

Islam, Nurul

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ECONOMIC GROWTH CENTER

YALE UNIVERSITY

Box 1987, Yale Station
New Haven, Connecticut

CENTER DISCUSSION PAPER NO. 58

Export Incentives and Responsiveness of
Exports in Pakistan: A Quantitative Analysis

Nurul Islam

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Export Incentives and Responsiveness of Exports in Pakistan: A Quantitative Analysis

The purpose of this article is firstly to quantify the variations in the effective exchange rate for the exports of Pakistan which have taken place over the last two decades or so as a result of the direct exchange rate adjustment as well as the various export promotion measures, including the fiscal concessions and the import entitlement schemes. The effective exchange rate is defined as the nominal or official exchange rate as modified by the direct and indirect export incentive schemes. The effective exchange rate is greater or less than the nominal exchange rate, depending upon whether there are subsidies to or taxes on exports. Secondly, the variations in the effective exchange rates are sought to be related to the changes in or the growth of exports in an attempt to measure the effectiveness of the export promotion measures in stimulating exports.

Export Incentives and Effective Exchange Rate for Exports

During the last two decades Pakistan's export and exchange rate policy has undergone important changes. Pakistan did not devalue her currency when all the members of the sterling area followed the devaluation of the United Kingdom in 1949. However, in the subsequent years, the pressure on her balance of payments and the stagnation in her exports led to a devaluation in 1955. The favourable effect of devaluation on her export earnings was limited especially in view of rising domestic costs and prices, aggravated by a continued stagnation in the agricultural production. During the late fifties, Pakistan introduced in gradual steps a wide variety of export promotion measures. Experiments with the

import entitlement schemes which were initiated on a limited scale during 1957-58 were followed by the introduction of the most important export promotion measure, i.e., the export bonus scheme, which has been in operation since 1959. Moreover, there were a large variety of fiscal concessions for the exporters as well as an additional import entitlement scheme known as the export performance licensing. Under the export performance licensing introduced since 1962-63 the exporters of specific, rather narrowly defined commodities, receive import entitlements or licenses at varying percentages of the F.O.B. value of exports, which can only be used for the imports of raw materials and spare parts required for the production of the particular exports in question. In other words, the use of the import entitlements are tied to the specific import component of the exports and they are not freely saleable. Even though they are not freely transferable, there is an unofficial market in them and the goods imported under these licenses are exchanged between the producers whose import entitlements and the requirements for imports do not always match. The element of subsidy in these schemes originates from the scarcity of the imported raw materials in the domestic market owing to the maintenance of quantitative restrictions on imports and they usually fetch a premium of 50 percent on their face value. This seems to be consistent with the empirical evidence on the magnitude of the scarcity margins in the domestic market of the imported intermediate goods.[1] The percentages of the export performance licensing vary between the different industries, depending upon the import component of the industries; they have been changed from one year to the other, sometimes from one shipping period, i.e., one six month period to another. In the initial years the amount of licensing was often in excess of the import components of

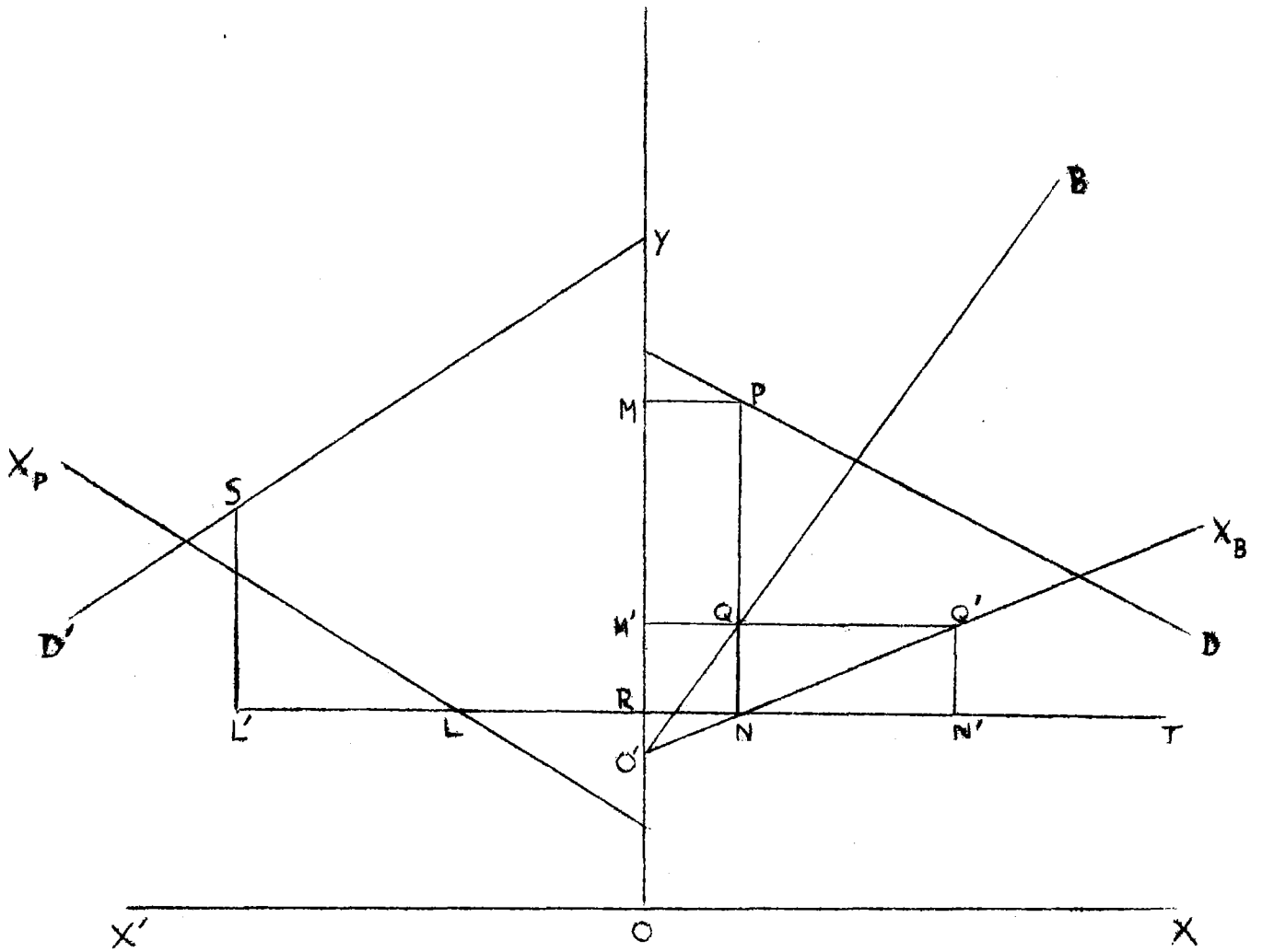
exports but were restricted to a very few exports. Later on, the number of industries eligible for such licensing has been expanded but the maximum percentage of licenses in each case has not exceeded 50 percent of the value of exports for most of the years. In 1967-68 the maximum limit has been brought down to 30 percent of the F.O.B. value of exports. While a limited number of industries has received the export performance licensing, the composition of such eligible industries has changed over time. The most important manufacturing industries such as the jute and cotton textile, being based on domestic raw materials, have not been eligible for export performance licensing.

The export bonus scheme, on the other hand, is extended to all exports excepting a few major primary exports such as jute, cotton, wool, tea, hides and skins. Thus it includes the minor primary goods and all the manufactured goods. This is an open ended scheme in the sense that all exports, present and future, are eligible for the export bonus excepting those which are especially excluded from the list. This is especially true for the manufactured exports. Among the minor primary exports, there has been from time to time attempts to exclude individual items and to move them back and forth from the list of the eligible exports. Rice and fish are important examples. The export bonus scheme does not confine itself to the existing exports only; it keeps the incentive open for the potential manufactured goods which are not exported today but may enter the export market in the future. It does not discriminate between the potential manufactured exports and thus has stimulated the export of many new miscellaneous exports. The export performance licensing is more discriminatory in that the authorities decide in their discretion which ones among the existing manufactured exports are eligible for the performance licensing and to which extent, each

export receiving a different percentage of licensing, depending upon its import component. The bonus system is less discriminatory between the individual exports in the sense that each individual commodity does not have a different rate of export bonus, even though there are more than one rate of bonus percentages which differs between the different groups of exports; the differential structure of bonus rates has gone through successive stages of consolidation, unification and diversification over the years. Moreover, the import entitlements provided under the export bonus scheme are freely marketable for the purchase of a wide range of imports, covering consumer goods, intermediate goods and capital equipment, and are not limited to the purchases of the specific import components of the particular exporting industry. The list of eligible imports under the bonus scheme, however, are changed from time to time; the list has expanded over the years as the scope of the bonus scheme has been widened. The premium on the bonus vouchers has fluctuated between 150 percent and 170 percent over the face value of the import entitlements and the percentage of bonus has varied between 30 to 40 percent of the F.O.B. export over the years. A diagrammatic representation of the bonus scheme is attempted in the next page.

The supply and demand for foreign exchange originating in the bonus market, i.e., due to the bonus exports and imports, is represented in the right hand portion of the above diagram and the supply and demand for foreign exchange at the official rate is represented in the left hand side. Along OY is measured all the rates of exchange, i.e., the official rate of exchange which is equal to RO as well as the price of foreign exchange which is determined in the bonus market and the scarcity margin on the official rate of exchange which is generated under the quantitative restrictions and the licensing of foreign

Market for Foreign Exchange in Pakistan



Exchange Earnings from
Non-Bonus Exports

Exchange Earnings
from Bonus Exports

exchange by the exchange control authorities. X_B is the supply curve of foreign exchange from the exports of commodities which receive export bonus; D is the demand function for foreign exchange for the purchase of imports which are permissible under the bonus scheme. B is the supply curve of foreign exchange in the bonus market, which is less than the supply of the total foreign exchange from the export of those commodities which are entitled to a bonus since only a percentage of the exchange earnings of the eligible exports is sold in the bonus market. Admittedly the percentages are different for the different groups of commodities and the above diagram simplifies the problem by assuming one rate in order to illustrate the working of the market. X_B can be conceived of as the weighted average supply curve of exports in response to a structure of the effective exchange rates for the bonus exports. The horizontal distance between OY and $O'B$ represents, corresponding to a given supply of exports indicated by any point (say Q') on X_B , the proportion of exchange earning which is available for sale in the bonus market. Corresponding to the supply of foreign exchange from the bonus exports to the extent of $M'Q'=RN'$, $M'Q$ is the amount available for sale in the bonus market. Given the demand curve D and the official rate of exchange OR , $MPNR$ is the total premium earned on the sale of foreign exchange to the amount of $M'Q$ in the bonus market. Therefore, the rate of premium is given by MR or PN . The total premium $MPNR$ is earned by the exporters on the amount of exports indicated by $RN'=M'Q'$ so that the effective rate of exchange for exports is $M'R+OR$, i.e., $M'O$. The equilibrium in the bonus market is

reached when $MPNR=M'Q'N'R$. If $MPNR$ is greater than $M'Q'N'R$, the exporters will increase exports since under these circumstances marginal revenue from exports under the bonus scheme exceeds marginal cost.

The demand function for foreign exchange in the official foreign exchange market is indicated by D' and the supply curve is indicated by X_p . However, the total supply of foreign exchange in the official market is augmented by an additional supply of foreign exchange earned by the exports, which are under the bonus scheme; this is equal to the excess of their total foreign exchange earnings over what they are entitled to sell in the bonus market. The excess of the foreign exchange over what is the equilibrium sale in the bonus market is given by QQ' in the diagram. This is transferred to the official market as shown by LL' , which is equal to $QQ'=NN'$. Given the supply and demand functions for foreign exchange in the official market, the scarcity margin over and above the official rate is indicated by SL' .

The exchange and import control authorities operate on the supply and demand functions in the bonus market for foreign exchange in different ways. The increase in the list of items which can be imported under the bonus scheme will shift the demand curve in the bonus market to the right; a decrease will shift it to the left. Similarly, an increase or decrease in the number of exports eligible under the scheme will shift the supply function X_B to the right or to the left. An increase or decrease in the percentage of exports entitled to bonus would shift the B curve to the right or to the left. These actions by the authorities relating to the supply and demand of foreign exchange in the bonus market would have opposite effects in the official market. A shift to the right of X_B curve would accompany an opposite shift, i.e., shift

towards the vertical axis OY of the X_p curve, i.e., supply function of exports at the official rate. Similarly, an outward shift of the D curve will involve a shift of the D' curve to the vertical axis.

In order to relate the multiplicity of incentive schemes to the performance of exports, it is necessary as a first step to quantify these incentive schemes in terms of total subsidy which a particular export receives. This may be expressed in terms of a total amount of subsidy per unit of the F.O.B. value of export, which in turn enables the estimation of the effective exchange rate for the various exports. If the multifarious export incentive schemes amount to S percentage of the F.O.B. value of export, R is the official rate of exchange, i.e., the amount of local currency per unit of foreign exchange then $R(1+S)$ is the effective rate of exchange. The subsidy originating from the export bonus and export performance licensing can easily be expressed in terms of the F.O.B. value of exports; both these import entitlements are expressed in terms of a percentage of the export value. Accordingly if E is the percentage of the F.O.B. export value which is provided as the export performance licensing and P' is the premium on such license, then the export subsidy as a percentage of the F.O.B. export is EP' . Similarly the subsidy, originating from the export bonus scheme, as a percentage of F.O.B. export is bP , where b is the percentage of bonus and P is the premium on the bonus voucher. The export bonus scheme which coexists with the official market for exports and imports regulated by the licensing of imports, results in four effective exchange rates, i.e., one each for export and import in the bonus market and the official rate for export in the official market and a higher rate for imports in the official market in so far as the final users of imports are concerned, in view of the scarcity prices

of restricted imports in the domestic market. For the purposes of the present study our interest lies in the effective exchange rate for exports which receive the export bonus. Many individual exports, especially the manufactured exports receive both the export bonus and the export performance licensing. The minor primary exports receive the benefit only of the export bonus scheme. However, the manufactured exports have been in addition receiving the fiscal concessions such as the rebates of the import duties on the import components of exports, the rebates of the indirect taxes on the output and rebates of indirect taxes on the domestic inputs since the late 1950's; the effective implementation of these concessions was hampered by red tape and administrative delays and during the early sixties the procedures have been simplified and rebates are expeditiously provided to the exports so that they are effectively enforced. Starting in 1962-63 the rebates of income tax are granted on profits from the export earnings, rebates being on a progressive scale depending upon the proportion of output which is exported. It is in the case of the fiscal concessions that the quantification of the total subsidy as a percentage of the F.O.B. value of export presents difficulty since the tax rates are expressed in terms of the domestic prices of the inputs and outputs and not in terms of the F.O.B. value of export. If the total amount of the tax concessions or the tax rebates are known and the total value of exports to which the concessions relate are known, the ratio of the former to the latter provides an estimate of the subsidy due to the fiscal concessions as a percentage of the F.O.B. value of export. If such information is not available, an estimate of tax concessions has to be made on the basis of tax rates, and the corresponding value of inputs and of outputs expressed in domestic prices. The fiscal concessions which

relate to the indirect taxes on the imported and domestic inputs have been expressed, in the first instance, as a percentage of the output in domestic market prices. This is easily done on the basis of data on the (a) import components and the tax rate on import components, and (b) on the inter-industry flows and indirect tax on the outputs of the different industries.¹

In the next stage, the amount of subsidy expressed as a percentage of the output in domestic prices has to be recomputed as a percentage of the F.O.B. value of export. This requires an assumption about the relationship between the domestic and export prices; the assumption is made that the export price plus the total subsidy originating from all the sources is equal to the domestic price, i.e.,

$$X = \frac{D(1-tm \cdot m - td \cdot d - I)}{1+BP+EP'}$$

Where X is the F.O.B. export price, tm is the tax on import component, m is the import component per unit of output, td is the indirect tax on domestic inputs, d is the domestic input component per unit of output and t is the tax on the output of the exportable commodity when sold in the home market. Once the value of X is derived, (tm·m), (td·d) and (I) can all be expressed as a percentage of X, i.e., F.O.B. export price. P+EP' are already known and are expressed in terms of a percentage of the F.O.B. value of export. Accordingly, all the export promotion measures are quantified in terms of a percentage of the F.O.B. value of export.

¹Both these types of data are available in Messrs. Tims and Stern, Input-Output Table for Pakistan, 1963-65, Planning Commission, Government of Pakistan and Harvard Advisory Service.

However, individual exports differ in terms of the percentage of subsidy they receive. Each of the components of the subsidy can be weighted by the total value of the exports of each of the items of exports under consideration. The main classification of exports for the purposes of this calculation has been in terms of the sectoral breakdown given in the input-output table. A number of assumptions are made in the case of the export performance licensing in order to adjust the differential export performance licensing for the individual industries in terms of the broad industrial classification contained in the input-output table. Export performance licensing refers to the more narrowly defined commodities than are contained in the industrial classification of the input-output table. Two sets of estimates of time-series of the total subsidy accruing to the manufacturing exports have been made: one estimate is for all the manufacturing exports and the other excludes the cotton and jute textiles. Given the official rate of exchange and the rates of subsidy, the effective exchange rates for the two groups of manufactured exports are estimated. In addition the effective rates of exchange for the jute textiles, cotton yarn and cotton cloth are separately estimated; these items are not entitled to the export performance licensing and their import components are negligible so that the subsidy originating from the export bonus scheme has been used to derive the effective exchange rate for them. To the extent that the indirect taxes on the output and on the domestic inputs have been excluded from the estimation of the effective exchange rates for these commodities, the effective rates are underestimated.

II

Measurement of Effects on Exports of the Variations
in the Effective Exchange Rate

The effects of the variations in the exchange rate on the export and import prices of a country and through them on the exports, imports, and balance of payments are part of the standard literature. The scope of this paper is, however, more modest and limited; it seeks to identify and measure the effects on the exports. A change in the effective exchange rate either by devaluation or by a system of indirect subsidies increases the receipts in local currency per unit of exports. This enables the exporter to reduce export price excepting in the case of a perfectly elastic export demand. If there are no imperfections in the world market and if the country's exports constitute a very small proportion of world trade, highly elastic export demand is the likely consequence. If the market is perfectly elastic, a particular country cannot affect the world price and the exporter profits per unit of export in domestic currency go up in proportion to the rise in the effective exchange rate. Under these circumstances the exporter does not pass on any part of his increased receipts per unit export sales to the foreign customers. The excess of domestic price over export prices accrues wholly to the exporter as a subsidy and enables the exporter to cover the excess of his marginal cost over the world price, if prior to the subsidy his costs exceed world price. If the world demand is not perfectly elastic the exporter reduces his export price and thus increases exports by increasing his competitiveness in relation to the rival suppliers in the export market. In an imperfectly competitive world market for the manufactured exports, instead of reducing the export price the exporter may decide to spend a part of an

increase in the receipts per unit of exports on the promotion of sales abroad such as publicity, trade contacts, and visits abroad, etc., or combine a relatively small price reduction with an increase in the sales effort. This is specially important when the new manufactured exports make an initial entry into the export market, in the face of the established competitors in world trade and in the presence of the foreign consumers' preference for the well-known trade marks and brand names.

Moreover, to the extent that the exporter does not pass on the entire increase in receipts to the foreign customers the profitability of exports in relation to the sales in the domestic market increases, and the exports expand as a result of an increase in the domestic production and/or a diversion of sales from the domestic market. If the exports constitute a considerable proportion of the domestic output, the elasticity of export supply mainly depends on an increase in total production unless the domestic demand is highly elastic. In case exports constitute a small fraction of the total supply, the elasticity of export supply is likely to be high. Thus it is well-known that the actual increase in exports is a function not only of the response of foreign demand, either to the variations in the export price or to an increase in expenditure on sales promotion but also the response of the domestic supply and demand. The influence of export supply, which is the joint-function of domestic supply and demand, needs to be incorporated in addition to the influence of variations in the effective exchange rate in an attempt to explain the changes in exports. While a rise in the effective exchange rate, consequent on the provision of export subsidies, increases the gross money earnings from exports, increase in the net earnings or profits from export sales depends upon what happens to the opportunity costs of exports including the alternative of selling at home. A rise

in the domestic price of exportables may occur due to a rise in the domestic costs either because supply can be increased only at an increasing cost owing to the diseconomies of scale and/or owing to the higher costs of the marginal producers or a rise in the factor prices, such as wages and the prices of the domestic or the imported raw materials. In a situation of foreign exchange stringency and the quantitative restrictions on imports, the supply of exports may be limited by a shortage of the imported inputs. Alternatively the domestic price of exportables may rise as a result of inelasticity of domestic demand in the face of less than perfectly elastic supply. The combined impact of all the factors associated with either an upward adverse shift in the aggregate domestic supply function or with a rising supply curve of exports results in a rise in the opportunity cost of exports and hence the domestic price of exports, a rise which reduces the real gain from an improvement in the effective rate of exchange for exports.

The model of the demand and supply functions for exports and their relationships with the variations in the effective exchange rate which underlie the attempts at statistical estimation in this paper may be elaborated as follows: Let

D_x = Foreign demand for exports

S_x = Supply of exports

P_x^f = Price of exports in foreign currency

S = Aggregate domestic supply of exportables

D = Domestic demand for exportables

P_x^d = Domestic price of exports in domestic currency

E = Effective rate of exchange, i.e., the amount of local currency per unit of foreign currency

P_H = Index of domestic whole sale prices or of wages or of cost of living, which affect the domestic cost of production of the exportables

P_w^f = World price of competing exports

D_w = Index of world demand which may be represented by world income or volume of world trade

Y = Domestic income of the exporting country

The following relationships are postulated:

$$D_x = f(D_w, \frac{P_x^f}{P_w^f}) \quad (1)$$

$$S_x = D_x \quad (2)$$

$$S_x = D - S \quad (3)$$

$$S = f(P_x^d, P_H) \quad (4)$$

$$D = f(Y) \quad (5)$$

$$P_x^f = \frac{1}{E} P_x^d \quad (6)$$

The endogenous variables are D_x , S_x , P_x^f , D , S , P_x^d , i.e., six in number and the exogenous variables are D_w , P_w^f , P_H and Y . No attempt is made here to estimate supply and demand functions for exports or the domestic demand and supply functions of the exportables; the purpose of this paper is a much more modest one to examine how the exports from Pakistan have responded historically to the variations in the exchange rate over time. Therefore, a simplification of the above system of relationships can be attempted as follows:

Let X be defined as the actual exports, which are the results of the inter-relations between the forces of demand and of supply, at home and abroad; X is

equal to S_x which is in equilibrium and export equal to D_x . Thus a simplified estimating equation can be suggested as under:

$$X = f(E, P_H, D_w, P_w^f, Y) \quad (7)$$

The various approximations to and variations of the above estimating equation have been attempted in order to meet the requirements of the available data.

Moreover, in view of the short time series the number of explanatory variables has to be kept down. One variation of the above equation is $X=f(E, P_x^d, D_w, P_w^f)$ which can also be written as $x=f(\frac{E}{P_x^d}, D_w, P_w^f)$ since $P_x^d=f(S,D)$ and, from equations

(4) and (5), $P_x^d=f(P_H, Y)$. Alternatively, $X=f(E, S, \text{ or } D, D_w, P_w^f)$.

In the following pages, the actual estimating equations have not used all the variables listed above in the absence of data, especially data on P_w^f . Moreover, all the variables, even when data are available have not been used in any single equation since they lead to wide variances of the estimates of coefficients in view of the shortness of the time series. However, the variables such as E and $\frac{E}{P_x^d}$ have been tried out with one year lag and time has also been tried out as an additional explanatory variable.

Some Quantitative Results

The statistical analysis of the response of the exports to the variations in exchange rate is based on the time series on the variables. In a number of cases data relating to the determining variables are not available and have to be approximated indirectly by other variables. The effective exchange rate, as estimated, is not exhaustive; it does not include all the export promotion measures and it excludes, for example, the effects of the concessions on the freight rates for the shipment of the exports to the ports and the effects of rebates on income tax which were introduced in 1962-63. The most important component of the export promotion measure is the export bonus scheme, and the export performance licensing which was introduced in 1963. The supplementary export promotion measures such as the various fiscal concessions became really effective from 1963 onwards in terms of the effective enforcement and coverage. As is indicated in the appendix the calculation of the amount of export subsidy emanating from the export performance licensing involves some difficult problems of approximation and aggregation. Thus an attempt has been made to introduce a dummy variable to represent the effect of the export promotion measures which are not included in the estimation of the effective exchange rate. The dummy variable is assigned the value of 0 up to 1961/62 and 1 from 1962/63. It has been used as an additional explanatory variable alternatively (a) when the effective exchange rate includes the effect of only the export bonus scheme and (b) when it includes the export bonus scheme as well as the other export promotion measures on which data are available, but still leaves out a few minor fiscal

and other concessions, including the administrative fixation of export quotas in the later years. In the case of (b), the purpose of the introduction of the dummy variable is to quantify the effects of the minor concessions.

As stated earlier, two groups of commodities have been the main recipients of export incentive schemes; they are the minor primary exports and the manufactured goods, the later more than the former in terms of the wide variety of incentives and concessions which are granted to them. In the following exercises it is the response of these commodities to the export incentive schemes which are sought to be quantified. The estimating equations relating to the total manufacturing exports yield the following results.

$$(1) \quad \text{Log } M = 25.42 + 4.98 \text{ Log } \left(\frac{E_B}{P_d} \right) + 0.76 \text{ Log } D$$

(0.57) (0.26)

$$R^2 = 0.92$$

$$D-W = 1.14$$

$$(2) \quad \text{Log } M = 1.68 + 2.66 \text{ Log } (E_B) + 1.06 \text{ Log } O$$

(0.45) (0.19)

$$R^2 = 0.99$$

$$D-W = 1.36$$

$$(3) \quad \text{Log } M = 17.49 + 2.68 \text{ Log } \left(\frac{E_B}{P_d} \right) + 0.18t$$

(0.40) (0.02)

$$R^2 = 0.98$$

$$D-W = 0.93$$

$$(4) \quad \text{Log } M = 23.41 + 5.04 \text{ Log } \left(\frac{E_B}{P_d} \right) + 0.91 \text{ Log } D$$

(0.46) $\left(\frac{E_B}{P_d} \right)_{-1}$ (0.23)

$$R^2 = 0.94$$

$$D-W = 1.42$$

$$(5) \quad \text{Log } M = 28.35 + 6.06 \text{ Log } \left(\frac{E_B}{P_H} \right) + 0.75 \text{ Log } D$$

(1.00) (0.36)

$$R^2 = 0.86$$

$$D-W = 1.29$$

$$(6) \quad \text{Log } \left(\frac{M}{P_d} \right) = 20.59 + 4.89 \text{ Log } \left(\frac{E_B}{P_d} \right) + 0.66 \text{ Log } D$$

(0.53) (0.24)

$$R^2 = 0.93$$

$$D-W = 1.15$$

and other concessions, including the administrative fixation of export quotas in the later years. In the case of (b), the purpose of the introduction of the dummy variable is to quantify the effects of the minor concessions.

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(0.53) (0.24)

$$R^2 = 0.93$$

$$D-W = 1.15$$

- (7) $\text{Log } M = 11.20 + 2.30 \text{ Log } \left(\frac{E_B}{P_d}\right) + 1.41 \text{ Log } O$
(0.48) (0.17)
 $R^2 = 0.98$
 $D-W = 1.00$
- (8) $\text{Log } M = 8.78 + 1.73 \text{ Log } \left(\frac{E}{P_d}\right) + 1.83 \text{ Log } T_w$
(0.47) (0.30)
 $R^2 = .96$
 $D-W = 1.13$
- (9) $\text{Log } M = 15.94 + 2.18 \text{ Log } \left(\frac{E}{P_d}\right) + 0.16t$
(0.58) (0.03)
 $R^2 = 0.96$
 $D-W = 0.70$
- (10) $\text{Log } M = 2.38 + 1.91 \text{ Log } E + 1.14 \text{ Log } O$
(0.58) (0.31)
 $R^2 = 0.97$
 $D-W = 0.92$
- (11) $\text{Log } M = 23.91 + 3.01 \text{ Log } \left(\frac{E}{P_d}\right) + 1.46 \text{ Log } \left(\frac{E}{P_d}\right) - 1$
(0.88) (0.82)
 $R^2 = 0.91$
 $D-W = 0.69$
- (12) $\text{Log } M = 6.14 + 1.11 \text{ Log } \left(\frac{E}{P_H}\right) + 1.71 \text{ Log } O$
(0.98) (0.36)
 $R^2 = 0.95$
 $D-W = 0.97$
- (13) $\text{Log } \left(\frac{M}{P_d}\right) = 6.38 + 1.95 \text{ Log } \left(\frac{E}{P_d}\right) + 1.21 \text{ Log } O$
(0.56) (0.26)
 $R^2 = 0.97$
 $D-W = 0.89$
- (14) $\text{Log } M = 23.46 + 4.37 \text{ Log } \left(\frac{E}{P_d}\right) + 0.20 \text{ Log } V$
(0.54) (0.32)
 $R^2 = 0.91$
 $D-W = 0.94$
- (15) $\text{Log } M = 10.09 + 1.86 \text{ Log } \left(\frac{E}{P_d}\right) + 1.34 \text{ Log } O$
(0.57) (0.26)
 $R^2 = 0.97$
 $D-W = 0.89$

In the above equations E is the effective rate of exchange including the effects of the majority of the export promotion measures, E_B is the effective rate including the effects of the export bonus scheme only, P_d is the domestic price index of manufactures, P_H is the domestic wholesale price index, O is the index of domestic production of the manufactured goods and T_w is the index of world trade in manufactures. V is the dummy variable; as is expected the dummy variable is a significant determining variable when E_B is used as the effective exchange rate, but then with E as the effective exchange rate, V as an explanatory variable does not yield significant coefficients. However, the time trend, as can additional explanatory variable along with E_B yields better results than the dummy variable. The domestic output and the domestic price are used as factors representing the effects of the domestic supply and demand factors. The best equation seems to be one with E_B and O as the explanatory variables; similarly the equation with E and O yield equally satisfactory results. The lack of significant differences in the results in terms of the magnitude of the elasticity coefficient or the efficiency or the variance of the statistical relationships, whether E_B or E is used as an explanatory variable (equations 3 and 9) seems to be due to the fact that the manufactured exports are dominated by the exports of the jute and cotton textiles, for which the export incentive schemes other than bonus schemes are of very marginal significance. The equations which used in addition to V , and E_B other explanatory variables such as O , t , and T_w in the same equation, one at a time, yield unreliable and statistically insignificant results. The best equations in terms of the magnitude of the coefficient of determination is, therefore, one which uses as the explanatory variables E_B and domestic output. However, this equation

(2) does not take into account the autonomous increase in world trade in manufactures which exercises an upward pull on the demand for and hence on the actual exports sold by Pakistan in the world market. The equation (8) incorporates the effects of exchange rate variation, the changes in the demand and supply situations at home, which are reflected in the movements of P_d , and the shifts in the world demand function for the manufactured exports. The world trade in the manufactured goods has been enjoying high rates of growth in this period. However, Pakistan's exports of the manufactured exports increased at a much higher rate than the total trade in the manufactured exports.

The use alternatively of the effective exchange E or E/B or the real effective exchange rate, i.e., E/P_d or E_B/P_d , i.e., the effective exchange rate deflated by the domestic price index of the manufactured goods, does not cause any significant difference in the results in terms of the responsiveness of the exports because the domestic price of the manufactured goods did not undergo any significant increase so as to offset the improvement with effective exchange rate. The effective and the real effective exchange rate moved in the same direction and at rates not very different from each other. The various alternative estimating equations (especially equations 7, 8, 9 and 13), however, support the conclusion that the manufactured exports of Pakistan have responded appreciably to the increase in the effective exchange rate with an elasticity between 2.0 and 2.5; the influence of domestic production and world trade were also significant but are less than favourable movements in the exchange rate. Given the favourable movements in the exchange rate and the relative stability of the domestic price level, consequent on a rapid increase in the domestic

industrial production, the elasticity of response of the exports to the increase in world trade was about 1.8 during the period under review. The equation of (8) seems to indicate that the exchange rate policy coupled with supply elasticity, was about equally important as the influence of expanding world trade.

Attempts to introduce more than two variables in the equations estimating the response of the total manufactured exports do not yield statistically significant results. The equations which include in addition to the various combinations of E or E_B or E/P_d or E_B/P_d and O or T_w , time trend (t) or O and T_w together in the same equation yield unsatisfactory results, partly because of multicollinearity. Similarly, the equations which include both E_B and V and at the same time include any one of the other two variables (O or T_w) as additional explanatory factors, yield unreliable results.

Among the manufactured exports, a distinction is made between the jute textiles, cotton textiles and the rest of the manufactured exports (called miscellaneous manufactured exports) and an attempt is made to estimate their separate responses to the changes in the exchange rate variations. To take the miscellaneous manufactured exports first, the estimation of their response to the variations in the exchange rate was partly handicapped by the absence of the separate domestic price data relating to the miscellaneous manufactures as well as by the absence of a separate index of the domestic production of miscellaneous manufactures. The estimating equations for the miscellaneous manufactured exports which seem to yield reasonably satisfactory results are as follows:

$$(1) \quad \text{Log } M_1 = 13.80 + 2.02 \text{ Log } \left(\frac{E}{P_d} \right) + 1.66 D$$

(0.36) (0.24)

$$R^2 = 0.91$$

$$D-W = 1.37$$

$$(2) \quad \text{Log } M_1 = 13.30 + 1.51 \text{ Log } \left(\frac{E}{P_d} \right) + 1.31 D$$

(0.38) (0.31)

$$R^2 = 0.88$$

$$D-W = 1.53$$

$$(3) \quad \text{Log } M_1 = 13.83 + 1.72 \text{ Log } \left(\frac{E}{P_H} \right) + 1.27 D$$

(0.48) (0.34)

$$R^2 = .87$$

$$D-W = 1.48$$

$$(4) \quad \text{Log } M_1 = 14.42 + 1.90 \text{ Log } \left(\frac{E}{P_H} \right) + 1.59 D$$

(0.61) (0.31)

$$R^2 = 0.85$$

$$D-W = 1.40$$

$$(5) \quad \text{Log } M_1 = -1.39 + 0.49 \text{ Log } \left(\frac{E}{P_d} \right) + 3.09 \text{ Log } T_w$$

(0.26) (0.25)

$$R^2 = 0.98$$

$$D-W = 1.59$$

Where M_1 is the dollar value of miscellaneous manufactured exports and the other variables have the same meaning as before, but that they relate to the miscellaneous exports, excepting in the case of P_d , P_H , and T_w which relate to the total manufactured goods. Though the index of domestic industrial production or the index of world trade does not relate to the miscellaneous manufactured exports of Pakistan, it is assumed that the above indices, if available for the commodities included in the miscellaneous manufactured exports, are highly correlated with the overall index of industrial production or that of the world trade in manufactures.

The introduction alternately of t (time trend) or T_w (index of world trade) does not improve results and in fact yields less reliable results. Neither does the use of the undeflated effective exchange rate, in view of the fact that P_d or P_H does not strictly relate to the miscellaneous exports, yield satisfactory

results. The replacement of D, i.e., dummy variable, by O, the index of domestic industrial production does not improve results. The role of bilateral trade agreements, export quotas and exchange of trade measures play an important role in the expansion of miscellaneous exports. The high coefficient of the dummy variable is indicative of the importance of these factors, since these institutional and administrative measures were intensified since 1962-63. As is seen above from the equations (1)-(4), the responsiveness of the miscellaneous manufactured exports to the variations in the effective exchange rate represented by both E or E_B as well as the dummy variable is high. The influence of the miscellaneous incentive schemes represented by D (dummy variable) is more important (as compared to the effect of the export bonus and export performance licensing), than in the case of the manufactured exports. That the importance of the supplementary measures excluding the import entitlements and on fiscal concessions which are included in E is greater than in the case of the manufactured exports as a whole is indicated by the relatively high and significant coefficient for D. The coefficient for D is not only high in relation to E or E_B but also in relation to its coefficient in the equations for the manufactured exports as a whole. The new manufactures face the initial high costs of establishing contacts and of sales promotion in the export market. These are the commodities in which quality and consumer's preference are important as price. The newer manufacturers are still struggling with the problems of quality control and standardization. They have to make special efforts to introduce new commodities or enter new markets in the face of competition from and the consumer's preference for the products of the established exports in the world trade. Moreover, they also have a higher cost differential vis-a-vis

the world prices than the jute and cotton textiles. The high costs and the obstacles in the way of selling new manufactures have been partly compensated by a higher export bonus rate for them.

Thus the export demand function for the newer manufactured exports is likely to be less price elastic, in view of market imperfections, product differentiation and consumer's preference, than that of the more standardized jute and cotton textiles of the kind which Pakistan has been exporting in the recent years. Moreover more than in the case of the latter industries, the selling or marketing costs are important for the newer manufacturers, especially when export sale's function is such that the marginal costs including selling costs go up sharply as the export sales are to be substantially increased.

The equations have also been re-estimated with three explanatory variables, i.e., real effective exchange rate, dummy variable, and time trend or an index of world trade or of the domestic industrial production. The least unsatisfactory of these equations using three explanatory variables is the following.¹

$$\text{Log } M_1 = -1.11 + 0.69 \text{ Log } E + 0.36 D + 2.34 \text{ Log } T_w$$

(0.29) (0.22) (0.51)

$$R^2 = .98$$
$$D-W = 1.51$$

In view of the relatively unrepresentative character of the index of world trade for the purposes at hand, the significant regression coefficient for T_w may be taken with some reservation. However, the coefficients relating to the exchange rate, including the dummy variable, are important in terms of magnitude as well

¹The equations have been re-estimated with the variables expressed in terms of the first differences of the variables with no improvement.

as significant statistically

Among the major manufactured exports, the exports of jute goods have shown strong response to the variations in the exchange rate as shown below:

- (1) $\text{Log } J = 31.35 + 7.07 \text{ Log } \left(\frac{E}{P_d}\right)$
(1.90)
 $R^2 = 0.50$
 $D-W = 0.65$
- (2) $\text{Log } J = 20.41 + 4.23 \text{ Log } \left(\frac{E}{P_d}\right) + 0.31t$
(1.04) (0.05)
 $R^2 = 0.88$
 $D-W = 1.23$
- (3) $\text{Log } J = -29.57 + 5.12 \text{ Log } \left(\frac{E}{P_d}\right) + 7.13 \text{ Log } T_w$
(1.53) (2.37)
 $R^2 = 0.84$
 $D-W = 1.41$
- (4) $\text{Log } J/T_w = 25.23 + 7.70 \text{ Log } \left(\frac{E}{P_d}\right)$
(1.41)
 $R^2 = 0.71$
 $D-W = 1.38$

The elasticity of response of the exports of the jute goods to the variations in exchange rate ranges between 4 and 5 as is seen from the two best equations, (1) and (3) estimated above. As is also evident from the equation (4), the share of Pakistan in the world trade in the jute manufactures is highly responsive to the changes in the real effective exchange rate. [2] The strong sensitivity of the exports of the jute manufactures to the changes in the exchange rate holds true, irrespective of whether the effective exchange rate or the real effective exchange rate is used as the explanatory variable as is seen below.

$$\text{Log } (J/T_w) = -8.976 + 7.02 \text{ Log } (E)$$

(1.26)

$$R^2 = .72$$
$$D-W = -0.93$$

The equations which use in addition to the effective exchange rate some index of domestic demand such as G.N.P. in current prices or an index of domestic supply such as the volume of domestic production, does not yield satisfactory results. The domestic price of the jute goods, appears to be the best index of the influence of the forces of domestic supply and demand on the exports of the jute manufactures. The high price elasticity of export demand for jute goods is also corroborated by a recent study of the elasticity of substitution between the competing sources, i.e., Pakistan's exports as against the exports of the competing suppliers, of the imports of the jute bags in the U.K. market, which estimates the elasticity of substitution in response to changes in the relative prices at -13.24.¹

The exports of the cotton textiles, both cotton yarn and cotton cloth, are strongly responsive to changes in the effective exchange rate in the same way as the jute textiles as shown below²

$$\begin{aligned} \text{Log } C_Y &= -16.56 + 5.46 \text{ Log } \left(\frac{E_B}{P_d} \right) \\ &\quad (1.44) \\ R^2 &= 0.59 \\ \text{D-W} &= 2.43 \end{aligned}$$

$$\begin{aligned} \text{Log } C_Y &= 2.39 + 5.11 \text{ Log } (E_B) \\ &\quad (1.70) \\ R^2 &= 0.48 \\ \text{D-W} &= 1.60 \end{aligned}$$

¹The combined exports of India and Pakistan is taken as the index of world trade. This is because Pakistan jute manufactures, of which more than 2/3rds is sacking, competes mainly with the Indian exports and not with the specialized jute products of the European jute industry.

²The time series start from 1954-55.

Where C_Y is the value in dollars of the exports of cotton yarn and E_B and P_d have the same meaning as before. Since other export incentives do not either apply to the cotton yarn or are relatively insignificant in so far as the exports of cotton yarn are concerned, the effective exchange rate represents the effects of the export bonus scheme only. The high elasticity of exports of cotton yarn holds true both in terms of quantity as well as the value of the exports of cotton yarn. The introduction of the additional explanatory variables in the above equations, such as the volume of world trade in cotton yarn or the time trend does not yield reliable results. However, an equation which relates the share of Pakistan's exports of cotton yarn in the volume of world trade in yarn to the real effective exchange rate is found to be highly significant as is given below.

$$\begin{aligned} \text{Log } \left(\frac{C_{Yq}}{T_{Wq}} \right) &= 8.80 + 6.89 \text{ Log } \left(\frac{E_B}{P_d} \right) \\ &\quad (1.75) \\ R^2 &= 0.66 \\ D-W &= 1.27 \end{aligned}$$

Pakistan has emerged in the last decade or so as an important exporter of the cotton yarn in the world in close competition with Hong Kong and Egypt. Moreover, the proportion of exports to the production of cotton yarn has been highly sensitive to the changes in the real effective exchange rate as shown below.

$$\begin{aligned} \text{Log } \left(\frac{C_{Yq}}{O} \right) &= -3.14 + 10.49 \text{ Log } \left(\frac{E_B}{P_d} \right) - 0.27t \\ &\quad (2.94) \quad (0.10) \\ R^2 &= 0.56 \\ D-W &= 2.39 \end{aligned}$$

where O is the volume of output of cotton yarn in Pakistan. It is important to remember that during the last decade there have been frequent changes in the effective rate of exchange for cotton yarn. The cotton yarn was alternately

put on and off the export bonus scheme, sometimes as a reaction against a considerable expansion of exports resulting in its domestic scarcity, especially for the domestic handloom industry.

The sensitivity of the exports of cotton cloth to the variations in the effective exchange rate is as high as that in the case of cotton yarn.

- (1) $\text{Log } C_H = 4.49 + 4.67 \text{ Log } \left(\frac{E_B}{P_d}\right)$
(0.90)
 $R^2 = 0.73$
 $D-W = 1.46$
- (2) $\text{Log } C_H = -2.94 + 7.56 \text{ Log } E_B$
(0.87)
 $R^2 = 0.88$
 $D-W = 2.73$
- (3) $\text{Log } C_H = 3.62 + 2.40 \text{ Log } \left(\frac{E_B}{P_d}\right) + 0.23t$
(1.08) (0.08)
 $R^2 = 0.90$
 $D-W = 1.86$

Where C_H is the dollar value of exports of cotton cloth, and other variables are defined as before. The equations which include in addition to the above variables, the volume of world trade in cotton cloth as an index of world demand or those which include E_B and an index of the domestic demand such as Pakistan's GNP or an index of the domestic supply such as the domestic output of cotton cloth do not yield satisfactory results.

The expansion of Pakistan's exports of cotton cloth has taken place mainly as a result of a rise in the share of Pakistan in the world trade in cotton cloth. The high sensitivity of Pakistan's share in the world trade for cotton cloth to the changes in the real effective exchange rate is shown below.

$$\text{Log } \left(\frac{C_{Hq}}{T_w} \right) = 8.21 + 4.30 \text{ Log } \left(\frac{E_B}{P_d} \right)$$

(0.91)

$$R^2 = 0.79$$

$$D-W = 2.58$$

Where C_{Hq} is the quantity of exports of cotton cloth from Pakistan and T_w is the volume of world trade in cotton cloth. The increase in Pakistan's exports of cotton cloth is not so much in response to increase in world trade in cotton cloth as is due to Pakistan's increasing share in the world trade. As stated earlier, this is true also of the export of cotton yarn as is seen below.

$$(1) \quad \text{Log } C_{Yq} = 48.29 + 9.37 \text{ Log } \left(\frac{E_B}{P_d} \right) - 1.95 \text{ Log } T_w$$

(2.06) (1.63)

$$R^2 = 0.79$$

$$D-W = 2.27$$

$$(2) \quad \text{Log } C_{Hq} = -105.88 + 1.97 \text{ Log } \left(\frac{E_B}{P_d} \right) + 8.47 \text{ Log } T_w$$

(2.11) (6.14)

$$R^2 = 0.86$$

$$D-W = 2.80$$

$$(3) \quad \text{Log } \left(\frac{C_{Yq}}{T_w} \right) = 23.77 + 7.99 \text{ Log } \left(\frac{E_B}{P_d} \right) - 1.08 \text{ Log } O$$

(2.71) (1.97)

$$R^2 = 0.67$$

$$D-W = 1.59$$

$$(4) \quad \text{Log } \left(\frac{C_{Hq}}{T_w} \right) = 32.18 + 3.55 \text{ Log } \left(\frac{E_B}{P_d} \right) + 1.86 \text{ Log } O$$

(1.43) (2.66)

$$R^2 = 0.81$$

$$D-W = 2.56$$

As seen from the equation (1), the coefficient of T_w as an additional explanatory variable is unreliable, where as the equation (3) indicates that the share of Pakistan in world trade for cotton yarn is highly sensitive to the real effective exchange rate. However, the insignificance of the domestic output, as an additional explanatory variable is due to the fact that the influence of O

on the exportable surplus is already accounted for by the fact that real effective exchange rate which includes the domestic price of cotton yarn and includes ipso facto the effects of the domestic supply. The high sensitivity of Pakistan's share in the world market to the variations in the real effective exchange rate as against the effective exchange rate only implies that the effective rate of exchange as well as the movements in the domestic price level which may be caused by an inelastic domestic supply are important factors in explaining the amount of exportable surplus of cotton yarn.

The high responsiveness of export to the effective exchange rate is due to a great extent to the diversion of sales from the domestic to export market rather than to an increase in the aggregate supply. The proportion of export in the volume of domestic production is highly responsive to changes in the effective exchange rate as is seen below.

$$\text{Log } C_{Hq} = -15.7 + 7.40 \text{ Log } E_B + 0.009t$$

(2.42) (0.115)

$$R^2 = 0.88$$

$$D-W = 2.80$$

The variations and growth in world trade do not seem to have any significant influence on the growth of exports of cotton yarn or cotton cloth. The fact that world trade in these specific items of cotton textiles was growing slowly in this period does not have any significant influence on Pakistan's export performance in these items, because she increased considerably her share of the world market. Over the period as a whole the domestic supply was not a factor on the determination of Pakistan's exports; partly because output was expanding and partly because the share of the exports in the total output was small, there was a considerable elasticity of export supply in response to an increase in the relative profitability of the export sales vis a vis the

domestic sales. The equations which attempt to explain the share of exports in the world trade by means of both the effective exchange rate and the domestic output do not yield reliable results in the case of either of the items of exports, i.e., cotton yarn and cotton cloth.

The minor agricultural exports in Pakistan have been the recipient of the most important export incentive scheme, i.e., the export bonus scheme as they have enjoyed considerable expansion in recent years. Even though the high rate of growth of the minor primary exports is partly due to their initial low absolute level, the minor primary exports have shown considerable responsiveness to the variations in exchange rate as shown below.

$$(1) \quad \text{Log } A_M = 4.70 + 1.71 \text{ Log } \left(\frac{E}{P_d} \right) + 0.07t$$

(0.90) (0.03)

$$R^2 = 0.55$$

$$D-W = 0.84$$

$$(2) \quad \text{Log } A_m = 3.13 + 1.64 \text{ Log } \left(\frac{E}{P_d} \right) + 1.20 \text{ Log } Y_w$$

(0.87) (0.49)

$$R^2 = 0.58$$

$$D-W = .88$$

$$(3) \quad \text{Log } A_m = 3.42 + 1.83 \text{ Log } \left(\frac{E}{P_d} \right) + 1.27 \text{ Log } T_w$$

(0.92) (0.65)

$$R^2 = 0.52$$

$$D-W = 0.84$$

$$(4) \quad \text{Log } A_{mq} = -6.73 + 0.95 \text{ Log } (E) + 2.11 \text{ Log } O$$

(0.39) (0.85)

$$R^2 = 0.71$$

$$D-W = 1.47$$

$$(5) \quad \text{Log } A_{mq} = -10.15 + 3.18 \text{ Log } O$$

(0.88)

$$R^2 = 0.54$$

$$D-W = 1.39$$

A_m is the minor agricultural exports defined as the total agricultural exports excluding jute, cotton, hides and skins, and tea. E and P_d are respectively

the effective exchange rate and the index of the domestic price of the minor agricultural exports, Y_w is the index of industrial production in the main trading partners of Pakistan, T_w is the index of world trade in food and raw materials and O is the index of domestic production of the minor agricultural exports. The index of world trade relates to a much broader category of exports than are represented by the minor agricultural exports of Pakistan and hence this explanatory variable is subject to an error, being a very rough approximation. A_{mq} is the volume of exports; it is the value of exports A_m deflated by the domestic price index (P_d). The elasticity of response of the value of minor agricultural exports to the variations in the real effective exchange is between 1.50 and 2.00 as it appears from the equations (1) to (3). The response of the quantity of exports to the variations in the index of domestic production is substantial as is seen from the equations (4) and (5). The high elasticity with respect to the real effective exchange rate, which includes the effects of the availability of exportable surplus via the domestic prices of the exportables, as in equations (1) to (3), and the lower elasticity with respect to the variations in the effective exchange rate only, corroborates the role of an increase in the domestic production as a necessary complement to the role of exchange rate in stimulating exports.

Major Agricultural Exports

The major agricultural exports in Pakistan have been kept outside the purview of the export promotion measures. In fact, in the fifties there were considerable taxes on the export of such major exports as jute, cotton and hides and skins, and tea. However, there has been over the years a reduction in the export taxes so that the effective exchange rate has slowly improved and approached the official rate of exchange. The consequential improvements in the effective exchange rate have been relatively small. The rate of annual exchange in the effective rate of exchange through reductions in export taxes has not been important enough to provide a time series with sufficient degree of variations in the effective rate and in exports for any analysis of their inter-relationships. The assumption behind the imposition of the export taxes on the major agricultural exports has been the inelasticity of export demand. This assumption was abandoned in the early fifties in the case of hides and skins and wool. In fact in 1968 an export bonus of 20 percent is allowed in the case of raw wool. The export tax on cotton and tea has been maintained during the 1960's though at a reduced rate, even though it has been increasingly recognized that the demand for the export of a single country, like Pakistan which is a marginal supplier in the world market, is elastic while the elasticity of aggregate demand for the world exports of a commodity like cotton and tea may be low. The assurance of a cheap supply to the domestic manufacturing industry, in view of its assumed inelasticity of supply at least in the short run, as in the case of raw cotton, has been an important consideration for the continuation of export taxes on the major agricultural commodities; two other related considerations have been the prevention of a considerable rise in the domestic price, in view of a fast increasing domestic consumption and a stagnant domestic supply as in the case of tea, and a need of revenues for the government.

However, the export tax on cotton which has amounted to 2.5 percent ad valorem is abolished in 1967.

While in view of Pakistan's major share in the world market for raw jute the export demand for raw jute is likely to be inelastic, the demand for raw jute is price elastic vis a vis the synthetic substitutes such as paper and synthetic fibres; moreover, the continuation of an export tax kept up the price, and encouraged the entry into the world market of marginal producers like Thailand and African countries. These considerations eventually have led to the abolition of export duty on jute in November 1967, when the export duty on raw jute has amounted to 4 percent ad valorem. [3] In recent years the increase in the production of raw jute in Africa and Latin America has reduced Pakistan's share in the total world production, though in terms of world trade in raw jute she is still a predominant supplier because most of the newly producing countries do so for import substitution or for meeting the increased demand for packing materials at home. Recent advances in the agronomic research in Africa and Latin America have increased the prospects of low cost production of raw jute in many countries of the world and this threatens a contraction of world trade and consequently exports from Pakistan. It is possible that a lowering of the export price of raw jute would reduce the extent and delay the process of import substitution in the newly producing countries. Even though the cost of producing raw jute in African countries is higher than that of the export price of the Pakistani raw jute, the differential is not adequate to induce the African countries to surrender the associated benefits of the raw jute production and the jute goods industry based on the home produced raw jute.

The recent studies of the plans, prospects and policies regarding the increased production of raw jute and jute goods in the African countries predict that there will be a net decline in the imports of jute manufactures in Africa from the rest of the world and under the present cost-price relationship between the home and imported raw jute, the proportion of the imported raw jute in the total use of raw jute will suffer a considerable decline (from about 80 percent to 45 percent).[4] This analysis strengthens the case for a more favourable export price policy for jute. The need for and desirability of a lower price is also suggested by the recent advances made by the new synthetic material, i.e., polypropylene, which is considered to be a complete substitute for raw jute in its two principal end uses, i.e., heavy duty sacking and bags and carpet backing, in the developed countries of the world. Until now in the carpet backing outlet there has been no serious competitor to jute. The price of the new synthetic substitute is lower than that of the jute products and promises to be lower still in the future owing to technological advances and **decline in the raw material costs.** It is expected that about 40 percent fall in the price of raw jute and about 30 to 40 percent fall in the price of burlap or jute cloth is necessary in order for the jute products to successfully withstand the competition of the synthetic fibre in these two end uses. The total expected demand in 1975 in the developed countries is about 1 million tons out of which it is in respect of about 650 thousand tons that the competition with the synthetic materials is the keenest so that if this market is lost, the raw jute can only be expected to **retain** a market for about 350 thousand tons by 1975 in the developed world, i.e. 35 percent of the market for the materials for packing and carpet backing. [5] Whatever fragmentary evidence is available

on the elasticity of export demand for Pakistan's agricultural exports suggests that it is high in response to changes in price. The elasticity of substitution between Pakistan's exports of skins and of wool and the exports from the competing sources in response to changes in relative prices in the major markets for Pakistan's skins and wool appears to be as high as -2.60 and -17.13 respectively.

[6] The most conservative estimate of elasticity of export demand for fine rice puts it at -3.14. [7] The equations relating the share of Pakistan's exports in world exports (quantity) to changes in Pakistan's export price vis-a-vis some index of the world price yields the following results in the case of cotton and wool.

$$\text{Log } \left(\frac{C}{T_w} \right) = 3.60 - 2.20 \text{ Log } \left(\frac{P_x}{P_w} \right)$$

(1.51)

$$R^2 = 0.16$$

Where C_q is the quantity of Pakistan's exports of raw cotton, T_w is the world trade in raw cotton, P_x the export price and P_w is the index of world price.

$$\text{Log } \left(\frac{W}{T_w} \right) = 9.86 - 1.90 \text{ Log } \left(\frac{P_x}{P_w} \right)$$

(1.29)

$$R^2 = 0.17$$

Where W_q is the quantity of exports of wool, T_w is the world trade in wool; P_x and P_w are respectively the export price and the world price. Both the coefficients are greater than one and have the right sign. The fact that Pakistan and the world exports of raw cotton and raw wool are not perfectly homogeneous commodities since Pakistan exports mainly one or two varieties of cotton whereas the figures on world trade cover all the varieties, and the limited reliability of data on the world price have contributed to the lack of

the statistical significance of the elasticity coefficients obtained above.

An attempt to relate the volume of Pakistan's major exports including jute, cotton, hides and skins, tea, wool, fish and rice, (A/P_x) to (a) their prices (P_x) relative to an index of world price (P_w) for the same commodities and (b) an index of world income (Y_w) or an index of volume of world trade in the same commodities (T_w) yields the following results for the years 1953-54 through 1965-66

$$(1) \quad \text{Log} \left(\frac{A}{P_x} \right) = 0.41 - 1.38 \text{ Log} \left(\frac{P_x}{P_w} \right) + 0.14 \text{ Log} Y_w$$

$(0.42) \qquad \qquad \qquad (0.19)$

$$R^2 = 0.57$$
$$D-W = 1.27$$

$$(2) \quad \text{Log} \left(\frac{A}{P_x} \right) = -0.48 - 1.29 \text{ Log} \left(\frac{P_x}{P_w} \right) + 0.33 \text{ Log} T_w$$

$(0.39) \qquad \qquad \qquad (0.77)$

$$R^2 = 0.55$$
$$D-W = 1.34$$

A is the dollar value of exports and P_x is the dollar price index of exports, i.e., rupee price index deflated by an index of variations in the rate of exchange. The coefficients of world income or world trade are not statistically significant. It is noteworthy that the quantum index of world trade in the major agricultural exports, as defined above, registered an increase during the period, 1953/54-1965/66, at the rate of about 0.007 only per annum. In view of the stagnation and consequently very little variation in the index of world trade, the absence of any significant indicator of relationship between world trade and Pakistan's exports in these particular primary commodities is plausible.

It is remarkable that each of the above equations yields elasticity coefficients of exports with respect to relative prices, which are greater than one and significant. The share of Pakistan's exports in the world trade in

other exports, an increase in the domestic supply has often partly offset the adverse effect of an increasing domestic absorption on the exports.

The role of domestic supply and industrial demand in influencing the exportable surplus in the case of a number of the individual agricultural commodities, however, is shown below.

$$(1) \quad \text{Log } C_q = 7.42 - (0.59) \text{ Log } I_{CH} \\ (0.21) \\ R^2 = 0.36$$

$$(2) \quad \text{Log } C_q = 3.57 + 0.91 \text{ Log } \left(\frac{C_o}{I_{CH}} \right) \\ (0.22) \\ R^2 = 0.55$$

$$(3) \quad \text{Log } \left(\frac{C_q}{C_o} \right) = 2.70 - 0.83 \text{ Log } I_{CH} \\ (0.18) \\ R^2 = 0.62$$

C_q = quantity of cotton exports,

C_o = domestic output of cotton,

I_{CH} = index of cloth production

The above equations if estimated with an additional variable $\left(\frac{P_x}{P_w} \right)$ do not yield reliable results.

$$(4) \quad \text{Log } J_q = 6.10 + 0.21 \text{ Log } \left(\frac{J_o}{I_{Jm}} \right) \\ (0.06) \\ R^2 = 0.48$$

$$(5) \quad \text{Log } J_q = 7.35 - 0.16 \text{ Log } I_{Jm} \\ (0.06) \\ R^2 = 0.36$$

$$(6) \quad \text{Log } \left(\frac{J_q}{J_o} \right) = 0.99 - 0.29 \text{ Log } I_{Jm} \\ (0.05) \\ R^2 = 0.72$$

J_q and J_o are the exports and the domestic output of raw jute and I_{Jm} is the domestic output of the jute goods.

$$\text{Log } \left(\frac{W_q}{W_o} \right) = 7.41 + 0.16 \text{ Log } I_p$$

(0.09)

$$R^2 = 0.21$$

W_q and W_o are the exports and the domestic output of raw wool whereas I_p is the index of the total industrial production. The separate index of output of the woolen textiles for the relevant period is not available.

$$\text{Log } \left(\frac{H_q}{H_o} \right) = -1.93 - 0.51 \text{ Log } I_p$$

(0.19)

$$R^2 = 0.39$$

H_q and H_o are quantities of exports and output of hides and skins.

As is evident in all the above equations relating the quantity of exports to the indices of the aggregate domestic supply and domestic demand the latter factors have been important in determining the exportable surplus of the above commodities. Whether the exports are related to the ratio of the domestic output of the raw material to the output of the finished manufactured export or whether the ratio of exports to the domestic output of the raw material is related to an index of the domestic production of the finished manufactures, this conclusion is corroborated. The influence of domestic supply vis-a-vis domestic demand on the export performance is more important in the case of cotton and hides and skins than that of wool and jute, as is seen above from the magnitude of the coefficients.

Concluding Remarks

Pakistan has provided in the last decade or so considerable export incentives to the manufactured exports and the minor primary exports. Both these groups of exports have responded strongly to the export subsidies introduced in the various incentive schemes. The export incentive schemes have been intended partly to offset the adverse effects on the exports of the relative overvaluation of the exchange rate; they have been partly intended to assist the relatively infant manufacturing industry in competing in the export market and to overcome the obstacles in an imperfect world market to the introduction of new manufactures in the face of the consumer's preference for the established products as well as to meet the high marketing costs involved in selling and establishing contacts abroad. The cotton and jute textiles have received proportionately a lower rate of export subsidy than the newer, miscellaneous manufactures on the grounds that the former group of industries are presumably less of an infant industry than the latter and have a longer experience of export marketing since the early fifties. The most important instrument of export promotion has been the export bonus scheme which provides freely saleable or transferable import entitlements as a percentage of export earnings. The supplementary export incentive schemes, including the export performance licensing which is linked to the import component of exports, fiscal concessions and the direct promotion measures via the fixation of the compulsory export quotas, bilateral trade agreements and sales promotion through trade fairs and publicity and the exchange of trade missions, etc., i.e., other efforts in promoting export sales through

non price competition have been more important in the case of the miscellaneous manufactures. These efforts were intensified since 1962-63, subsequent to which the rate of growth of the miscellaneous manufactures has also been accelerated. The comparative price stability which was partly facilitated by non-inflationary monetary and fiscal policy has strengthened the effective exchange rate policy in stimulating exports. The exports are highly responsive to changes in the real effective exchange rate which includes the effects of the domestic price level of the exportables. The increase in the agricultural output, specially of the agricultural raw materials, has contributed to the maintenance of price stability in the face of an increasing domestic demand. While the minor agricultural commodities have been subject to the export incentive schemes, the major exports have been kept out of its purview partly for ensuring an adequate domestic consumption or absorption of exportables like tea and partly for keeping down the price of the raw materials in the interest of the domestic manufacturing industry, whose exports were stimulated. Empirical evidence though not exhaustive, seems to indicate that the export demand for the major agricultural exports of Pakistan is price elastic. Even though over the years there has been a reduction in the export taxes in the major agricultural exports, they continue to enjoy a far less favorable exchange rate than the manufactures. Though the aggregate supply elasticity of the agricultural commodities in the short run is low, the elasticity of substitution in production between the different agricultural commodities in response to changes in their relative prices is high. Recent emphasis on increasing the production of food crops, via increased price incentives for food crops, the introduction through public subsidy of such technology as new improved variety of seeds and fertilizers, etc.,

increases the profitability of food production vis-a-vis the alternative non-food crops, which are also the major agricultural exports; at the same time the cost of production of the major agricultural exports like raw jute has gone up in view of an increase in the cost of living of the farming population. The need to ensure a competitive export price in the world market, in view of the threat of substitutes or of the competing products and in some cases, the emergence of the low cost producers in the other parts of the world is of critical significance. At the same time the returns to the domestic producers in terms of their opportunity costs need to be remunerative. The need to attain the dual objective of a remunerative price for the farmers to ensure an elastic export supply and the maintenance of a competitive export price seems to require an upward adjustment of the exchange rate for the major primary commodities of Pakistan. A hesitant movement in this direction is reflected in the decision to include raw wool one of the major primary exports under the export bonus scheme.

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TABLE III
 PERCENTAGES OF EXPORT BONUS
 (Commodity-Wise)

Bonus Premium	Primary products excluding jute, cotton, tea, wool, hides and skins and rice	Fresh fruits and Vegetables	Tobacco	Fish	Cotton yarn	Fine Variety Cloth ¹	Other Cotton Textiles ²	Hessian	Sacking ⁸
1959-60	161.00	20	20	20	20	20-10	20	20	20
1960-61	124.35	20	20	20	20	10-0	20	20	20
1961-62	137.67	20	20	20	20	0	20	20	20
1962-63	156.77	20	20	20	20	10	20	20	20
1963-64	151.56	20 40 ³	35	20	20-10	10-15	30	20	20
1964-65	150.25	20 30 ³	30	0	10-0	20	30	20	20
1965-66	149.60	20 30 ³	30	0	0	20	30	20	20
1966-67	155.94	20 30 ⁷	30	30	30	20+10 ⁶	30+10 ⁶	20	20

	Other Jute Manufactures ⁸	Other Manufactures	Rice
1959-60	20	40	20
1960-61	20	40	20
1961-62	20	40	20
1962-63	20	40	20
1963-64	40 ⁴	40 20 ⁵	20
1964-65	20	30 ¹ 20 ⁵	0
1965-66	20	30 20 ⁵	0
1966-67	Not Available	30+10 ⁶ 20 ⁵	0

1. Mill made cloth, cotton blankets, hand loom cloth, lace, braid, tape, Niwar, mosquito net, towels.

2. Cotton absorbent, carpets, rugs, press cloth, fishing net, hosiery, mattresses, nets, pillows, rope, wools, strings, sugar bags, surgical bandages.

3. Minor agricultural commodities such as Agar Afar, Kapok (ginned), maize starch and gluten, sealing wax, a large variety of seeds, a number of vegetables, vegetable turpentine, beeswax were entitled to 40 per cent bonus.

4. Waterproofed jute matting.

5. (1) Wool pile variety of carpets, (2) Woollen carded web, (3) Woollen doublings, (4) woollen twistless yarn (not standard ordinary woollen yarn which received 40 per cent bonus), (5) fishing nets made from unfinished yarn or with 60 percent silk and 20 percent cotton (whereas fishing nets with more than 60 percent silk get 40 per cent bonus), (6) synthetic fabric (with more than 50 per cent cotton), (7) handkerchiefs, (8) map cases of cloth, (9) grey bleached cotton cloth, (10) cigar wrapper leaf, (11) calcium carbonate, (12) chalk french, (13) glycerine soap (crude), (14) whiting, (15) mats made of indigeneous materials such as bamboo, palm or date leaves, (16) straw mats, (17) inkpot stands, (18) shoe lasts and woollen heels, (19) umbrella sticks, (20) walking sticks, (21) fan handles, (22) brooms and broomsticks, (23) jewellery boxes, (24) one category of sports goods, (25) lace used in sports goods, (26) wastes of silks and cotton, (27) woollen and worsted rages, (28) grinding wheels and (29) tent poles.
6. Additional bonus on (a) cotton yarn and cotton cloth, if exported in excess of export quota, and (b) cutlery, (c) surgical instruments and sports goods were entitled to additional 10 per cent bonus.
7. For some primary products, such as poultry feed, crude fertilizer, spices and handicrafts rates were raised from 20 per cent to 30 per cent.
8. Between 1961-66 (December 1966) 10 per cent of the Bonus Voucher earned by the Jute industry was stamped and 10 percent was free voucher; Beginning Jan., 1967, sacking earned 30 percent bonus out of which 20 percent was stamped and 10 per cent free; hessian earned 20 per cent bonus - half price, half stamped.

EFFECTIVE EXCHANGE RATE OF MANUFACTURED GOODS

(All Incentives Taken Into Consideration)

All Manufactures Including Cotton & Jute Textiles							All Manufactures Excluding Cotton & Jute Textiles							
BONUS	EPL	TAX ON OUTPUT	TAX ON DOM- ESTIC INPUT COMPO- ONENTS	TAX ON IMPORTED INPUT COMPO- ONENTS	TOTAL SUBSIDY	EFFECTIVE EXCHANGE RATE	BONUS	EPL	TAX ON OUTPUT	TAX ON DOMES- TIC INPUT COMPO- ONENTS	TAX ON IMPORTED INPUT COMPO- ONENTS	TOTAL SUBSIDY	EFFECTIVE EXCHANGE RATE	
59/60	.304	-	.094	.004	.012	.414	6.73	.640	-	.129	.019	.037	.825	8.69
60/61	.272	-	.090	.006	.011	.379	6.56	.500	-	.131	.031	.037	.699	8.09
61/62	.279	-	.082	.006	.013	.380	6.57	.550	-	.154	.022	.032	.758	8.37
62/63	.326	.080	.162	.011	.022	.601	7.62	.630	.188	.204	.022	.043	1.087	9.93
63/64	.353	.080	.182	.014	.022	.651	7.86	.600	.188	.228	.027	.033	1.076	9.88
64/65	.326	.052	.182	.013	.023	.596	7.60	.450	.116	.272	.025	.045	.908	9.08
65/66	.304	.052	.125	.012	.023	.516	7.22	.450	.116	.196	.022	.040	.824	8.68
66/67	.343	.052	.162	.015	.030	.602	7.62	.468	.116	.202	.024	.050	.860	8.85

TABLE IV

Sources:

Value of Exports of Cotton Yarn and Cotton Cloth: Pakistan Economic Survey 1963-64, prepared by the Economic Adviser to the Government of Pakistan, Ministry of Finance, Rawalpindi, Table 36; Pakistan Economic Survey, 1966-67, Table 15; Monthly Foreign Trade Statistics of Pakistan, June 1967, Central Statistical Office, Government of Pakistan, Karachi, p. 11, p. 26.

Surplus of Cotton Yarn and Production of Cotton Cloth: Pakistan Statistical Yearbook, 1964, issued by Central Statistical Office, Economic Affairs Division, President's Secretariate, Government of Pakistan, Karachi, Table 60; 64/65, 65/66 and 66/67--Monthly Statistical Bulletin, January 1968, Central Statistical Office, Government of Pakistan, Economic Affairs Division, p. 32. Figures on annual basis were converted to fiscal year basis by taking the average of consecutive years.

Price of Cotton Yarn: 20 Years of Pakistan in Statistics, 1947-1967, Central Statistical Office, Economic Affairs Division, Government of Pakistan, p. 220, Price of 10 lbs. of 20/2 Dawood (Camel Cart).

Quantity of Exports of Cotton Yarn: 51/52, 52/53, 53/54--Pakistan Economic Survey, 1964-65, Table 33. 54/55 to 65/66 Pakistan Economic Survey 1966-67, Table 15. 66-67--Monthly Foreign Trade Statistics of Pakistan, June 1967, Table 9.

Effective rate of Exchange for Cotton Yarn and Cotton Cloth: 51/52 to 58/59--official exchange rate; 59/60-66/67--official exchange rate was adjusted for export bonus subsidy.