

A Note on the Effective Exchange Rate for Pakistan's Manufactured Exports, 1968-1975

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The role of relative prices in determining the export performance of developing countries is now well established. Studies by Kravis [2], McGeehan [3] and others have found that price competitiveness is essential for maintaining a rapid rate of export growth in both developed and developing countries. For Pakistan, Husain [1] has shown that changes in export prices resulting from changes in the export bonus scheme had a significant effect on raising the level of manufactured exports over the 1960-1967 period.

Certainly, price is not the only, nor even necessarily the most important, determinant of export levels; a rise in the domestic price of exports, as a result of changes in prices abroad or in the effective exchange rate, does not automatically cause exports to expand. Exports of some products show very low price responsiveness because of the nature of their supply and demand elasticities. Moreover, income changes, both domestic and international, have an important bearing on the level of exports; and indeed, in the short run, income changes are almost always the principal determinant of export volume.

Nevertheless, successful export performance over the long term is unlikely without price competitiveness. Countries must continually assess the adequacy of their trade and exchange rate policies to provide appropriate incentives for meeting export targets.

Because of the myriad of incentives and tax measures that countries apply to their export trade, it has long been accepted that a country's official exchange rate provides a poor guide to the price competitiveness of its exports. Export incentives are determined by what exporters actually receive for each

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unit of foreign exchange they earn, and this often differs substantially from the official exchange rate. The relevant rate for measuring incentives—or the effective rate as it is frequently referred to—is the official rate of exchange adjusted for export taxes and subsidies.

However, the term “effective exchange rate” has, in recent years, applied to several quite different exchange rate concepts and before examining the trends in Pakistan’s effective exchange rate, it is necessary to distinguish carefully among the various types of exchange rate concepts, providing each its own separate label.

1. *Official Exchange Rate:* Many countries choose to peg the value of their currency in terms of an international reserve currency (including SDR’s) or in terms of gold. There are far too many exceptions and shades of meaning applied to the concept of the official exchange rate to be listed here. For our purpose it is sufficient to note that, from the exporter’s point of view, the official rate is the ratio used by the official monetary authority to convert his earnings of foreign exchange into domestic currency.

2. *Trade Weighted Exchange Rate:* Even if a country has a fixed par value in terms of a reserve currency, the exchange value of its currency in relation to the currencies of its trading partners may fluctuate, as these countries devalue or revalue their currencies in relation to the reserve currency. Thus, even though a country does not explicitly revalue or devalue, it may implicitly do so as its trading partners alter their exchange rates. The degree of implicit devaluation or revaluation can be calculated by computing a weighted average exchange rate of the country vis-a-vis its trading partners, using (in the case of exports) the shares of exports going to each trading partner as weights. This trade weighted average exchange rate has sometimes been termed the effective exchange rate,¹ but we shall reserve that name for a different concept.

3. *Effective Exchange Rate:* The effective exchange rate, measured at one point in time, is the return to exporters, in local currency, from selling exports worth one unit of foreign exchange. If the effective exchange rate is expressed in units of the domestic currency per dollar, the effective exchange rate is the official exchange rate less export and other taxes plus the subsidies applicable to one dollar’s worth of exports. This is perhaps the most conventional use of the term effective exchange rate and is the one used regularly in Pakistan to express the magnitude of the incentive provided by the export bonus scheme.

For reasons that will become apparent, it is convenient to refer to the effective exchange rate measured in current period prices as the *nominal* effective exchange rate.

4. *Real Effective Exchange Rate:* A comparison of nominal effective exchange rates at different points in time may not provide an accurate measure of the change in export incentives during the intervening period, because changes in domestic and foreign price levels during the period must also be taken into account. If raw material and labour costs rise faster than the nominal effective exchange rate, margins on export sales may shrink as producers are unable to pass the increased costs on to the more price elastic world market

¹See, for example, the *IMF Survey*, April 19, 1976, p. 4.

(which they frequently can do in the domestic market). The relative attractiveness of exports may also weaken if prices in the domestic market are drawn up by demand-pull inflation at a faster rate than export prices. Furthermore, an increase in the general level of domestic prices erodes the real value of exporters' margins and this decline in their real income may cause exporters to substitute leisure for effort, resulting in a deterioration in export performance.

For these reasons, real effective exchange rates have been calculated by deflating nominal effective exchange rates for different years by a general index of domestic prices. This "price-level-deflated" effective rate (PLD-EER) shows the "real" value of the receipts from each dollar's worth of exports expressed in the prices of a given base year. Notice, however, that the PLD-EER takes into account only movements in the domestic price level, but exporters' real incentives are also affected by the level of foreign prices.

5. *Purchasing-Power-Parity Effective Exchange Rate:* Another type of real effective exchange rate, the "purchasing-power-parity adjusted" effective exchange rate (PPP-EER) has been devised to reflect the trends in export prices.² The PPP-EER is simply the PLD-EER multiplied by an index of foreign prices. The foreign price index can be either the unit value of the country's exports, expressed in units of foreign exchange, or a weighted average of the domestic price indices of the country's major trading partners. While the former has the advantage of focusing on the country's existing exports, it is subject to sharp cyclical swings. It also tends to under-represent the prices of new or potential export products. The average wholesale (or consumer) price index of the country's major trading partners is more in line with the underlying notion of the purchasing-power-parity theory, but for countries such as Pakistan where exports are concentrated in a small group of products—cotton, leather and rice—the average index of foreign prices may not give a correct picture of the long term changes in the world prices affecting Pakistan's principal exports. On *a priori* grounds, neither index of foreign prices has a clearcut advantage.

With these definitions in mind, we can turn to the examination of the trends in Pakistan's effective exchange rate for manufactured products, on both a nominal and a real basis, over the 1968-75 period.

Effective Exchange Rates for Pakistan's Exports of Manufactures

Nominal Effective Exchange Rates

The average nominal effective exchange rate for manufactured exports in different years is shown in row 1 of Table 1, along with the effective exchange rates for the major categories of manufactures. The average nominal EER rose steadily between 1968 and 1971, as both the average bonus rate and the premium at which vouchers were sold moved up. In 1972, the rupee was devalued and the bonus scheme was dropped. Because of the magnitude of

²The concepts of the price-level-deflated effective exchange rate and the purchase-power-parity adjusted effective exchange rate were first introduced by Anne Krueger and Jagdish Bhagwati. See Krueger [4] App. 1.

the official devaluation (131 percent, expressed as the increase in rupees per dollar) export taxes were placed on some manufactured goods to limit the rise in their domestic prices. As a result, the average EER on manufactured goods rose by only 7 percent, substantially less than the 21 percent increase in the average EER for all merchandise exports.³ In 1973-74, the average EER for manufactured goods reversed its upward trend, partly because export taxes on some items were raised, but most importantly because Pakistan chose to revalue the rupee in February, 1973, when the United States devalued the dollar. The EER rebounded the following year as export duties were eliminated to offset the effects of the world recession on Pakistan's exports. Overall, the nominal EER rose more than 25 percent during the six year period.

The currencies of Pakistan's principal trading partners also did not stay fixed during the 1968-75 period as can be observed from the index of the ratio of the composite value of the currencies of Pakistan's trading partners to the rupee shown in row 2 of Table 1. This index declines slightly, indicating that the rupee purchased fewer "composite" units of foreign exchange and was thus implicitly devalued against the composite currency. The rise of the deutschmark and yen during this period more than offset the fall of the pound. The nominal EER's adjusted for changes in the trade weighted exchange rate are shown in row 3. It should be stressed that these effective exchange rates reflect only the official exchange rates, the bonus voucher scheme and export taxes. Other export incentives such as duty drawbacks, exemptions from excise duties and subsidized credit available to exporters have not been incorporated for lack of information on their quantitative importance.

Real Effective Exchange Rates

It was previously argued that the simple, weighted indices of foreign and domestic prices do not necessarily provide the appropriate adjustment in the nominal EER's for the different price movements that affect exporters' incentives. In calculating the PLD-EER, for example, one would want to use an index of the cost of inputs going into the production of export goods for calculating real profit margins in exports, an index of the domestic prices of exportables for measuring the changes in the relationship of domestic and export margins, and finally an index of consumer prices for computing the loss of purchasing power of exporters' profits. None of the regularly reported consumer or wholesale price indices necessarily yields a precisely weighted index of all three of these effects, though in practice one such index may serve as a reasonable approximation. Any single index used to deflate nominal exchange rates must, therefore, be either a specially constructed composite index or simply a proxy whose approximation of the appropriate composite price deflator may not be exact. Since the weights to be applied in constructing the composite index are not obvious, most studies have followed the second approach, but with little justification or even attempt at sensitivity analysis to show the range of real effective exchange rates obtainable from alternative price deflators.

For this study, two domestic and two foreign price indices have been selected for computing real EER's. On the domestic side, the general wholesale price index for Pakistan has been chosen since it reflects the prices of both

³*Annual Plan 1973-74* p. 34.

raw materials and final goods. The general wholesale index, however, gives considerable weight to export industries and this produces a downward bias in the real EER for the following reason. An increase in the nominal EER can be expected to raise the domestic prices of export goods. This alone would tend to push up the general wholesale price index. It would then be incorrect to deflate nominal EER's by this price index, since the index has risen solely because of the export incentives. Only if the domestic prices of exportables rise at a faster (or slower) rate than the nominal EER is it appropriate to deflate the EER by a price index that includes this differential change in the prices of exportables.

As an alternative to the general wholesale price index, a price index of import-competing goods has been constructed. This index reflects the prices of imported raw materials (and raw materials that are importable but produced domestically) and final goods of industries, which are competitors for the resources engaged in the production of exports.

Two price indices for foreign prices have been selected. The unit value of Pakistan's manufactured exports is expressed in dollars. A composite index has been constructed from the wholesale price indices of Pakistan's major trading partners and weighted according to the shares of exports going to each of these countries.

These price indices are shown in rows 4-7 of Table 1. It can be seen that, in recent years, consumer prices have been rising faster at home than abroad. The general wholesale price index in Pakistan and the average wholesale price index of Pakistan's trading partners, weighted by the shares of exports going to these countries, rose at about the same pace until 1971-72 when they began to diverge and by 1974-75, Pakistan's index was 50 points above the average index for the countries receiving her exports. Also, the prices of import competing goods in Pakistan grew at a slightly slower rate, suggesting that inflation in Pakistan's export and home goods industries e.g. gas, electricity and transportation—was higher than in import-competing industries.

The rate of increase in domestic prices on either index was greater during the six year period than the rise in the nominal EER, and the real value of each unit of foreign exchange earned by exporters thus declined, the bulk of this decline taking place during 1973-75. The price-level-deflated EER's on both measures fell by close to 40 percent, though the fall was not uniform. In one year, 1972-73, the PLD-EER computed using prices of import-competing goods managed to show a clear gain over the 1968-69 base year while PLD-EER based on the general wholesale price index showed a slight decline in that year compared to the base year.

One factor offsetting the decline in the real value of exporters' earnings was the generally favourable trend in world prices. Domestic prices in the principal importing countries of Pakistani goods rose at about 5 percent per annum until 1971-72 when that rate suddenly doubled. Prices for Pakistan's manufactured exports, which had been more or less stagnant, also took off in 1971-72, and more than doubled within the space of three years. The export boom for manufactured goods ground to a halt in 1974-75 and prices receded from their 1973-74 highs, though they remained almost twice the levels prevailing in 1968-69. The effects of the upward trend in world prices on exporters'

incentives can be seen in the purchasing-power-parity EER series, obtained by multiplying the PLD-EER's by either of the two indices of foreign prices. Since there are two PLD-EER series, a total of four PPP-EER series have been calculated and shown in rows 10-13 in Table 1.

In general, the PPP-EER series show a rising-falling pattern, but because of the differences in the price indices, the timing and the amplitude of the swings vary substantially. Three of the four PPP-EER series peak around 1973 showing a percentage gain of between 30 to 60 percent compared with 1968-69 levels. All four series show a decline in the real EER since 1972-73 and three of the four series show a very sharp deterioration in the PPP-EER between 1973-74 and 1974-75, in spite of a simultaneous increase in the nominal EER of a more than 20 percent. In other words, while the government effectively devalued the rupee by dropping export duties between these two years, the magnitude of the effort fell short of what was necessary to overcome the joint effects of the decline in export prices and the steep rise in domestic prices. As a result, the real incentives facing exporters may have shrunk by as much as 25 percent in one year.

Have export levels responded to changes in real EER's? The value of manufactured exports, shown in row 14 of Table 1, rose steadily until 1973-74 after which it dropped off. The quantum index of manufactured exports (row 15) is almost completely flat from 1970-71 to 1973-74 with the sole exception of the surge in 1972-73. The number of years are too few to test for a statistical relationship between real EER's and exports, and in any event the analysis would have to incorporate domestic and international demand factors to isolate the independent effect of prices on export supply. Nevertheless, the movements in the price and quantity series are at least consistent with the view that real EER's are casually related to export performance. In the first four years of the period, annual changes in the PPP-EER (I/A) series are followed, after a lag of one year, by changes in the same direction in export volume. After 1972-73, however, the real effective exchange rate continued to rise, but these were perhaps insufficient to overcome the effects of worldwide recession.

Conclusion

The types of conclusions that can be drawn from the foregoing analysis are limited by the fact that the alternative, and equally plausible, procedures for estimating the real effective exchange rate give a wide variety of estimates. In 1973-74, for example, the highest estimate was 60 percent greater than the lowest. The available literature on effective exchange rates is not very instructive regarding the appropriate domestic and foreign price deflators to use in calculating real EER's. It has been emphasized in this note that the three types of domestic price movements that appear to be most closely associated with exporter's real incomes—raw materials prices, the price of competing goods, and the general trend in consumer prices—are not necessarily adequately reflected in the conventional wholesale or consumer price indices, though it remains to be seen how close a fit does exist between one of these indices and the ideal composite index made up of a properly weighted average of the three specific indices mentioned above.

The conceptual weaknesses notwithstanding, estimates of real EER's can provide useful insights into the price incentives facing exporters. The

Table 1

Effective Exchange Rates and Price Indices for Pakistan's Manufactured Exports: 1968-1975

Nominal Effective Exchange Rates	Unit	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
1. Manufactured Goods	Rs/\$	7.81	8.37	8.48	8.60	9.19	8.12	9.9
(a) Cotton Yarn	"	7.36	—	—	8.17	8.46	—	9.9
(b) Grey Cloth	"	7.36	—	—	8.18	9.56	—	9.9
(c) Finished Cloth	"	8.23	—	—	0.09	10.39	—	9.9
(d) Leather (semi-tanned)	"	—	—	—	8.68	7.32	—	—
(e) Leather (tanned)	"	—	—	—	8.71	9.41	—	—
(f) Others	"	8.05	—	—	8.98	10.42	—	9.9
2. Index of composite value of the currencies of Pakistan's trading partners.	1968-69 = 100	100	100	99	97	94	96	96
3. Adjusted Nominal Effective exchange rate	Rs/\$	7.81	8.37	8.57	8.87	9.78	8.46	10.3
<i>Price Indices</i>								
4. General Wholesale Price index for Pakistan (A)	1968-69 = 100	100	103	109	116	132	161	219
5. Import Competing Goods price index for Pakistan (B)	"	100	103	111	114	112	140	214
6. Average wholesale price of Pakistan's trading partners (II)	"	100	105	111	116	125	152	168
7. Unit value of Pakistan's manufactured exports (I)	"	100	103	97	122	139	212	195

— Continued

Table 1—Continued

Nominal Effective Exchange Rates		Unit	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
<i>Real Effective Exchange Rates</i>									
8. PLD-EER Type (A)		Rs/\$	7.81	8.13	7.86	7.64	7.40	5.25	4.70
9. PLD-EER Type (B)		"	7.81	8.13	7.72	7.78	8.73	6.04	4.81
10. PPP-EER (II/A)		"	7.81	8.53	8.72	8.87	9.26	7.98	7.90
11. PPP-EER (I/A)		"	7.81	8.37	7.62	9.33	10.30	11.13	9.17
12. PPP-EER (II/B)		"	7.81	8.54	8.57	9.02	10.91	9.18	8.08
13. PPP-EER (I/B)		"	7.81	8.37	8.49	9.49	12.13	12.80	9.38
<i>Manufactured Exports</i>									
14. Value		\$ Mil.	191	215	276	334	507	599	508
15. Quantum Index: I		1968-69 =100	100	109	149	143	191	148	137

Notes to Table 1

- Row 1 1968-69 *Report of Working Group on the Export Bonus Scheme*, 1969
 1969-70 *Economic Survey* 1970
 1970-71 *Economic Survey* 1971
 Calculated from $EER = \frac{f}{f(1+r.p)}$ where f is official exchange rate, EER is the effective exchange rate, r is the average bonus rate (weights based on values exported) and p is the average premium during the year.
 1971-72—1972-73 *Annual Plan* 1973-74 p. 35
 1973-74 Official rate less export taxes.
 1974-75 EER assumed equal to official exchange rate.
- Row 2 The annual average official exchange rates of Pakistan's trading partners expressed in dollars were taken from *International Financial Statistics*. (November, 1975) and converted into indices with 1968-69=100. The exchange rate indices were combined into a weighted average using as weights the value of exports going to the principal export recipients—the U.S., U.K., Japan, Italy, Germany, Hong Kong.
- Row 3 Row 1 ÷ Row 2
- Row 4 Central Statistical Office *Monthly Statistical Bulletin* November, 1975.
- Row 5 Ibid, Weighted average of Metals, Metal manufactures, Utensils, General Chemicals, Dyeing materials, Paints and Varnishes, Soaps, Fertilizers, Drugs and Medicines, Machines, Cycles, Tyres and Tubes, Paper and Newsprint, Glass Products and Electric Goods. Weights based on 1969-70 domestic values of output.
- Row 6 OECD, *Main Economic Indicators*
 (Paris, OECD, various Issues)
 Country indices weighted according to share of Pakistan's exports received.
- Row 7 1968-69—1973-74 *Economic Survey* 1974-75.
 1974-75 Key Economic Indicators Feb., 1976.
- N.B. Unit values of manufactured exports in rupees have been converted to U.S. \$ by the following index of exchange value of the rupee:
- | | | |
|-----------------|---|-----|
| 1968-69—1971-72 | = | 100 |
| 1972-73 | = | 222 |
| 1973-74—1974-75 | = | 208 |
- Rows 8-9 Row 3: Row 4(A) or Row 5(B).
- Rows 10—13 Row 8 or Row 9 multiplied by either row 6(I) or Row 7(II).
- Row 14 Nishat, S. "Export Trends in West Pakistan", Unpublished, PIDE.
- Row 15 Row 15 : Row 7.

purchasing-power-parity-effective exchange rate (PPP-EER) series for Pakistan suggest that the real returns from exporting grew at best by no more than 20 percent and most probably by only 10 percent from 1968-69 to 1974-75, although the nominal EER rose by more than 25 percent over this period. The estimates of the real EER oscillated widely. In 1972-73, the simple average of the four PPP-EER series rose 35% above its 1968-69 level before falling back. The rupee devaluation in May, 1972 apparently had little direct impact on either the nominal or the real EER series. Comparing the nominal EER's for the years immediately preceding and following devaluation, the nominal EER for manufactures rose by only 7 percent while for all merchandise exports it climbed by more than 20 percent. The contribution of devaluation to the change in real EER's between these two years is much less than the contribution of movements in domestic and foreign prices. It is possible, of course, that devaluation triggered the domestic inflation that subsequently brought about a decline in the real EER, but the direct impact of devaluation on the nominal EER was marginal.

The most disturbing finding is that the real EER for manufactured goods has declined since 1973. From impressionistic evidence it seems likely that this decline has continued into 1975-76. The nominal EER for manufactures did not change in 1975-76 and the pace of domestic inflation, while more moderate than in the previous two years, has nonetheless been greater than the rate of change in the unit value of manufactured exports. A rapid recovery of world trade could quickly reverse this deterioration, as some "firming up" of export prices is expected. But whether the recovery of export prices would be sufficient to overcome domestic price inflation is not clear.

The time is ripe for a careful assessment of Pakistan's trade and exchange rate policies to determine whether internal policies affecting the real EER are in need of change. Two kinds of research are needed to formulate an appropriate trade and exchange rate policy with regard to manufactured exports. First, effective exchange rate series, on both a nominal and real basis, should be compiled over a longer time period and at a more disaggregated level than has been attempted in this paper. Export supply functions for different categories of manufactured exports can then be estimated statistically, using both price and income variables to examine the degree of responsiveness of exports to export promotion measures.

A second area in which research is required is the trends in real EER's among Pakistan's principal competitors in the world market. It is not the absolute level of Pakistan's real EER that affects the quantity of exports demanded but rather the level relative to the real EER's of competing suppliers. A time series of real EER's for India, Japan, Korea and other exporters of labour-intensive commodities should be computed and introduced as part of a relative price variable in estimating export supply functions for Pakistan's manufactured exports.

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