subject to the foregoing caveats, the inputs were shadow priced as follows:

Labour: This was priced at its market wage in the main exercise. A sensitivity analysis was also performed in which the shadow price was taken as 50 percent of the wage rate.

Domestic Inputs: These are divided into two groups. Those inputs, such as raw jute and cotton, hides and skins, etc., which have figured significantly in the export lists in previous years, were valued at their export prices. These were then adjusted for the shadow price of foreign exchange (see below). As there have been considerable fluctuations in the prices of these raw materials, an annual analysis for the three years 1966/67 to 1968/69 was undertaken. This can be regarded as a sensitivity analysis in which the prices of the raw material inputs take their export values of 1966-67, 1967-68 and 1968-69.

The other group of domestic raw materials was that of "non-exportables", and imputed at their market prices.

Fuels, Transport, Overheads: This group was valued at its market price, it being considered impracticable to ascertain the imported component of each of these inputs required for a unit of final output.

Imported Raw Materials: These were adjusted for import duties, and then valued at the shadow price of foreign exchange. It proved impossible, even after the interviews, to ascertain precisely the duty actually paid on each of the inputs. In the computations it was therefore necessary to perform a sensitivity analysis. This was based on the assumptions that there were no duties included in the raw material costs submitted, i.e., that the cost data provided actually represented pure CIF values—this was what was generally claimed in the interviews—and alternatively, that the data included an average duty of 50 per cent.

Foreign Exchange: The calculation of an appropriate shadow price of foreign exchange is complicated by the fact that a substantial amount of foreign exchange is allocated through direct licensing and not through the market mechanism. It has been suggested by Schydlowsky [17] that in such situations the most appropriate method of deriving a shadow price is to take the ratio of the weighted market price of imported commodities to their CIF prices. A recent study by Nurul Islam [9] has estimated that during 1961-66 such a weighted differential was 1.83, giving an implicit exchange rate of Rs. 8.56/$. This rate was used to evaluate all transactions in foreign exchange.

The shadow price of investment may be calculated by computing the present value of the sum of (1) the direct contributions to consumption, i.e., (1-s)q, where s is the marginal propensity to save and q is the marginal productivity of

capital goods; and (2) the direct contributions to investment, sq, valuing the contributions to investment at the shadow price P*.

It turns out [12a] that the shadow price of investment, P*, can be expressed as:

$$(4)\quad P^* = \frac{(1-s)q}{i - sq}$$

where i = social rate of discount.

We apply the social rate of discount to the shadow price of capital goods to get a flow measure of the real cost per unit of output. In all the foregoing we have been using, of course, a rupee's worth of consumption as the numeraire.

Data on savings, consumption and the productivity of investment were obtained from publications of the Planning Commision [13] and the State Bank of Pakistan [14]. It should be noted that the State Bank data cover only the firms quoted on the Karachi Stock Exchange. However, this is at least adequate for obtaining orders of magnitude. Between 1964/65 and 1968/69, we get s=14 per cent, the rate of growth of per capita consumption was 7.4 per cent per annum while the marginal rate of return on investment was arbitrarily taken to be 15 per cent.[a]

The following table shows the social rate of discount with different values for the elasticity of the marginal utility of per capita consumption:

E	i
1.0	0.074
1.5	0.111
2.0	0.148

A social rate of discount of, say 11 per cent (i=0.11) means that policy makers place a premium of at least 11 per cent on additions to this year's consumption over additions to next year's, on additions to next year's over that of the following year, and so on.

Given the above values of s and q, the shadow price of investment for various rates of i is as follows:

i	P^*
0.074	2.43
0.111	1.43
0.148	1.02

The middle values, namely a social rate of discount of 11 per cent and a shadow price of 1.43 for investment, were chosen for the exercise.

Table I shows the social cost and profitability of various manufactured exports. A number of interesting conclusions can be derived from this exercise.

[a]Between 1965 and 1966 (the latest years for which data are availab le), the marginal rate of return on investment was 9.2 per cent. This was considered to be an understatem ent (by all criteria).

First, some of the items show a loss (i.e. a cost-benefit ratio in excess of unity) when valued at shadow prices. This occurs for five out of the 19 items, including some of the major manufactured exports.

Second, as a rough rule, the higher value-added items within each industrial group do better than those with lower value-added. This occurs, for example, for carpet backing versus hessian; for hessian versus sacking; for footwear versus tanned leather; for radios versus transistors; and for carpets versus woollen yarn. Cotton yarn and cloth, however, do not fit into this pattern for some years. But it should be noted that the calculations for the latter pair are very sensitive to the price of the input of each. The social profitability of cotton yarn falls as the export price of raw cotton rises, and the profitability of cloth rises as the export price of yarn falls.

The fact that the export price of cotton yarn fell between 1966/67 and 1968/69 despite an increase in the export price of raw cotton is due to a rise in the bonus premium from an average of 159 in 1966/67 to 182 in 1968/69. This is a clear example of the divergence between social and private profitability due to a perverse allocation of export incentives. Another example is offered by exports of jute sacking in 1968/69, which provided less foreign exchange earnings than would have been earned by the export of a corresponding amount of its raw jute input.

The tables also show the results of a sensitivity analysis. Two variations were undertaken. In the first, labour costs were valued at half the market rate. In the second, it was assumed that an average tariff of 50 per cent of the CIF value had originally been imposed on the imported raw materials, and that this was then corrected for.

The effect of both these variations is to reduce the cost. However, their impact differs to a considerable degree between different products.

Each of the exercises covers 19 commodities, five of which have calculations for three years each. Thus, the sensitivity analysis is applied to 29 cases. When both the wage costs and the tariff rate are varied by 50 per cent, 17 of the 29 cases—yarn (3), cloth (3), hessian (3), backing (3), carpets, footwear, electric lamps, cement and wood screws—exhibit a (social) cost/net benefit ratio that is lower following the change in wage cost than that resulting from changes in material costs. The other 12 cases, namely, woollen yarn, leather, optical frames, tyres, tubes, bicycles, transistors, radios, sewing machines, show the reverse.

In short, for the first group of exports—part of the socalled "traditional" exports—a 50 per cent variation in wage costs had a much larger effect than an equivalent (percentage) variation in the tariff rate on raw material imports. The only exception to this appears to be wood screws, and here it is likely that the "domestic" material input is largely an indirect purchase of imports. While the wage component appears to be an important item in the cost structure of the older manufactures, the raw material input is relatively more important in the newer, "non-traditional", manufactured exports.

The implication is that Pakistan has started export of items that are considerably less labour intensive than her traditional manufactured exports.

Thus, if official policy seeks to expand the production and export of these goods, it must provide imports at competitive rates. This is only justified (since some of these commodities show a social loss) in the case of an infant industry argument or if there are other social benefits, such as regional development. In the present exercise only foreign exchange earning has been considered.

Finally, one can take a look at the private profitability of these exports. Table I sets out the private cost of earning a unit of revenue and compares it with the social cost/net benefit ratio. We see that all the private ratios are less than unity, i.e., that all the private profits are positive. Therefore, no industry covered made a loss (in 1968-69) in order to gain an entry into the international market.

Table II shows a ranking of the export items by private and social profitability. The Spearman rank correlation coefficient works out at 0.42, which indicates a fairly low degree of association between the two criteria. (The Spearman coefficient can vary between + 1, indicating perfect correlation between the rankings, and - 1, which indicates a perfect reversal of the ordering of one criterion by the other). In the present context, a positive correlation of 0.42, while showing a weak correspondence, shows to some extent the divergence between private and social profitability which leads to distortions in resource allocation at market prices.[3]

[3] The coefficient significant at the 90 per cent level.

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TABLE I

SOCIAL COST OF FOREIGN EXCHANGE

	YARN			CLOTH			SACKING			HESSIAN			BACKING		
	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69
Labour	0.22	0.22	0.22	0.12	0.12	0.12	164	164	164	344	344	344	325	325	325
Materials	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	0.13	0.13	0.13	0.24	0.24	0.24	173	173	173	261	261	261	550	550	550
i*	0.41	0.41	0.41	0.16	0.16	0.16	116	116	116	445	445	445	643	643	643
Total	0.76	0.76	0.76	0.52	0.52	0.52	453	453	453	1050	1050	1050	1518	1518	1518
Net social benefit	1.15	1.01	0.52	0.52	0.51	0.58	62	52	—594	1173	610	578	2360	1786	2934
Cost/benefit	0.66	0.76	1.46	1.00	1.01	0.90	7.31	8.71	inf	0.90	1.72	1.83	0.64	0.85	0.52
$L = 0.50$ Cost/benefit	0.57	0.64	1.25	0.88	0.90	0.79	5.98	7.13	inf	0.76	1.44	1.51	0.57	0.76	0.46
$T = 0.50$ Cost/benefit	0.62	0.70	1.27	0.91	0.96	0.82	2.34	2.55	inf	0.82	1.46	1.53	0.60	0.77	0.49

Source and method : See text.

TABLE I—(*Continued*)

	Woolen Yarn	Carpets	Tanned leather	Foot-wear	Optical Frames	Cycle Tyres	Cycle Tubes	Cycles	E ec. Lamp s	Tran-sistors	Radios	Sewing Machines	Cement	Wood Screws
	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968-69	1968/69
Labour	0.71	6.12	6.84	225.6	9.67	545	181	32.30	27	4	11.40	24.11	15.23	24.32
Materials	—	—	—	311.0	5.45	472	113	17.81	44	2	14.32	27.09	35.30	39.51
Other	0.79	2.19	5.19	98.0	3.29	545	151	11.37	18	1	5.25	6.21	4.62	17.12
P	0.62	2.57	21.83	154.9	11.34	638	189	21.70	33	14	14.70	21.69	9.80	20.03
Total	2.12	10.88	33.86	819.5	29.75	2200	634	83.18	122	21	45.67	78.70	64.95	100.98
Net Social Benefit	1.93	13.16	49.09	1227.8	25.76	2527	743	71.32	138	—22	68.72	43.92	96.60	105.95
Cost/Benefit	1.10	0.83	0.69	0.67	1.16	0.87	0.86	1.17	0.88	inf	0.66	1.79	0.67	0.95
L = 0.50 Cost/Benefit	0.91	0.59	0.62	0.56	0.97	0.76	0.73	0.94	0.79	inf	0.58	1.52	0.59	0.84
I = 0.50 Cost/Benefit	0.86	0.81	0.59	0.64	0.68	0.67	0.62	0.81	0.81	0.70	0.55	1.05	0.66	0.92

TABLE II

PRIVATE AND SOCIAL PROFITABILITY, 1968-69

Items	PRIVATE		SOCIAL	
	Cost / Revenue	Rank	Cost / Benefit	Rank
Yarn	0.59	3.0	1.25	15.0
Cloth	0.68	9.0	0.79	9.5
Sacking	0.81	15.0	inf	18.5
Hessian	0.76	13.0	2.02	17.0
Backing	0.47	1.0	0.46	1.0
Wool Yarn	0.88	17.5	0.91	12.0
Carpets	0.78	14.0	0.59	4.5
Leather	0.66	7.5	0.62	6.0
Footwear	0.65	6.0	0.56	2.0
Optical Frames	0.64	5.0	0.97	14.0
Cycle Tyres	0.90	19.0	0.76	8.0
Cycle Tubes	0.85	16.0	0.73	7.0
Wood Screws	0.75	11.5	0.84	11.0
Bicycles	0.74	10.0	0.94	13.0
Sewing Machines	0.88	17.5	1.52	16.0
Radios	0.53	2.0	0.58	3.0
Transistors	0.75	11.5	inf	18.5
Lamps	0.66	7.5	0.79	9.5
Cement	0.60	4.0	0.59	4.5

Spearman rho +0.42