International Capital Inflows and Economic Development a Firm Level Analysis of India's Post-Reform Manufacturing Sector

Dr. Pranjal Sarma
Assistant Professor,
Dept. of Statistics,
&
Dr. Rijusmita Sarma
Assistant Professor,
Dept. of Statistics,
L.C.B. College, Guwahati

ABSTRACT

A more 'open door' policy on trade and investment regime in India has been undertaken on the ground that the underlying complementarities would provide due augmentation to the development process and empirical evidences gathered corroborate such a stance. In this chapter an attempt has been made to understand empirically whether a liberal foreign investment policy gives necessary boost to development process in India. We have dealt with the issue by taking selected sample firms by dividing them into foreign and domestic at ownership level in Indian manufacturing sector and comparatively assess their development on the economy during the post reform era.Empirical analysis shows that foreign firms are less import dependant and better export performer compared to their domestic counterparts. In return foreign forma save precious foreign currency but they are unable to generate more employment opportunities.

Wilcoxon Matched Pairs Signed Rank Test was carried out to test the significant difference between foreign firms and domestic firms for seven relevant variables across all the selected industries. Of the seven variables examined, five exhibited significant differences between the two types of firms. In contrast, no significant differences were found between the two groups of firms in terms of vertical integration and product differentiation. As such our analysis draws a contradictory picture for the general belief that Foreign firms are tax evaders and contribute less to the nation.

KEYWORDS: Capital intensity, Profit intensity, Non Parametric test, Chemical industry, Drugs and Pharmaceuticals.

1.0 Introduction:

There is obvious impact of foreign direct investment (FDI) on host country's development as it comes in the form of equity investment and hence there is no debt burden. Moreover, FDI in the form of joint ventures and wholly owned subsidiaries comes along with a package of assets and intermediate products, which can be categorized as tangible and intangible assets. Thus FDI has got an added advantage over other forms of capital inflows and has a direct impact on the economic development of the host country.

India's policy towards FDI on 'Foreign collaboration' has gone through different phases. It has evolved from a brief period of 'open door' in the fifties, to a policy of rigorous selectivity in the late sixties and seventies, to a policy of partial liberalization in the late eighties and to an open door policy in early nineties. Foreign collaborations in India came in two general forms: foreign financial collaboration and foreign technical collaboration. FDI comes by way of foreign financial collaboration.

Industrial Policy Resolution 1991 started a new phase of FDI in India. The role of FDI is recognized on the ground that it would bring greater competitiveness and efficiency into the system through modernization and technical upgradation.

During the whole five year period from 1991 to 1995, out of the total of 8,111 foreign collaborations, the cases involving FDI are accounted for 4,157 (51.25%) more than double the number than the previous period 1981-90. The FDI actual during the period amounts to Rs.12170 crores, representing 20.44% of approval (SIA, News Letter, 1997): The manufacturing sector (comprising of basic engineering, electrical and non-electrical machinery, electronic, chemicals and fertilizers) accounted for 25% of the approvals and 56.97% of the actual inflows. Among these sectors, three sectors viz., chemical, including drugs and pharmaceuticals (21.3%), electricals and electronics (20.23%) and non - electricals (9.62%) comprise 51.15% of actual inflows of FDI (CMIE, BOP Statistics, July 1996). Hence the study is motivated by the growing size and significance of FDI in manufacturing sector in general and the above mentioned three sectors in particular in India. Manufacturing sector is of vital importance for domestic production, consumption and exports. Here lies the rationale for an empirical study on the role of foreign and domestic firms in augmenting economic development.

1.1 Review of Empirical Studies:

Some scholars have enquired into the differences in the ways in which globally organized TNCs (transactional corporations) and locally based firms behave. Most of the empirical works relating to the comparative performance of foreign and domestic firms have focused on the manufacturing sector. Larry Willmore (1976) shows that the foreign firms export a greater portion of their production to other markets, employ relatively more white collar workers at a higher salary, and have lower capital-output ratios. Byung Soo Chung and Chung H. Lee (1980), in their study, show that the difference in production techniques chosen by foreign and local firms in Korea is statistically insignificant. Larry N. Willmore (1986) shows that compared to their local counterparts, foreign firms operate fewer plants, have higher ratio of value added to output, higher level of advertising and royalty payments, greater export, higher labour productivity, higher wages and greater capital intensity. Rhys Jenkins

(1990) has shown that there is considerable evidence from both Latin American and East Asian countries to support the view that foreign subsidiaries account for a higher proportion of manufacture exports than local firms and employ relatively more capital intensive techniques with a few exception in case of countries like Taiwan and Hong Kong where local firms are more capital intensive in comparison to their foreign counterparts. Kumar N. (1990) found no statistical significant difference in export performance of foreign and domestic firms in Indian manufacturing.

1.2 Data Set and Methodology:

The comparative study looks at both domestic and foreign firms across different industries. The predominance of foreign firms in Indian manufacturing sector is found across the following major industries: Chemical, Electrical machinery, Non-Electrical machinery and Electronics. The foreign firms are defined as firms with more than 50 per cent equity held abroad. The firms which do not have data for at least three years are excluded from the study.

The comparative performance of domestic and foreign firms is analyzed on the basis of seven parameters namely export orientation, import dependency, capital intensity, profit intensity, vertical integration, product differentiation and effective tax rate. These parameters are defined as below:

Export Orientation (intensity) = Total Exports ÷ Gross Sales

Import Dependency (intensity) = Total Imports ÷ Gross Sales

Capital Intensity = Gross Fixed Asset ÷ Total Wage Bill

Profit Intensity = Total Profit ÷ Total Sales

Vertical Intergration = Value added ÷ Total Sales

(Value added = Salaries + Operating Profit)

Product Differentiation = Advertisement Expenditures ÷ Total Sales

(or Advertisement Intensity)

Effective Tax Rate = Tax Provisions ÷ Gross Profit

The data on the variables like gross sales (including excise duty), gross profit (net profit plus interest payment plus depreciations), tax (corporate tax), gross fixed assets, total wage bill, advertisement and value added (salary bills plus operating profits) have been collected from CMIE on its publication entitled 'Statistical profiles of 500 Corporate Giants' which separately present data for domestic and foreign firms on different industries along with their sub-groups. We obtain data on foreign exchange transactions of firms i.e., total exports and total imports. The total exports include the exports of goods and services along with interest earnings, dividend earned, royalties earned, earning from transportation or tourism, technical fee etc. Total imports include imports of raw material stores and spares, capital goods and payments for services purchased like royalties, commissions, technical fees etc.

2.0 Core Discussion

Our study period relates to 1996 to 2020.The data on exports, imports, value added, profits, advertisement, gross fixed assets, total wage bills and corporate tax are first averaged for all the years (1996-2020) to avoid year to year fluctuation and also to take care the accounting period which is not found to be same across the firms. The average value of the variable (excepting the variables namely gross fixed assets and corporate tax) are divided by their gross sales to obtain their ratios to make the comparative analysis meaningful. Division by sales is necessary to smooth out the large differences in sales across the firms. For capital intensity we obtain the ratio of gross fixed assets to total wage bills as an indicator. The ratio of tax to profit is calculated as a measure of effective tax burden facing the firms separately in the above industries and their sub-groups so as to get a single figure for comparison.

After carefully matching data of both domestic and foreign firms we retain with 108 firms in Chemical, 36 firms in Electrical, 16 firms in non-Electrical and 20 firms in Electronics. Altogether we take 180 firms of which 102 are domestic firms and 78 are foreign firms.

Of the 108 firms in Chemical, 62 are domestic firms and 46 are foreign firms. Of the 36 firms in Electrical, 21 are domestic firms and 15 are foreign firms. Of the 16 Non-Electrical firms, 9 are domestic firms and 7 are foreign firms and out of 20 firms in Electronic, 10 are domestic firms and 10 are foreign firms.

The expected relationship are hypothesized for a particular variable between the two sets of data on foreign and domestic firms and analyzed to see if the data extend any support for the hypotheses or not. The analysis is done in two phases. Firstly, a comparative analysis is done using these ratios between domestic and foreign firms and the use of the non-parametric test namely Wilcoxon Matched Pair Signed Rank Test is undertaken to draw inference. We have highlighted this test in a subsequent section. The ratios of these seven variables are given in Table - 1 to Table - 4 separately for domestic and foreign firms and Table - 5 contains the summary results of the non-parametric test.

Table-1: **COMPARATIVE RATIONS OF DOMESTIC FIRMS: CHEMICAL INDUSTRY**

Sub-Industry Groups	Exp. Int.	Imp. Int.	Cap. Int.	Pro. Int.	Vert. Intg.	Adv. Int.	Eff. Tax.	No. of Firms
Basic Chemical	0.09	0.14	15.11	0.21	0.33	0.05	0.10	12
Other Chemical	0.06	0.18	5.50	0.29	0.29	0.03	0.11	6
Paints & Dyes	0.12	0.07	5.35	0.10	0.16	0.10	0.15	7
Cosmetic & Toiletries	0.10	0.14	0.26	0.15	0.17	0.06	0.19	3
Plastic & Rubber	0.09	0.15	9.01	0.14	0.18	0.07	0.11	14
Drugs & Pharma	0.14	0.14	3.11	0.18	0.20	0.08	0.09	20

Table-2: **COMPARATIVE RATIONS OF FOREIGN FIRMS: CHEMICAL INDUSTRY**

Sub-Industry Groups	Exp. Int.	Imp. Int.	Cap. Int.	Pro. Int.	Vert. Intg.	Adv. Int.	Eff. Tax.	No. of Firms
Basic Chemical	0.07	0.12	22.40	0.12	0.15	0.05	0.19	5
Other Chemical	0.08	0.15	92.91	0.16	0.23	0.03	0.26	8
Paints & Dyes	0.10	0.06	6.85	0.15	0.18	0.04	0.15	6
Cosmetic & Toiletries	0.15	0.08	0.23	0.10	0.19	0.11	0.35	7
Plastic & Rubber	0.08	0.08	23.33	0.16	0.19	0.06	0.07	5
Drugs & Pharma	0.10	0.12	8.10	0.13	0.21	0.12	0.27	15

Table -3: **COMPARATIVE RATIOS OF DOMESTIC FIRMS: ELECTRICAL, NON-ELECTRICAL AND ELECTRONICS INDUSTRY**

Sub-Industry Groups	Exp. Int.	Imp. Int.	Cap. Int.	Pro. Int.	Vert. Intg.	Adv. Int.	Eff. Tax.	No. of Firms
Electrical Machinery	0.07	0.05	4.65	0.09	0.19	0.06	0.16	11
Other Elec. Machinery	0.03	0.19	10.11	0.13	0.15	0.02	0.18	10
Non-Elec. Machinery	0.01	0.11	4.18	0.15	0.28	0.03	0.21	9
Electronics	0.13	0.23	9.01	0.17	0.20	0.07	0.19	10

Table -4: **COMPARATIVE RATIOS OF FOREIGN FIRMS: ELECTRICAL, NON-ELECTRICAL AND ELECTRONICS INDUSTRY**

Sub-Industry Groups	Exp. Int.	Imp. Int.	Cap. Int.	Pro. Int.	Vert. Intg.	Adv. Int.	Eff. Tax.	No. of Firms
Electrical Machinery	0.13	0.06	6.01	0.11	0.21	0.05	0.15	9
Other Elec. Machinery	0.07	0.12	27.70	0.13	0.24	0.04	0.10	6
Non-Elec. Machinery	0.11	0.11	5.10	0.16	0.28	0.06	0.21	7
Electronics	0.16	0.20	9.13	0.14	0.17	0.03	0.20	10

2.1 Performance of Foreign and Domestic Firms in Terms of Development Indicators

2.1.1 Exports orientation:

The TNCs subsidiaries enjoy comparative advantages over the domestic firms in terms of brand name, technology and marketing skill which put them in better position in exporting (de la Torre, 1974). Foreign firms are more domestic market oriented when the size of the domestic market is large (Buckely and Casson, 1991). On the other hand, the export orientation depends very much on the domestic culture of the host country. An inward looking policy backed by import substitution and high tariff structure induces the foreign firms to internalize the domestic market through a FDI structure called "Jumping the tariff wall". A more outward looking policy regime can attract efficiency seeking FDI which can be helpful in enhancing export intensity. Nevertheless the large host market is always a major factor behind increasing TNCs involvement.

The export intensity of foreign and domestic firms in 10 sub-groups of three major industries is found to be very low ranging from 1% to 16% of sales. We find that the export intensity of foreign firms is higher than the domestic firms in respect of six industry sub-

groups viz., Other Chemical, Cosmetic and Toiletries, Electrical Machinery, Other Electrical Machinery, Non-Electrical Machinery and Electronics. This higher export intensity of foreign firms can be attributed to technological and marketing advantages they enjoy over the domestic firms. Interestingly, in Drugs and Pharmaceuticals industry, the relative export intensity of domestic firms is much higher than that of the foreign firms.

2.1.2 Import Dependency:

The foreign firms are believed to be more import dependent than domestic firms. TNCs tend to source their inputs from their home country which serve as 'double-edged mechanism' viz., to create a market for their intermediate inputs and profit shifting through over invoicing of imports. The 'liberalized era' could have paid them to go for more imports than the domestic firms with a much reduced custom duties observed during the period.

The relative import dependency of foreign firms is found to be invariably less in comparison to domestic firms in case of all the ten industry sub-groups.

2.1.3 Capital Intensity:

The most debatable issue before the developing countries in the role of technology transfer by TNCs. In general, techniques of production of TNCs affiliates are relatively capital intensive in nature. That is the reason why foreign firms more often compete out local manufacturers and create unemployment. The adaptability of TNCs to local condition depends on the nature of the FDI (market seeking and efficiency seeking) and the type of industry (capital intensive and labour intensive) they are going. Moreover, the abundant factor endowments of the host country can be an additional factor for explaining the adaptability of TNCs.

In favour of the common belief we find that foreign firms are more capital intensive than domestic firms. In Chemical Industry, the only exception is Cosmetics and Toiletries industry where the difference is marginal. In all other cases the differences are found to be relatively higher. In Electrical, Non-Electrical and Electronic industries the difference is found to be marginal.

2.1.4 Profit Intensity:

It is said that foreign firms earn more profit than domestic firms in general. The higher profitability of foreign firms is due to internationalization advantages (Buckely and Casson, 1991) and other firm specific advantages they enjoy over local manufacturers. On the other hand, profitability is inversely related with degree of competition and market concentration. The difference in profitability between domestic and foreign firms is found to be marginal.

The relative higher degree of profitability is observed for domestic firms in the following industrial sub-groups in the Chemical industry: Basic Chemical, other Chemical, Cosmetic and Toiletries and Drugs and Pharmaceuticals. In Electrical and Non-Electrical industry, the foreign firms are marginally higher in profitability than the domestic firms. But in Electronics industry, the domestic firms are at higher in profit intensity than the foreign firms.

2.1.5 Vertical Integration

Vertical integration takes place when there is absence of an efficient market for intermediate transactions. In consequence, highly integrated firms provide less backward linkages and depend more on imported inputs impeding the growth of domestic ancillary industries. Vertical integration is taken as the ratio of value added to sales. Value added equals salary plus operating profits. The remaining part of sales revenue goes to incur the cost of purchasing the intermediate inputs from other firms. The residual sales revenue contains a part of imports and the remaining part is purchased from domestic ancillary firms.

It is observed that, within Chemical industry, the domestic firms are relatively in higher integration in Basic Chemical and Other Chemical industries. In case of paints and Dyes, Cosmetic and Toiletries and Drugs and Pharmaceuticals, foreign firms are marginally at higher vertical integration than their domestic counterparts. In Electrical, Non-Electrical and Electronics industries, foreign firms are more integrated in Electrical machinery and other Electrical Machinery groups.

2.1.6 Product Differentiation or Advertisement Intensity

Foreign firms are generally more intensive in introducing new products. As a result their advertisement and marketing expenditure as a proportion of sales can be higher relative to local firms. We find that there is no difference between domestic and foreign firms between Basic Chemical and other Chemical industries within the Chemical Industry. In respect of Paints & Dyes domestic firms are much more intensive in product differentiation than their foreign counterparts. In Cosmetic and Toiletries foreign firms are relatively more intensive in product differentiation.

2.1.7 Effective Tax Rate

The nominal tax rate facing a firm may be different from the effective tax rate. The effective tax rate shows the burden on corporate income. Foreign firms may be different from domestic firms in effective tax rate. The effective tax rate is defined here as the ratio of tax provisions to gross profitability. As it is observed, the relative effective tax rate is much higher in case of foreign firms. Within the Chemical industry, except for paints and dyes, plastic and rubber group, the effective tax rate for foreign firms are invariably higher than that for domestic firms. In electrical, non-electrical and electronics industries, the difference of effective tax rate between foreign and domestic firms is marginal

in respect of electrical machinery, non-electrical machinery and electronics industries. But in case of other electrical machinery, the effective tax rate is significantly higher in domestic firms than their foreign counterparts.

2.2 Non-Parametric Test

For testing the statistical significance of the difference between foreign firms and domestic firms with respect to these seven variables across the ten industries, the non-parametric test namely Wilcoxon Matched-Pairs Signed Rank Test for two related samples has been used. The procedure involved in using this test is as follows:

To begin with, the difference (d) between each pair of values is obtained and these differences are assigned ranks from the smallest to the largest, ignoring signs. The actual signs of differences are then put to corresponding ranks and the test statistic T is calculated, which happens to be the smaller of the two sums, namely, the sum of negative ranks and the sum of positive ranks.

There may arise two types of situations while using this test. One situation may arise when the two values of some matched-pair(s) is/are equal as a result of which the difference(d) between the values is zero. In such a case, we do not consider the pair(s) in the calculations. The other situation may arise when we get the same difference (d) in two or more pairs. In such a case, ranks are assigned to such pairs by averaging their rank positions. For instance, if two pairs have rank score of 8 then each pair is assigned 8.5 ranks [(8+9)/2=8.5] and the next largest pair is assigned the rank 10.

After omitting the number of tied pairs, if the number of matched pairs is equal to or less than 25, then the table of critical value T is used for testing the null hypothesis. In case the number exceeds 25, the sampling distribution of T is taken as approximately normal with mean $\mu_T = n(n+1)/4$ and standard deviation σ_T

$\sigma_T = \sqrt{[n(n+1)(2n+1)/24]}$

where n is taken as the number of given matched pairs, the number of tied pairs being omitted if any. In such a situation, the test statistic Z is worked out as follows:

$Z = (T-\mu_T)/\sigma_T$

The advantage of taking this test in that it does not assume normality of the population distribution. The test is rather a powerful one as it utilizes information on both direction and magnitude of the differences within the pairs. Since all the variables under the present study are in ratios, these can be compared between large and small in any industry group. Another advantage of this test is that it does not take absolute values of the differences. First it ranks the differences giving higher ranks to higher value and excludes the ties. Thus it is not affected by the extreme values as in case of arithmetic mean. This is one of the desirable properties, especially in non-parametric test, when the sample size is small.

Table 5: INFERENCES DRAWN FROM WILCOXON MATCHED PAIRED SIGNED RANK TEST

	Variables	Inference
1.	Exp. Int.	$Exp^F > Exp^D$
2.	Imp. Int.	$Imp^F < Imp^D$
3.	Capital Int.	$Cap^F > Cap^D$
4.	Profit Int.	$Pro^F > Pro^D$
5.	Vert. Int.	No significant difference
6.	Adv. Int.	No significant difference
7.	Eff. Tax	Eff. $Tax^F >$ Eff. Tax^D

Note: Inferences are drawn by applying Wilcoxon Matched Pairs Signed Rank Test at 95 per cent confidence level.

3.0 Summary and Conclusions:

In this paper, an attempt has been made to compare some of the characteristics of foreign and domestic firms and to see the development impact it exerts on the economy. The empirical analysis shows foreign firms are relatively better export performer in comparison to domestic firms. On import dependency, foreign firms are found to be less import dependent than domestic firms. Thus foreign firms save precious foreign currency for the country.

In favour of the common belief we find that foreign firms are more capital intensive. Thus the employment generation capacity of foreign firms is less in comparison to domestic firms. In respect of profit intensity, our analysis reveals that the profit intensity of foreign firms is significantly higher than that of the domestic firms. So far as vertical integration is concerned, the test reveals that there is no significant difference between the two sets of firms. In respect of product differentiation also we find that there is no significant difference between the two sets of firms. The effective tax rate as defined by the ratio of tax provisions to gross profitability is found to be higher in respect of foreign firms in comparison to domestic firms. This contradicts the view that foreign firms are tax evaders and contribute less to the national exchequer.

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