EXIM BANK: RESEARCH BRIEF

The Internationalisation of Indian Firms through Outbound Foreign Direct Investment: Nature, Determinants and Developmental Consequences

एक्ज़िम बैंक
EXIM BANK
भारतीय निर्यात–आयात बैंक
EXPORT-IMPORT BANK OF INDIA

EXPORT-IMPORT BANK OF INDIA
Visit us at www.eximbankindia.in

No. 109
July 2017

Neoclassical theory predicts that to penetrate markets, seek resources and increase efficiency, capital should flow from the capital abundant to capital scarce economies. Contrary to this prediction, a burgeoning trend is the intensification of Outbound Foreign Direct Investment (OFDI) flows from emerging markets and developing economies to developed economies (South-North), and other developing economies (South-South) either through cross border mergers and acquisitions (M&As) or greenfield investments. Although some firms from a small number of developing economies were investing overseas in the 1960s and 70s (namely, the 'Multinationals from the South'), it is only more recently that more and more firms are exhibiting a distinct preference for investing overseas, with the emergence of significant global and regional players from these countries.

The RBI disaggregated OFDI dataset, July 2007 to January 2012, shows that more than 3600 firms are engaged in OFDI. India Brand Equity Foundation (2014) notes that over 2,200 Indian firms are anticipated to invest abroad in the coming 15 years. Correspondingly, FDI outflows from India over the last two decades have increased considerably from US$ 0.006 billion in 1990 to US$14.752 billion in 2011, with outflows being nearly 50% of the inflows during 2007-12 **(Figure A)**. India's FDI outflows amount to 9.55% of that for BRICS (Brazil, Russia, India, China, and South Africa), 3.39% of that for developing economies and 0.92% of worldwide FDI outflows over 2009-12. In scale, India is thus, still a small source of outward investments, though its position in FDI flows and stock, outward as well as inward, amongst emerging economies is noteworthy.

Figure A: Trends in Indian aggregate FDI flows and stocks, outward vs. inward, 1990-2012
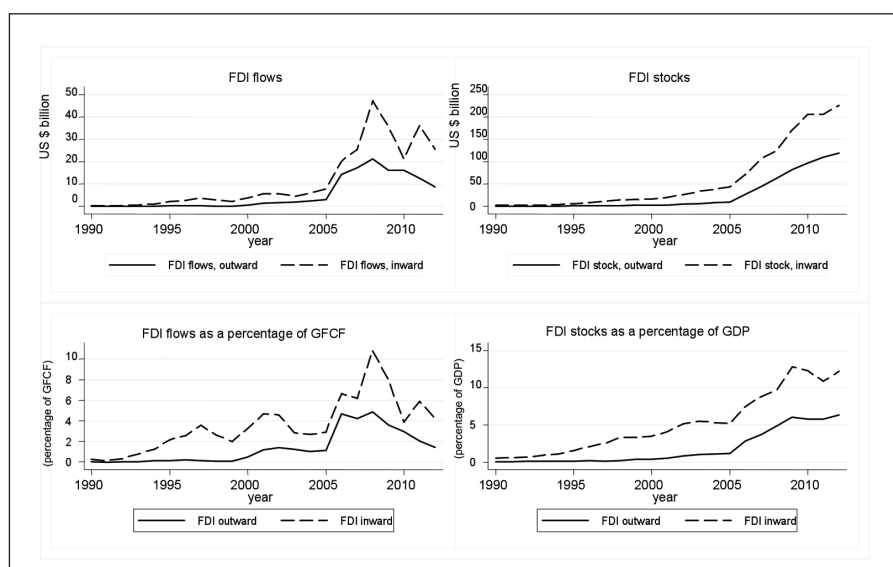
Source: Based on WIR, UNCTAD, 2013, annex tables.

This study is motivated by the consideration that the phenomenon of the increasing internationalisation of Indian firms through OFDI is of major interest in an emerging market context, and builds on previous research on Indian firms' OFDI by focusing on some measurement and methodological issues, while yielding some important insights and policy implications. Using the firm-level database *Prowess* provided by the Centre for Monitoring the Indian Economy (CMIE), the time period covered in the study is 1995-2010 as this period has seen a sharp increase in the magnitude and number of firms engaged in OFDI. For the manufacturing sector, the analysis is based on data for about 6,068 firms (57,698 observations). Identification of firms with foreign investments is done on the basis of the 'investment outside India' (IOI) data field in Prowess. The following three main issues are examined:

1. Whether involvement in OFDI is associated with higher productivity levels at the firm level (that is, whether OFDI firms are more productive than firms with purely domestic operations and those that organise international activities only through exports). Cross-sectional findings of a positive link between firm productivity and foreign involvement could however, be due to the most productive firms self-selecting themselves into foreign markets, and/or learning effects through foreign engagements. Therefore, these two mechanisms are studied further.

2. Estimation and analysis of the determinants of the initial OFDI decision of Indian manufacturing sector firms: that is, test for a causal relationship between ex-ante (before initiating OFDI) firm characteristics and the firm's foreign involvement, namely, the

self-selection hypothesis. Given the higher sunk costs of OFDI, this involves examining whether it is the ex-ante better performing firms that engage in foreign investments.

3. Estimation and analysis of the effects of OFDI on developmental outcomes, here, firm productivity and firm sales (in levels and growth rates), and export intensity; that is, test for a causal relationship between ex-post (after initiating OFDI) firm characteristics and OFDI. This involves examining whether there are any learning effects on firm productivity from doing OFDI-the learning-by-outward investment hypothesis.

The first two issues relate to theoretical constructs of the new-new trade theory literature. In examining the export substituting, horizontal or market-seeking OFDI, firms are posited to face the proximity-concentration trade-off. Self-selection entails the least productive firms to exit from the industry, less productive firms cater only to the domestic market, more productive firms choose to export as they can cover the higher cost of export. At some point, these firms are able to afford the sunk costs of OFDI and make the transition to the next level and invest abroad. The model predicts the sorting of firms into different organisational forms based on their productivity draw. Also, considering the empirical complementarity between exports and OFDI the choice from exports or OFDI is extended to exports and OFDI. The prediction of the productivity ordering between purely domestic firms, pure export firms, and firms that export and invest abroad is closer to the empirical literature in developing economies that suggests that it is exporters that graduate to the next level and invest overseas.

While for the first issue, in addition to the manufacturing and service

(information and communication) sector firms, the under-investigated construction and mining sector firms are also considered, the coverage of this study in terms of determinants and developmental consequences, however, is for manufacturing sector firms alone. In examining the three main issues, this study attempts to build on the existing literature. Estimation of firm-level total factor productivity (TFP) is the foundation for subsequent analysis. Methods/modifications are applied towards the construction of real output (gross output; value added), and input series (combined intermediate inputs, namely, raw materials, energy and services; labour and capital) required for estimating firm productivity.

Given the incomplete coverage of the labour input in the database and the need to impute it, while following the widely-used Annual Survey of Industries (ASI) based approach, an attempt is made to overcome the uniform wage rate criticism by adjusting the labour input measure for a 'wage premium' based on firms' ownership categories. The measure of physical capital (based on the Perpetual Inventory Method) allows for disaggregated growth of investment, and the capital stock series is formed by combining physical capital with 'knowledge' or 'Research and Development' capital stock. To arrive at the real measures from nominal measures, at the 3-digit industry level, the price indices for output, raw materials, energy, and services are constructed separately.

Foreign Involvement and Firm Productivity

In examining the cross-sectional relationship between firm productivity and the degree of firms' foreign involvement, first, in the context of productivity estimation, comparisons are drawn between alternative methods that attempt to overcome 'simultaneity

bias'. Second, in the context of studies that note that the relative superiority of exporters in comparison to purely domestic firms may also result from several sources of potential bias in productivity estimates (also related to the selection of the functional form of the production function, namely, gross output vs. value added) attempts are made to explore whether similar concerns are of importance while investigating the relative superiority of OFDI firms (that also export).

Descriptive statistics for various firm categories in manufacturing show that the median firm in the purely domestic firms' category is smaller than firms that also export, while firms that export and invest abroad are much larger, have higher export intensity than pure exporters (reflecting market-seeking export behaviour, and interdependencies across modes of internationalisation) and also spend more on R&D. Further, while overseas investors that also export have slightly lower capital-output ratio, combined material, raw material and energy intensity, their services intensity is slightly higher than of purely domestic firms.

For firms in the manufacturing and construction sectors, based on the nonparametric approach of first-order stochastic dominance (Kolmogorov-Smirnov test), cross-sectional differences in TFP between outward investors that also export, pure exporters and domestic firms are found to follow the theoretical predictions, although in contrast to gross output, the value added specification suggests an upward bias in the productivity advantage of internationally engaged firms. This suggests that controlling the 'value added bias' is important and it is not sufficient to control only for the 'simultaneity bias'. Productivity differentials vary, sometimes considerably, by 2-digit industry/industry-groups, and the hypothesised pattern is obtained, more so in textiles,

coke and refined petroleum products, chemicals, pharmaceuticals, basic metal and fabricated metal, and machinery and equipment n.e.c. than in the rest.

In services, productivity comparisons show that pure export firms dominate the purely domestic firms, and overseas investors that also export dominate purely domestic firms. However, between overseas investors that also export and pure exporters, no clear cut difference could be established, unlike a previous study on Indian software services suggesting the stochastic dominance of pure exporters over overseas investors that also export. This suggests that Indian IT firms' OFDI that is mainly located in developed countries could also be guided by vertical or complex integration strategies, related to the technology seeking motives and agglomeration economies (due to clustering in specific regions). In mining, only the dominance of pure export firms over purely domestic firms could be established for the latter half of the sample period. Qualified support is thus, found for the 'pecking-order' as predicted by heterogeneous firms' theories. Productivity comparisons that include firms with marginal foreign investments, in manufacturing and services, are found to be broadly similar to those for firms with relatively larger positions abroad.

Determinants of the Initial Decision to Invest Abroad

'Survival' (or duration) analysis techniques are applied to analyse what makes manufacturing sector firms start to invest abroad (that is, the probability that a firm invests abroad in a given period of time, given that it has survived as a non-OFDI firm until that period). Nonparametric Kaplan-Meier estimates suggest positive effects of the firm's business group affiliation on the 'hazard' of foreign entry. However, these effects are for

large, not medium and small firms. Semi parametric results based on both continuous (Cox proportional hazard model) and discrete-time (namely, complementary log-log, logit and probit) hazard models are consistent with the theoretical predictions of the heterogeneous firms' literature that firm productivity explains the self-selection of firms into foreign markets and support the gradual internationalisation process in which the firm serves the foreign market via exports before engaging in OFDI Also, firm size, knowledge-based investments, product differentiation, cash flow and policy effects are significantly related to early OFDI. Within-industry peer effects ('domino' or spillover effects) from other OFDI firms are not significant. Unobserved heterogeneity is found to be important, suggesting the need to account for it. Further, robustness analyses based on restricting the sample to the post 2000 period (a period with important policy changes, and pick up in OFDI); firms with OFDI entry and non-OFDI firms being in the same size class, and considering exporters only, that is, excluding all non-export observations, yield qualitatively similar results.

Effects of OFDI on Firm Performance

Causal effects of Indian manufacturing firms' initiation of OFDI over 1996-2007 are evaluated following discrete (binary) treatment methods (comparing OFDI status with non-OFDI status firms) using propensity score matching-difference-in-differences (PSM-DID) approach to get estimates of the average treatment effect on the treated (ATT). Over a three-year post-entry horizon, results based on 230 matched pairs obtained with the 1-to-1 nearest neighbour (within caliper) matching procedure (from within the same industry and year as the OFDI switchers) indicate that the estimated causal effects of starting OFDI on TFP are insignificant in the OFDI

entry year and in subsequent periods, even after excluding resource-seeking OFDI. OFDI appears to increase firms' export intensity in the OFDI entry year and in subsequent years, suggesting a small complementarity between OFDI and exports. Sales of OFDI firms also increase with respect to comparable non-OFDI firms, with a significantly positive effect in the third year under OFDI. Subsamples based on industry's technology intensity suggest that heterogeneity seems to matter for export intensity and firm sales but not for productivity. Results for 116 matched pairs, for a four-year post-entry horizon indicate that the effect on TFP (two-years later) is positive and significant, suggesting learning effects from OFDI.

In investigating learning-by-exporting, the literature notes that several studies (that do not necessarily report any learning effects from exports) only distinguish between exporting and non-exporting firms (with the firm's export status being a binary treatment variable). It is argued that any positive effects of exporting on firm performance might not just depend on the firm's export status, but also be a function of the extent of its export activities. In this study also, an attempt is made to apply non-discrete (non-binary) continuous treatment methods to analyse the effects of varying treatment levels (firms' foreign investment intensity, that is, firms' investment outside India-total assets ratio) on estimated outcome variables. Based on the fractional logit model, analysing the effects of being a foreign investor in time period t on performance in subsequent time periods, estimated average dose-response functions for all three outcome variables show varying effects of treatment levels, with significantly positive effects over a

certain range of the treatment variable. An inverted U-shaped relationship complements previous findings on the relationship between export-sales ratio and labour productivity/ sales/profitability growth rates. As the foreign investment intensity of Indian firms is still very low, there appears to be a considerable treatment interval over which OFDI activity can positively and significantly impact the growth of TFP, sales, and export intensity.

Comparisons of findings based on binary treatment with the continuous treatment analysis suggest that the impact of first-time foreign investors may be very different from the effects of being a foreign investor in time period t on subsequent time periods. In assessing the learning effects of OFDI based on both binary and continuous treatment, this study finds that (1) binary treatment results based on 116 matched pairs (two-years later) is positive and significant; (2) continuous treatment reveals some evidence of differences in productivity growth between OFDI and non-OFDI firms; (3) it is only the estimate for 230 matched pairs that is statistically insignificant. Also, the numbers of ATT in both cases (for 230 and 116 matched pairs) are positive and high. It can thus be argued that two of the three estimates in this study, (1) and (2) above, suggest that OFDI favourably impacts firm productivity. While not dismissing the insignificant result, it is important to note that insignificant results from binary treatment are consistent with significant non-linear effects with continuous treatment.

Finally, in seeking to enhance India's OFDI flows, an OFDI policy framework has evolved in recent years. For instance, under the EXIM Bank's Overseas Investment Finance (OIF) programme, financial support

measures are being offered to further Indian firms' overseas investments, particularly those of outward oriented small and medium enterprises (SMEs). Conclusions and policy implications that can be drawn from this study support the above measures by drawing focus towards firms with small international engagements. The key policy implication is that policy measures by way of removing hindrances and providing broad support (such as financial and technological), especially to firms with small foreign investment intensities (small overseas investment positions) can help improve firms' competitiveness, export earnings and sales. This support can also be targeted towards export firms particularly if they are planning for technology-seeking OFDI.

The contents of the publication are based on information available with Export-Import Bank of India and on primary and desk research through published information of various agencies. Due care has been taken to ensure that the information provided in the publication is correct. However, Export-Import Bank of India accepts no responsibility for the authenticity, accuracy or completeness of such information.

For further information, please contact

Mr. David Sinate
Chief General Manager
Export-Import Bank of India
Centre One Building, Floor 21,
World Trade Centre Complex,
Cuffe Parade, Mumbai - 400 005, India.
Phone : +91 22 - 22180364/ 22172704
Fax : +91 22 - 22180743
E-mail : rag@eximbankindia.in
Website : www.eximbankindia.in