

# Notes and Comments

## SOME ASPECTS OF DIRECT FOREIGN PRIVATE INVESTMENT IN PAKISTAN

by

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✓ Foreign private investment is either direct or portfolio, the functional difference being that the former involves control of the company while the latter does not. Sometimes direct investment is defined as that which entails the acquisition of majority participation in companies and portfolio investment as minority participation or non-participating shares. ✓ In Pakistan direct foreign private investment takes various forms like sub-sidiaries, branches and joint ventures. There have been few systematic analyses of the impact of foreign private investment on the economy of the recipient country. The reason is that while immediate or direct impact is easily established, the indirect effects on output, employment, balance of payments and technology are difficult to identify and measure. The purpose of the present note is rather modest: to look into the relative efficiency of foreign firms in Pakistan and the extent to which they influence the market structure.

### I. RELATIVE EFFICIENCY

The fact that the foreign firms are able to draw upon research and development facilities of their parent companies gives them an important advantage over their local competitors. Also the manufacturing experience of the parent companies is available to the foreign firms. The manufacturing expertise of the parent companies is the result of many year's accumulated experience. Moreover, modern management techniques utilized by the parent companies are available to the foreign firms, giving them extra advantage. However it is not enough to list the advantages which foreign firms enjoy over their competitors. What is needed is the assessment of the impact of these advantages on relative efficiency. Theoretically, under competitive condition, differences in profitability amongst various firms in a given industry should give a fairly good measure of relative efficiency. On an empirical plane, however, it is not very helpful. Understatement of profits by companies to evade taxes on profits is a common practice. Again, most of the markets are not perfect and large firms do influence prices and reap monopolistic gains. Other measures of relative efficiency like comparative factor productivity or unit costs suffer from similar limitations. Many factors determine productivity and cost, and efficiency is only one of them.

With these reservations in mind we will attempt an assessment of the relative efficiency of foreign firms *vis-a-vis* domestic firms in a given industry in terms of relative productivity. Lack of data precludes the estimation of other measures. In essence, therefore, we are comparing the efficiency of factor use.

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*Comparative Productivity of Labour*

First we compare average labour productivity of foreign firms with that of domestic firms in the same industries for some selected lines of manufacturing in West Pakistan<sup>1</sup>. Labour productivity is measured both in terms of gross output and value added. By gross output per head we mean total value of output produced within a year divided by total number of workers. In each industry the total number of firms are grouped into two categories, foreign and domestic, and average productivity of labour of the foreign firms is compared with that of domestic firms.

As the tables show, whether we measure productivity in terms of gross output or value added, the result is not very different, so we can carry on with the analysis by either of these two measures. Since data on intermediate costs seem less accurate, the analysis is done in terms of gross output per head.

The figures presented in Table I show that foreign firms have higher gross output per head in thirteen industries out of a sample of sixteen, the comparative superiority being particularly marked in chemicals, printing and publishing and pharmaceutical industries. In order to find out the statistical

**TABLE I**  
**LABOUR PRODUCTIVITY IN TERMS OF GROSS OUTPUT**

(amount in '000' Rupees)

Name of Industry	Foreign Firm	Domestic Firm	Col. (1)
			$\frac{\quad}{\text{Col. (2)}} \times 100$
	(1)	(2)	(3)
1. Canning and preserving	18.8	16.0	117
2. Edible oils and fats	85.0	87.5	97
3. Cigarettes	91.6	55.5	165
4. Textile (cotton)	13.1	12.3	106
5. Printing and publishing	83.1	13.5	615
6. Acids and alkalis	46.8	17.6	265
7. Dyes and colour	22.2	16.5	134
8. Basic industrial chemicals	34.1	9.6	355
9. Paints and varnishes	69.2	35.1	197
10. Polishes	80.6	22.9	351
11. Perfumes and cosmetics	33.5	44.9	74
12. Miscellaneous chemical	74.7	14.8	504
13. Tin cans and products	27.0	21.8	123
14. Electric bulbs and lights	28.1	17.8	157
15. Communication and equipment	10.3	14.0	73
16. Medicinal and pharmaceutical	35.0	11.9	294

Source: See appendix.

<sup>1</sup> A detailed description of the sources and nature of data is given in the appendix.

significance of the differences in productivity, we used the technique of 't' test for related samples. The test shows that the differences are significant at the one percent level.<sup>2</sup>

TABLE II  
LABOUR PRODUCTIVITY IN TERMS OF "VALUE-ADDED"

(Amount in '000' Rupees)

Name of Industry	Foreign Firm	Domestic Firm	Col. (1) x100
			Col. (2)
	(1)	(2)	(3)
1. Canning and preserving	11.3	9.3	121
2. Edible oils and fats	51.3	23.1	222
3. Cigarettes	60.3	42.3	142
4. Textile (cotton)	9.6	6.1	157
5. Printing and publishing	79.1	7.8	1014
6. Acids and alkalis	41.4	11.9	348
7. Dyes and colour	9.9	6.3	157
8. Basic industrial chemicals	25.2	8.4	300
9. Paints and varnishes	46.4	19.1	243
10. Polishes	73.3	16.4	447
11. Perfumes and cosmetics	25.1	25.3	99
12. Miscellaneous chemical	56.3	6.6	853
13. Tin cans and products	10.9	6.9	158
14. Electric bulbs and lights	18.7	13.8	135
15. Communication and equipment	4.6	8.6	53
16. Medicinal and pharmaceutical	22.5	6.6	341

Source: See appendix.

<sup>2</sup> The formula is given as

$$t = \frac{\bar{D}}{SD} \text{ where } \bar{D} = \frac{\sum D}{N} \text{ and } SD = \sqrt{\frac{\sum d^2}{N(N-1)}}$$

$$\text{and } \sum d^2 = \sum D^2 - \frac{(\sum D)^2}{N}$$

D = Differences between a pair of observations

$\bar{D}$  = Mean of the differences

SD = Standard error of differences.

It is sometimes argued that foreign firms are generally larger in size than local firms, as the former have easy access to relatively cheap foreign capital or financial backing and technical support of the parent companies. Moreover, whatever the financial facilities available locally, the credit standing (or credit-worthiness) of the large, efficient and world renowned foreign enterprises is far above the credit standing of the relatively small and less known local enterprises. Thus the foreign firms are able to obtain even local capital more easily than the domestic firms. In case of the majority of industries in our sample of 16, the average size of the foreign firm is in fact bigger than that of the average domestic firm in the same industry with size measured both in terms of employment and value of fixed assets. Also our sample shows that the capital-intensity (defined as capital labour ratio) of foreign firms is higher than the corresponding domestic firms in most of the cases. How far are the differences in labour productivity then explained by differences in size or differences in capital-intensity? To test this we tried a function taking relative labour productivity as a function of relative size and relative capital-intensity.

$$g^f/g^p = F(K^f/K^p, A^f/A^p \text{ or } E^f/E^p)$$

Where  $g$  stands for average labour productivity,  $K$ ,  $A$  and  $E$  for capital/labour ratio, fixed asset, and employment respectively. The superscripts  $f$  and  $p$  indicate foreign and domestic respectively. The estimated equations are given below<sup>3</sup>:-

$$g^f/g^p = 121.488 + 0.672 K^f/K^p + 0.037 A^f/A^p \\ (2.069) \quad (2.012) \quad (0.454)$$

$$\bar{R}^2 = 0.189 \quad F(2,13) = 2.75$$

$$g^f/g^p = 162.730 + 0.533 K^f/K^p + 0.111 E^f/E^p \\ (1.970) \quad (2.243) \quad (0.708)$$

$$\bar{R}^2 = 0.201 \quad F(2,13) = 2.89$$

Whether we measure size by the value of fixed assets,  $A$ , or by the volume of employment,  $E$ , the co-efficient is insignificant in the two equations. Apparently, relative size has little effect on relative labour productivity, or there is no evidence of economies of scale. On the other hand, the co-efficient for capital-intensity is significant in the two equations. Thus it appears from the above equations that partly higher labour productivity of foreign firms is due to higher capital per head.<sup>4</sup>

### Comparative Productivity of Capital

Next, for the same set of industries, we compare capital productivity. Capital productivity is computed both as gross output per unit of fixed capital and value added per unit of fixed capital. Fixed capital includes equipment and

<sup>3</sup> The figures in the bracket are the 't' values of the respective co-efficients.

$\bar{R}^2$  indicates  $R^2$  adjusted for degrees of freedom.

All the ratios are expressed in percent.

<sup>4</sup> The low values of  $R^2$  indicate that only a small part of the variation in relative productivity is explained by the independent variables.

machinery, land, buildings and transport vehicles. Working capital is excluded partly because we are more interested in the comparative efficiency of equipment utilization and partly because the data on working capital is not available for all the industries in the sample.

Table III presents average productivity of capital in terms of gross output. Out of the sixteen industries foreign firms have higher productivity of capital in eleven industries. The statistical test shows that the differences are not significant at the 5 percent level<sup>5</sup>.

Thus not only the productivity of labour is higher for foreign firms but capital also appears to be more productive, though the difference in capital productivity does not seem very significant.

As noted earlier foreign firms achieve higher productivity of labour partly by adopting a more capital intensive technique. The usual capital intensity criteria in less developed countries, however favour the adoption of low capital-intensive techniques. The argument is that in a country where labour is abundant and capital is scarce the opportunity cost of labour is close to zero. Hence a given amount of capital should be combined with as much labour as possible in order to maximise output. Out of the alternative techniques for a given industry, the one with the lowest capital-labour ratio should be selected. It implies that the foreign firms could have increased employment and possibly output by adopting a less capital-intensive technique. The greater employment thus generated would probably give labour a larger share of the output.

But Galenson and Leibenstein have suggested that if the objective of the society is to maximise output sometime in the future, then the most productive technique or project is not necessarily the one which maximises current output and consumption, but the one which leads to the highest saving[3]. Assuming profits are saved and wages are consumed, this criterion recommends high capital-intensive techniques. The usual criticism against this criterion is that it ignores the possibility of raising savings by taxing wages. A further problem in the case of foreign investment is that this criterion, by increasing the share of capital, favours the foreign investors as against the local workers, thus adversely affecting the domestic economy.

## II. EFFECT ON MARKET STRUCTURE AND INDUSTRIAL ORGANIZATION

In Pakistan and other less developed countries, the national markets are normally of small size and they cannot but support a limited number of firms in each industry. Particularly if export opportunities are limited, then the number of firms in each industry may well be below the number required for effective competition. Secondly, these national markets are generally well protected from external competition by high tariff walls or quantitative import restrictions. These factors create a substantial divergence between the world price and domestic price of a given product, which results either in the establishment of high-cost and inefficient firms or generate excess profits to the efficient firms. Moreover, if most of the capital equipment and industrial materials are imported, as is the case in Pakistan, import restrictions tend to

<sup>5</sup> It is significant only at the 20 percent level.

exclude potential entrants in a given industry. In other words, import limitation may restrict the number of firms in a given industry if imports are essential for that industry. Under these circumstances the number of firms in each industry may be limited and the industry may be dominated by a few large firms. These few dominating firms are likely to be the big foreign firms, as they have greater financial resources and superior technical and managerial know-how. They have access to the foreign exchange market of the advanced countries. Besides, as already pointed out, the internationally known foreign firms are able to obtain even local capital more easily than the domestic firms.

TABLE III

## CAPITAL PRODUCTIVITY IN TERMS OF GROSS OUTPUT

(Amount: in '000' Rupees)

Name of Industry	Foreign Firm	Domestic Firm	Col. (1)
			Col. (2) $\times 100$
	(1)	(2)	(3)
1. Canning and preserving	1.82	.89	204
2. Edible oils and fats	6.23	5.39	115
3. Cigarettes	11.01	4.91	224
4. Textile (cotton)	6.84	1.89	362
5. Printing and publishing	3.60	1.78	202
6. Acids and alkalis	1.31	.61	215
7. Dyes and colour	.78	1.54	51
8. Basic industrial chemicals	1.04	.50	208
9. Paints and varnishes	6.85	4.09	137
10. Polishes	5.32	1.62	328
11. Perfumes and cosmetics	1.56	8.34	19
12. Miscellaneous chemical	2.03	2.34	88
13. Tin cans and products	5.63	2.17	259
14. Electric bulbs and lights	2.93	1.98	148
15. Communication and equipment	1.38	3.55	39
16. Medicinal and pharmaceutical	2.76	3.26	85

Source: See appendix.

TABLE IV

## CAPITAL PRODUCTIVITY IN TERMS OF "VALUE ADDED"

(Amount in '000' Rupees)

Name of Industry	Foreign Firm	Domestic Firm	Col. (1) Col. (2) × 100
			(3)
1. Canning and preserving	1.10	.53	207
2. Edible oils and fats	3.76	1.48	254
3. Cigarettes	7.25	3.74	194
4. Textile (cotton)	5.01	1.02	491
5. Printing and publishing	3.43	1.06	323
6. Acids and alkalis	1.16	.41	283
7. Dyes and colour	.35	.59	59
8. Basic industrial chemicals	.77	.44	175
9. Paints and varnishes	4.59	2.72	169
10. Polishes	4.85	1.10	441
11. Perfumes and cosmetics	1.17	4.70	25
12. Miscellaneous chemical	1.55	1.11	139
13. Tin cans and products	2.27	.69	329
14. Electric bulbs and lights	1.95	1.54	127
15. Communication and equipment	.61	2.18	28
16. Medicinal and pharmaceutical	1.78	1.81	98

Source: See appendix.

Sometimes the foreign investing companies are themselves monopolists at home and extension overseas of their operation is often an attempt to form an international monopoly or cartel. In such a situation, there would not be a large number of foreign firms competing each other, but only one or two giant monopolies dominating the market from the initial stage of industrialization. Then there may be obstacles to entry in a particular field dominated by foreign enterprise. For instance, the capital requirements for a new entrant to operate on an efficient scale comparable to the existing foreign enterprise may be very large and this fact may discourage those with less resources. Second, the established foreign enterprise might control special designs of the product by means of patents and trade marks, not available to the new domestic entrants. There may also be common preference of the consumers for established foreign brand names, or trade marks.

In this section we will make an attempt to determine the existence of monopolistic or oligopolistic structures in those industries where foreign firms have entered and will try to find out how far the foreign firms control or dominate various industries in Pakistan. If one or two large foreign firms dominate an industry then they are likely to be in a position to determine the price and output of that industry and they may earn abnormal profits.

Normally in empirical work, concentration ratios and sizes distribution of firms are used to determine the existence of monopolistic or oligopolistic structures. The degree of concentration refers in general to (a) the number and (b) the size distribution of all the enterprises supplying goods within the industry. One situation may be said to have more concentrated control than another, both as the number of the firms is smaller and as the relative sizes of the firms differ more widely. If industry A has only three firms supplying all the output and industry B has 30 firms, then the former is said to be more concentrated than the latter. Similarly, if two industries, X and Y, have 30 firms each, but in industry X, say the largest four firms supply 80 percent of the industry's output, while in industry Y, the largest four firms supply only 30 percent of the industry's output, then industry X is more concentrated than industry Y.

Let

$Cr$  = Concentration ratio

$S_r$  = the total sale of the largest 'r' firms

$S$  = total sale of the industry

$\bar{S}$  = average sale or average size of the firm

$N$  = total number of firms in the industry

Then

$$Cr = \frac{S_r}{S} = \frac{S_r}{N \cdot \bar{S}}$$

differentiating with respect to time

$$\frac{\partial Cr}{\partial t} = \frac{\frac{\partial S_r}{\partial t}}{(N \cdot \bar{S})} - \frac{\frac{\partial (N \cdot \bar{S})}{\partial t}}{(N \cdot \bar{S})^2} S_r$$

with some manipulation we get

$$\frac{\Delta Cr}{Cr} = \frac{\Delta S_r}{S_r} - \frac{\Delta N}{N} - \frac{\Delta \bar{S}}{\bar{S}}$$

thus we find that

$$\frac{\partial Cr}{\partial N} < 0, \quad \frac{\partial Cr}{\partial S} < 0 \quad \text{and} \quad \frac{\partial Cr}{\partial Sr} > 0$$

This means that concentration is a decreasing function of the number of firms and the average size of the firm. As the number of firms increases, concentration tends to decrease and similarly as the average size of the firm in the industry increases, concentration tends to decline. The upper limit bound for  $Cr$  is the case of monopoly where the entire industry consists of one firm only i.e.  $Cr=1$ . Obviously concentration cannot be increased beyond that point and accordingly  $Cr$  cannot exceed unity. On the other hand, if all the firms in an industry are of equal size, their market share is the reciprocal of their number, i.e.  $\frac{1}{N}$  is the lower limit. Thus the limit of  $Cr$  is given as:

$$\frac{1}{N} \leq Cr \leq 1$$

The number of firms in each industry is very sensitive to the degree of aggregation in industrial classification. We used four digit industrial classification developed by the Census of Manufacturing Industries of Pakistan. This is according to the Pakistan Standard Industrial Classification.

Table V shows the number of foreign firms, total number of firms and changes in the number of firms over time in some selected industries of (West) Pakistan. Also it shows the proportion of total assets and total output controlled by foreign firms in each industry. As we know, the greater the number of firms in any industry, the more difficult it is to establish and police collusive agreements. This results, not only from the greater number, but also from probable increase in the complexity of the product and price structure as the number of firms increases. Even with no formal collusion, estimates of demand and competitors' actions will be more difficult, the greater the number of firms. Thus, the probability that monopolistic practices exist is expected to be smaller, the larger the number of firms in any industry.

On this assumption, we find that two industries in our sample (cotton textile and printing and publishing) are fairly competitive. On the other hand, 3 or 4 industries seem highly concentrated in terms of number of firms, and the probability of monopolistic practices is high in these industries. The rest lie somewhere in between. All the industries except two are concentrated, if we define the number of firms below 30 as small. But if we define the number of firms below 10 as small, then only 3 industries are concentrated.

TABLE V

## CONCENTRATION RATIO IN SELECTED MANUFACTURING INDUSTRIES

Name of Industries	FN	TN	$\Delta$ TN	FCRQ	FCRA
Canning and preserving	2	13	7	.42	.43
Edible oils	2	25	—	.22	.20
Cigarettes	4	10	7	.75	.57
Tobacco stemming	8	8	7	1.00	1.00
Textile (cotton)	3	166	78	.05	.02
Printing and publishing	2	160	94	.03	.02
Acids and alkalis	2	18	—	.32	.19
Dyes and colours	3	11	—	.46	.63
Basic industrial chemicals	2	4	—	.91	.83
Paints and varnishes	4	18	4	.53	.43
Perfumes and cosmetics	2	16	8	.16	.48
Miscellaneous chemicals	2	20	6	.67	.71
Tin cans and products	3	21	12	.53	.33
Electric bulbs and lights	3	5	4	.84	.92
Communication and equipment	3	13	9	.45	.71

FN = Number of foreign firms in 1967-68

TN = Total number of firms in 1967-68

$\Delta$  TN = Changes in the total number of firms between 1959-60 to 1967-68

FCRQ = Foreign concentration ratio in terms of output

FCRA = Foreign concentration ratio in terms of fixed assets

The number of foreign firms in various industries is relatively small (in our sample) and it ranges from 2 to 8. Hence the proportion of foreign firms to total firms is high in those industries where the total number of firms is small.

Concentration ratios are generally computed as the proportion of total sales or total output supplied by the four or five largest firms. Here, instead of the usual concentration ratio, we present the proportion of total output and assets controlled by the foreign firms. Let us call it 'foreign' concentration ratio. This ratio is expected to indicate not only the extent of foreign control of a given industry, but also the possibility of the existence of monopolistic or oligopolistic practices in that industry. Because we found that the number

of foreign firms in each industry (in our sample) is small and below ten, hence if they control, say 80 or 90 percent of the total output, then it is quite likely that they exercise a certain degree of monopolistic leverage. In other words, the probability that monopolistic practices are exercised by foreign firms is expected to be greater for higher concentrated industries than lower concentrated industries. In terms of output, then the most highly concentrated industries are cigarettes, tobacco stems, basic chemicals and electric lights. These are also the industries where the total number of firms is small. To determine the relationship between foreign control and the number of firms more precisely, we estimated the following functions:

$$\begin{aligned} \text{FCR} &= 61.861 - 0.379 \text{ TN} \\ &\quad (8.500) \quad (3.194) \\ R^2 &= 0.40 \text{ F}(1, 13) = 10.20 \end{aligned}$$

where

FCR = Foreign concentration ratio or the proportion of output supplied by foreign firms

TN = Total number of firms in the industry

The inverse relation indicates that the greater the number of firms in a given industry, the lower the control exercised by foreign firms. Since in our sample many of the industries have relatively small number of firms, the degree of foreign control appears significant. In two-thirds of the cases, they control above 40 percent of the output and assets. The result suggests that by removing the obstacles to entry and by encouraging the local firms to enter, the government can reduce foreign concentration in an industry.

Changes in the number of firms are usually thought to reflect the conditions of entry or exit. While increases in the number of firms over time reflect the conditions of entry, decreases in the number reflect conditions of exit. High barriers to entry will help sustain monopoly or oligopoly, low barriers to entry will encourage new entrants and promote competition. In the majority of the industries, though the percentage increase in the number of firms is very high, the absolute increase is small. In part, the high percentage increase is due to an extremely small base.

### CONCLUSION

Our sample study of industries having direct foreign investment reveals that the number of foreign firms is very limited in each industry. But the total number of firms differ substantially from industry to industry. While some industries like cotton textile and printing and publishing have a large number of firms, other's like cigarettes, basic chemicals and electric lights have very limited number of firms. Similarly the increase in the number of firms over the period 1960-68 shows considerable variation amongst the industries.

The proportions of output and fixed assets controlled by foreign firms are very significant in those industries where the total number of firms is small,

such as tobacco, basic industrial chemicals and electric lights. These are the industries where the probability of the existence of monopolistic practices by foreign firms is high. On the other hand, the proportion of output supplied by foreign firms is relatively small in those industries where the total number of firms is large.

So far as the inter-firm productivity comparisons are concerned, it appears that foreign firms experience higher productivity of labour than domestic firms. The average productivity of capital also seems to be greater for foreign firms than domestic firms, but the differences are not very significant in a statistical sense. In the majority of the cases, the average size of the foreign firm is bigger and the average capital-intensity (capital-labour ratio) is higher for foreign firms as compared with the domestic firms. Our analysis suggests that the greater labour productivity in foreign firms is partly due to higher capital-intensity.

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## Appendix

### SOURCES AND DESCRIPTIONS OF DATA

The data on the sample industries were obtained from the Bureau of Statistics, Planning and Development Board, Lahore. The sample was selected randomly for the manufacturing industries of (West) Pakistan for the year 1967-68. For industrial breakdown, Pakistan standard industrial classification and the four digit classification were used. The breakdown of each industry into foreign firms and domestic firms was completely based on the answers given by the firms to the particular question (in the questionnaire sent by the Bureau to the firms) asked about the type of ownership.

There were basically three types of ownership, i.e. foreign owned, joint ventures and Pakistani owned. In this study both foreign owned firms and joint ventures were treated as foreign firms. The Pakistani owned firms were defined as domestic firms or local firms.

Since the Bureau did not release information for individual firms, we get somewhat aggregated data in the sense that in each industry for a given variable, we obtained one figure for all the foreign firms combined and one figure for all the domestic firms combined. So the productivity comparison was made between the average foreign firm and the average domestic firm in a particular industry. Since the analysis was mainly a cross-section analysis, we used current prices for all values. The gross value of output included both the value of the major product and the values of by-products. Fixed assets were defined as machinery, equipment land and building. Since data were available by establishments, we assumed an establishment as one firm. Firms defined in this way may be different from the definition of firm in economic theory, but we believe that it would not make any significant difference to our results.

In both parts I and II of the study, we used the same sample of industries. However, due to the lack of some relevant information, one industry had to be excluded from the analysis of the Part II of the study.