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## Foreign Ownership and Export Spillovers in Indian Manufacturing Industry under Liberalization

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### INTRODUCTION

Since the Second World War, tremendous changes have been taking place in the world economy through trade, investment and transfer of technology in the name of 'globalization' and 'internationalization'. In recent times, with countries increasingly opening up their economies, there has been a growing flow of commodities, factors of production, management, technology and financial capital across national borders through which technological and marketing knowledge is spreading out (Kumar and Siddharthan, 1994). Such flow of knowledge and capital mainly take place through foreign direct investment (FDI). Multinational enterprises (MNEs), the carriers of FDI, are considered as the major producers of advanced technology and informants of international marketing opportunities. They bring capital along with a host of other factors such as technology, management skills, and world-wide marketing experience and expertise, among others.

Along with the productivity enhancing argument in favor of FDI, lot of debates are currently going on regarding its role in enhancing or improving the export competitiveness of the host country. MNEs typically have a presence in many markets, making them a potential source of information about foreign markets, consumers and technology. Ruane and Sutherland (2004) points out that, MNEs can help in attaining export competitiveness for the host country in two major ways - (i) by setting up export-oriented units in that country; and (ii) by disseminating knowledge about international markets and international marketing techniques to the local firms, making them competitive in those markets. The first one is related to the export behavior of MNEs themselves (a direct effect) and the second one related to the impact of FDI on the export behavior of host-country domestic firms, often known as 'export spillovers' (an indirect effect). Recent studies have shown that the presence of MNEs with their direct investment increases the export intensity of host-country firms both directly and indirectly.

FDI by definition implies ownership of capital by the foreign firms and the power to exercise control over operations of the entity in which such investment takes place (Balasubrahmanyam, 1973). There is always a close interaction among capital ownership, degree of control exercised by the foreign firms and the extent to which the knowledge/technology is transferred. It is the ownership of capital that provides the foreign firms the power to exercise control over operations and it is believed that the extent of knowledge transmitted is positively related to the degree of control exercised (Joseph, 2004). 100 per cent subsidiary may have easier access to information on foreign markets because they form part of multinational enterprise. It is expected that the higher the degree of foreign ownership the more the exposure of firms to international market and, therefore, higher will be the export performance. It is also expected that there are strong export spillovers from foreign-affiliated firms to the domestic firms. Export spillovers can occur when the domestic firms learn from the export activities of foreign subsidiaries through information externalities (Aitken et al., 1997) or as a result of their mere presence in the industry with sales or technological superiority (Kokko et al., 2001).

Based on the above argument, two main hypotheses are tested in this study. The first hypothesis is that if MNEs possess such technological and marketing lead, then increased foreign ownership in a firm would result in increase in the firm's export performance (direct effect). Second, the inherent

knowledge and expertise of foreign firms are expected to reduce the inefficiencies existing among the domestically owned firms in developing countries through 'spillovers', thereby making them more competitive in international market (indirect effect). In this paper, the direct effect of foreign presence on export performance of firms is accounted by taking the foreign equity share of firms and indirect effect is taken by incorporating variables that represents FDI spillovers.

The hypotheses of this study are tested using cross sectional establishment level data for 1430 Indian manufacturing firms for the year 2004. India is an emerging market where various conscious opening up policies are taking place. India has followed an import substitution strategy till 1991, which had virtually eliminated foreign competition for Indian industries. However, realizing the importance of FDI through MNEs in improving productivity, exports, and overall economic growth, a number of policy decisions were undertaken in India during 1980s and early 1990s to attract more FDI along with other economic liberalization policies. This has resulted in increased inflow of FDI. The FDI inflow has increased from a mere US\$97 million in 1990-91 to US\$4,673 million in 2003-04. Exports from India also increased rapidly during the same period from US\$18,145 million in 1990-91 to US\$63,843 million in 2003-04, with almost 82 per cent of the export contribution coming from manufacturing sector (Reserve Bank of India, 2005).

A number of studies have attempted to analyze the impact of FDI on the export performance of Indian industries. These studies mostly concluded that FDI in India is more domestic-market seeking (see Sharma, 2000; Aggarwal, 2001). However, Banga (2003) found a significant impact of FDI on the export-intensity of non-traditional export industries in India. Most of these studies merely compare the export performance of domestic and foreign firms without looking into the possibilities of export-spillovers from foreign firms. In this context, this study attempts to analyze the effect of foreign ownership and FDI spillovers on the export performance of Indian firms in a liberalized framework.

The remaining part of the paper is organized as follows. Section 2 provides a review of recent empirical evidence of relationship between FDI and export performance of firms. Section 3 presents the data and methodology used for the study. Section 4 explains the estimation models. Section 5 outlines the empirical results and Section 6 concludes the paper.

## REVIEW OF RECENT LITERATURE

Though there exists large volume of literature on the productivity spillovers from FDI, there are very few studies on export spillovers from such type of foreign investment. Aitken *et al.* (1997) conducting a study on Mexican manufacturing firms between 1986 and 1990 found that export decision of Mexican firms is positively related to foreign firms' presence that is measured using two separate variables - MNEs' output (production) and their exports. They found that the presence of MNEs with their production and export activities positively influence the export performance of Mexican firms. Kokko *et al.* (2001) examined the association between FDI spillovers and the export behavior of domestic firms in Uruguay using a cross-sectional firm level data. They found that domestic firms are more likely to export if they operate in sectors where the presence of foreign firms is relatively high. Their study also pointed out that the type of trade regime (controlled or liberalized) may influence the ability of MNEs in generating positive export spillovers.

Greenaway *et al.* (2004), using a two-step Heckman selection model to determine the influence of FDI spillovers on the export decision of domestic firms, found positive FDI spillovers on the probability of a UK firm being an exporter. They found that the most important channel of export spillovers is the increased competition resulting from foreign firms. Ruane and Sutherland (2004) found that the presence and the export intensity of foreign owned firms in a third-party export platform has contrasting impact on the export propensity of the host country firms. While the study results suggest that the intensity of foreign presence in Irish manufacturing is associated with a higher probability of local Irish firms becoming exporters, the export intensity of foreign firms is

found to be negatively associated with the export decision and export intensity of domestically owned Irish manufacturing firms.

## **DATA AND METHODOLOGY**

### **Data**

The data for the study is taken from the Prowess (an electronic database for Indian corporate firms listed in the Bombay Stock Exchange (BSE)) provided by Centre for Monitoring Indian Economy (CMIE). Prowess is the establishment level data that is collected and compiled from the annual reports. Only manufacturing establishments from 31 three-digit National Industry Classification (NIC) are taken for this study. Accordingly, a sample of 1430 Indian manufacturing firms for the year 2004 is selected. The sample firms cover a wide range of manufacturing industries. The year 2004 was selected because of the following reasons: First, many studies suggest a transition period from a restrictive regime to a liberalized regime (Joseph, 2004) and we assume that a thirteen year period after the 1991 liberalization would take care of this transition problem. Second, during this year most of the economic indicators and various sectors of the economy performed reasonably well. The Indian economy recorded the highest growth (8.5 per cent) after liberalization in this year with a buoyed growth in agriculture (9.6 per cent growth) supported by improved performance by industry (6.6 per cent) and services (9.1 per cent growth) (Government of India, 2005).

In order to understand the export spillovers from FDI, sample firms in each industry sector have been classified into two groups: domestic controlled/owned firms (referred as domestic firms) and foreign controlled/owned firms (referred as foreign firms). The criteria used for this classification is the one given by Reserve Bank of India (RBI), the Central Bank of India, which considers firms with foreign equity participation of 10 per cent or more as foreign controlled/owned firms. Using the RBI classification criteria there are 1197 domestic firms (around 84 per cent) and 233 foreign firms (around 16 per cent) in our sample.

### **Methodology**

This study uses econometric models to estimate the effect of foreign ownership and FDI spillovers on firm-level export performance. The test includes estimation of the association between foreign equity participation (the extent of foreign ownership) and plant level export performance and the role of FDI in generating export spillovers. To test the impact of foreign ownership on the export performance of firms, all the sample firms are selected where FDI is taken as an additional input variable in the regression equation. The impact of FDI spillovers on domestic firms' export performance is tested taking domestic firms separately.

It should be noted that it is not easy to separate the influence of foreign ownership on the export performance of a firm since export behavior of a firm is not a simple function of the foreign ownership. Many other factors that are firm-specific or industry-specific do exert a deterministic influence on the firm-level export performance. This study, therefore, tries to incorporate some of the other important factors such as firm's size, capital intensity, R&D intensity, and technology import intensity on the export behavior of the firm. The rationale of including these variables in the export-determination model is discussed below.

The size of the firm is expected to positively influence the export performance of the firm because of its significant economies of scale (Caves, 1996; Ruane and Sutherland, 2004). Increased economies of scale due to large size may reduce the cost of production and make the product more price-competitive in export market. Ruane and Sutherland (2004) points out that, relatively larger enterprises are more capable of absorbing any fixed costs associated with entering an export market and to exploit economies of scale in the exporting process. Following Ruane and Sutherland (2004), the capital intensity of the firm is expected to be positively associated with its export intensity, and is included in the estimation equation.

It is assumed that firms with a higher R&D spending may absorb information externalities related to exporting more efficiently. Therefore, an R&D intensity variable is included in the model. It is also postulated that firms with high technology imports both through embodied (import of capital goods) and disembodied (technology licensing or purchasing) channels, would have a better export performance. It should be noted that access to foreign technology through their imports help the firms to produce goods that may well suit for foreign markets, making them more competitive. Therefore, such technology imports are supposed to positively influence the export performance of firms.

In order to understand the knowledge spillovers from foreign firms to the domestic firms, three possible spillover variables are included in the basic estimation equation. These three spillover variables are not mutually exclusive always and we find highly significant correlation between these variables in this study. Therefore, we test the impact of these spillovers, incorporating them separately in the estimation equation.

### **Spillovers from Sales**

The market share of foreign firms in the form of their sales can affect the productivity and exports of domestic firms to a great extent. It is believed that the quality products of MNEs, which usually contains high technology/knowledge content, induce the local firms to be more quality conscious by adopting latest technology to protect their market shares. Technology may spill over to the domestic firms through these products either by imitation or reverse engineering or by using these products as inputs to their products.

### **Spillover from Exports**

Another possibility for spillovers is from the export intensity of foreign firms. Foreign firms are generally considered as good exporters because of their marketing expertise and experience along with worldwide marketing networks. Close contacts with such firms make the domestic firms more productive and efficient in accessing the international markets.

### **Spillovers from Technological Knowledge Stock**

The technological knowledge stock variable for a firm,  $i$  in an industry,  $j$  is constructed by adding up R&D stock and the stock of technology purchased and/or capital goods imports of that firm.

## **MODEL ESTIMATION**

The study incorporates two equations; one for testing the impact of foreign ownership on Indian manufacturing firms (equation (1)) and the other for testing the impact of FDI spillovers on the domestic firms (equation (2)). The association between foreign equity participation and firm-level export performance is tested by estimating an econometric equation given in equation (1), where foreign equity share is the main determining variable. A general specification of the model is given as:

$$EXPINT_{ij} = \beta_0 + \beta_1 FEQ_{ij} + \beta_2 SIZE_{ij} + \beta_3 CAPINT_{ij} + \beta_4 RADINT_{ij} + \beta_5 TIMINT_{ij} + \beta_{6-35} IND_j + \varepsilon_{ij} \quad (1)$$

where  $EXPINT_{ij}$  is the export intensity of firm  $i$  in industry  $j$ ;  $SIZE_{ij}$ ,  $CAPINT_{ij}$ ,  $RADINT_{ij}$ , and  $TIMINT_{ij}$ , are the firm-specific variables explained in Appendix-I;  $FEQ_{ij}$  is the share of foreign equity at the firm level that varies between zero and 100 per cent;  $IND_j$  represent industry dummies; and  $\varepsilon_{ij}$  is a random disturbance term (see Appendix-I for variable definitions).  $\beta_1$  is the coefficient of foreign equity variable showing the degree of association between foreign ownership and firm level export performance. If a positive and significant coefficient for  $FEQ$  is observed, it implies that higher foreign ownership leads to increase in the export intensity of firms. The spillover effect of FDI on the

export performance of domestic firms is tested taking three possible spillover variables separately. The estimation equation is given as below.

$$\begin{aligned}
 EXPINT^D_{ij} = & \beta_0 + \beta_1 SIZE^D_{ij} + \beta_2 CAPINT^D_{ij} + \beta_3 RADINT^D_{ij} + \\
 & \beta_4 TIMINT^D_{ij} + \beta_5 FOREXP_j + \beta_6 FORSALE_j + \\
 & \beta_7 FORTEC_j + \beta_{8-37} IND_j + \varepsilon_{ij}
 \end{aligned}
 \tag{2}$$

where the superscript ‘D’ denotes that the equation is estimated for domestic firms only and *FOREXP*, *FORSALE* and *FORTEC* stands for spillovers from foreign firms’ exports, sales, and technology stock, respectively. The variables are defined and explained in Appendix-I.

**ESTIMATION RESULTS**

**Foreign Ownership and Export Performance of Firms**

Table 1 reports the estimation results for equation (1). The estimate of the coefficient of *FEQ* is not statistically significant in any form of model specifications, implying that the ownership pattern of firms (domestic or foreign) does not have any influence on the export performance of Indian manufacturing firms. The results show that the most influencing factor in making export competitiveness of firms in manufacturing industries is the R&D spending by the firms. This can be inferred from the positive and highly significant estimates of coefficient for *RADINT* in all forms of model specification. This supports the findings of Aggarwal (2001) that own technological capability of firms are crucial determinants of export performance of firms.

**Table 1** Impact of Foreign Equity Participation on Export Performance of Firms (Dependent Variable: *EXPINT<sub>ij</sub>*)

Explanatory Variables	OLS	OLS with Industry Dummies
	Coefficient (t value)	Coefficient (t value)
FEQ <sub>ij</sub>	-0.0195 (-0.611)	-0.0019 (-0.062)
SIZE <sub>ij</sub>	-0.0302 (-0.297)	0.0486 (0.466)
CAPINT <sub>ij</sub>	-0.0002 (-0.887)	-0.0002 (-0.867)
RADINT <sub>ij</sub>	1.7558 *** (2.757)	1.8646 *** (2.901)
TIMINT <sub>ij</sub>	0.3707 ** (2.336)	0.2747 * (1.741)
Constant	0.1397 *** (19.360)	0.0879 *** (3.622)
Industry Dummies	No	Yes
R <sup>2</sup>	0.010	0.138
F-ratio	2.970	6.381
Observations	1430	1430

Notes: Summary regression results derived from equation (1)

‘t’ values in parentheses

Statistically significant at \*\*\* 1 per cent, \*\* 5 per cent, \* 10 per cent.

Another significant firm-specific variable is the technology imports by firms (both embodied and disembodied), *TIMINT*, which helps the firms to get access to foreign technological knowledge and to be more competitive in the international market. This again supports the findings of Aggarwal (2001) that lowering of tariff walls on the imports of capital goods and inputs has a desirable impact on export competitiveness of firms. All other firm-specific variables seem to be insignificant in influencing the export behavior of Indian manufacturing firms. A collinearity test between the explanatory variables shows high statistically significant correlation between *FEQ* variable and *SIZE* variable. A further estimation of equation (1), dropping *SIZE* variable does not make any significant change in the results.

### FDI Spillovers and Export Performance of Domestic Firms

The impact of spillovers from foreign owned firms on the export performance of domestic owned firms is estimated using three different possible spillover variables, viz., and the share of foreign owned firms in total industry exports (*FOREXP*), sales (*FORSALE*), and technology stock (*FORTEC*). In all these cases, positive spillover effects of foreign presence on the export performance of domestic firms are expected. However, the estimation results given in Table 2, show that the FDI spillover in all these three forms have a significant negative effect on the export intensity of domestic firms.

**Table 2** Impact of FDI Spillovers on the Export Performance of Domestic Firms (Dependent Variable:  $EXPINT^{D_{ij}}$ )

Explanatory Variables	OLS			OLS with Industry Dummies		
	Export Spillovers	Sales Spillovers	Technology Spillovers	Export Spillovers	Sales Spillovers	Technology Spillovers
$SIZE^{D_{ij}}$	0.0288 (0.226)	0.0030 (0.023)	0.0402 (0.315)	0.0587 (0.456)	0.0587 (0.456)	0.0587 (0.456)
$CAPINT^{D_{ij}}$	-0.0010 (-1.316)	-0.0010 (-1.337)	-0.0010 (-1.326)	-0.0008 (-1.158)	-0.0008 (-1.158)	-0.0008 (-1.158)
$RADINT^{D_{ij}}$	1.9790*** (3.000)	2.2138*** (3.332)	1.9160*** (2.907)	1.9739*** (2.938)	1.9739*** (2.938)	1.9739*** (2.938)
$TIMINT^{D_{ij}}$	0.4193** (2.083)	0.4186** (2.074)	0.4130** (2.054)	0.3292* (1.677)	0.3292* (1.677)	0.3292* (1.677)
$FOREXP_j$	-0.1439*** (-3.729)	---	---	-0.2335*** (-2.881)	---	---
$FORSALE_j$	---	-0.1388*** (-3.140)	---	---	-0.3879*** (-4.482)	---
$FORTEC_j$	---	---	-0.1302*** (-4.134)	---	---	-0.2169*** (-2.881)
Constant	0.1649*** (16.102)	0.1652*** (14.710)	0.1677*** (16.382)	0.2061*** (9.739)	0.2702*** (12.815)	0.2117*** (9.402)
Industry Dummies	No	No	No	Yes	Yes	Yes
R <sup>2</sup>	0.025	0.022	0.028	0.155	0.155	0.155
F-ratio	6.186	5.365	6.832	6.274	6.274	6.274
Observations	1197	1197	1197	1197	1197	1197

Note: Summary regression results derived from equation (2)

't' values in parentheses

Statistically significant at \*\*\* 1 per cent, \*\* 5 per cent, \* 10 per cent.

In other words, the results suggest that higher exports, sales, and technological capacity of foreign firms negatively affect the export performance of domestic firms. This indicates that domestic firms in Indian manufacturing sector are not able to benefit from the externalities produced by foreign affiliates in improving their export performance and fail to compete with the marketing expertise and the technological superiority of the foreign firms. The inclusion of industry dummies to control for the industry characteristics that may influence the FDI spillovers and export performance of firms do not show considerable changes in the sign and significance of the estimated coefficients. The results support the argument in the literature that the competition effect due to the more efficient operations of foreign firms in production as well as marketing has a negative impact on the export performance of domestic firms. According to the theory of international business, such an effect is expected in the short-run, as foreign entrants start selling in the host market, a crowding-out effect on the domestic firms' output and thus the export performance can be observed (Aitken and Harrison, 1999). However, thirteen years after the full-scale economic liberalization in India, such crowding-out effect cannot be suspected. A major reason can be the increased competition in the domestic market, which forced the domestic firms to pay more attention to the domestic market in keeping their market shares.

## CONCLUSION

This study sought to examine the effects of foreign ownership on export performance of Indian manufacturing industries under a liberalized framework. It has been hypothesized that with the superior technology, marketing skills and marketing networks of MNEs, higher foreign ownership would help the firms to improve their export performance. However, the findings of the study show that higher foreign ownership does not have any influence in increasing the firm-level export performance. This indicates that firms having better access to technology and other benefits due to foreign equity participation are not performing better on export front. They continue to confine their operations to the domestic market than to the foreign market even under the liberalized regime of export. The study results shows that India's liberalization policies have failed to attract any significant amount of export-oriented FDI.

From the policy perspective, the negative spillovers from foreign affiliates have important implications. This gives doubts to the perception that incentives to attract FDI would bring more technological improvement and international competitiveness in the Indian manufacturing industry. Our findings support the argument that the major motive of MNE-affiliates in developing countries is to capture the domestic market (more inward looking strategy). The MNEs in India are not yet started to take the comparative advantage of the country such as the availability of cheap and skilled labor force, to tap the export market. It is, however, not possible to expect a significant export spillovers from FDI in India (like in East and South East Asian countries), because, as Srinivasan (1998) pointed out, India's factor market, including infrastructure sector, is less efficient compared with many of these countries with whom India competes in international markets. The results, however, should be interpreted with caution. This study is based on a cross-section analysis, and a single year may not fully explain the true nature of impact of FDI spillovers on export since it is a continuous or dynamic process. A more rigorous study using a longer time period provides further scope for study.

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**Appendix I** Variable Definitions

Variable	Description
<b>Dependent Variable</b>	
EXPINT <sub>ij</sub>	Proportion of turnover exported (Export intensity) by firm i in industry j.
EXPINT <sup>D</sup> <sub>ij</sub>	Proportion of turnover exported (Export intensity) by a domestic firm i in industry j.
<b>Foreign Ownership Variable</b>	
FEQ <sub>ij</sub>	Foreign equity participation as percentage of total equity capital (Foreign ownership) of firm i in industry j. This variable varies between zero and 100 per cent.
<b>FDI Spillover Variables</b>	
FORSALE <sub>j</sub>	The share of foreign firms' sales in industry j to the total sales of that industry (Spillovers from foreign firms' sales).
FOREXP <sub>j</sub>	The share of exports of foreign firms in industry j to the total exports in that industry (Spillovers from foreign firms' exports).
FORTEC <sub>j</sub>	The share of all foreign firms in industry j to the total technological knowledge in that industry (Spillovers from foreign technological knowledge).
<b>Firm-specific Variables</b>	
SIZE <sub>ij</sub>	Total sales of firm i in industry j.
CAPINT <sub>ij</sub>	Net fixed assets per output (Capital intensity of firm i in industry j).
RADINT <sub>ij</sub> :	R&D expenditure per output (R&D intensity) by firm i in industry j.
TIMINT <sub>ij</sub> :	Technical knowledge import per output (Technical knowledge import intensity (Capital goods imports (embodied technology) plus technology licensing (disembodies technology))).
<b>Industry-specific Variables</b>	
IND <sub>j</sub>	Industry dummy variable, included to control for industry-specific characteristics. There are 31 industries included in the study. Therefore 30 industry dummies are used.