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## Impact of Trade Liberalization on Foreign Direct Investment in Indian Industries

By

*Bishwanath Goldar*<sup>\*</sup>  
*and*  
*Rashmi Banga*<sup>\*\*</sup>

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<sup>\*</sup> Institute of Economic Growth, University of Delhi Enclave, North Campus, Delhi  
– 110 007, India. Email: [bng@iegindia.org](mailto:bng@iegindia.org).

<sup>\*\*</sup> United Nations Conference on Trade and Development (UNCTAD), The Taj Ambassador  
Hotel, New Delhi. (All views expressed are personal) Email: [rashmibanga@yahoo.com](mailto:rashmibanga@yahoo.com)

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## *Executive Summary*

Literature on FDI and trade has mainly concentrated on export-substituting or export-complementary nature of foreign direct investment (FDI). However, the relationship between FDI and trade has become far more complex in the current WTO regime wherein several developing countries have initiated import liberalisation and entered into trading arrangements. These have drastically reduced trading costs and encouraged trade. With the growing volumes of trade, the focus of policy makers in the developing countries has now shifted from whether FDI causes trade **to whether trade can boost FDI inflows and in particular, what kinds of trade can boost FDI inflows?**

There are reasons to expect that different kinds of trade would influence FDI flows differently. While trade associated with cross-border vertical integration may boost FDI by providing incentives of cost reduction, intra-industry trade may discourage FDI that seeks economies of scale. Within intra-industry trade (IIT) the impact may differ with respect to vertical and horizontal intra-industry trade. Vertical IIT may encourage FDI as it assures ownership advantages and a market; while horizontal IIT may discourage FDI as it may be more beneficial to trade rather than invest if the product is not produced locally. Net effect on FDI of such trade may be an important empirical question.

Though, some studies indicate that FDI is used to preserve markets that were previously established by exports and others have suggested that FDI, in particular U.S. FDI, follows exports, the impact of different kinds of trade on FDI inflows is still an area with limited research. This is a useful area for research with great significance for the policy makers. This paper makes an attempt to address these issues in the context of Indian industries.

The paper undertakes analyses at three levels. *First*, using panel data for 78 industries at three-digit level of industrial classification for the period 1991-92 to 1997-98, econometric models are estimated which (a) relate the extent of foreign investment in an industry in a particular year to intra-industry trade in that industry, level of materials import intensity and, a set of other variables that are expected to influence the degree of foreign presence; and (b) relate intra-industry trade and materials import intensity to trade barriers facing that industry and a set of other variables that are expected to influence materials imports and intra-industry trade. *Second*, an inter-firm cross-sectional analysis using data for a recent year is undertaken to explain inter-firm variations in the foreign share in equity of different firms and relating it to the trade behaviour of firms. And *finally*, inter-state analysis of FDI and trade flows is undertaken, trying to relate trade intensity of companies in a state to the magnitude of FDI inflows into the state.

Two major data sources used in the study are the *Annual Survey of industries* (ASI), which is published by the Central Statistical Organisation, Government of India and *Prowess*, Centre for Monitoring Indian Economy Pvt. Ltd (CMIE) that contains database on over seven thousand registered companies. A concordance table has been constructed wherein industries in Prowess are matched to three digit level industries in ASI. A panel dataset has been constructed for 78 industries at three-digit

level of industrial classification (National Industrial Classification) for the period 1991-92 to 1997-98.<sup>1</sup> Data for industry characteristics are drawn from ASI while data on foreign direct investment, exports and technology for the matched industries are obtained from Prowess (CMIE). As a quantitative measure of the trade liberalisation process, the tariff rates and non-tariff barriers (import coverage ratio) are used. The intensity of intra-industry trade (IIT) is measured by the well-known Grubel-Lloyd (1975) index. To compute the above index, the basic data on India's export and import, at the 4-digit levels of International Standard Industrial Classification (ISIC), have been obtained from the World Bank's "Trade and Production Database CD-ROM". The ISIC classification has been mapped into the ASI classification and indices for the 78 industries covered in the study have accordingly been obtained.

The results presented at the industry level indicate that trade liberalization, particularly reduction in tariff rates and higher export intensity, has caused materials import intensity and intra-industry trade to go up. The increase in materials import intensity reflecting to some extent the process of cross-border vertical integration has had a favourable effect on foreign investment inflows. But increase in intra-industry trade is not found to have a statistically significant effect. The results of inter-firm cross sectional analysis indicate that export intensity and import-availability ratios have significant favourable impact on foreign share in equity. These results corroborate the findings at the industry level that trade associated with cross-border vertical integration has a favourable effect on FDI inflow.

The relationship between trade and FDI is studied with the help of state level data on trade and FDI. The inter-state variations in FDI flows and the scale of international trade is analysed to find out if these two are related. A positive relationship is visible between the level of international trade the plants of companies located in the state are engaged in and the scale of FDI flows.

In sum, the results arrived at different levels indicate that trade liberalization has had a favourable effect on FDI flows in India. It is also found that the regions having greater extent of international trade are able to attract greater amount of FDI. Some evidence is found that point to differential effects of trade associated with international vertical integration and intra-industry trade. Though liberalization has led to a substantial increase in intra-industry trade, much of the intra-industry being horizontal in nature in India is not found to have a strong favourable effect on FDI.

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<sup>1</sup> The period chosen has been dictated by the availability of comparable data. Since there has been a change in industrial classification in the ASI from 1998-99, the period of the analysis could not be extended beyond 1997-98.

# 1. Introduction

For a long time, the theory of international trade and the theory of foreign direct investment have been relatively disjoint. But, empirical studies have commonly found foreign direct investment (FDI) and trade to be inter-linked. FDI has been found to either substitute trade (in the case of tariff-hopping investment) or complement trade (in the case of intra-firm trade). However, the relationship between FDI and trade has become far more complex in the current WTO regime wherein several developing countries have initiated import liberalisation and entered into trading arrangements that have drastically reduced trading costs and encouraged trade. With the growing volumes of trade, the focus of policy makers in the developing countries has now shifted from whether FDI causes trade to whether trade can boost FDI inflows and in particular, what kinds of trade can boost FDI inflows? The answers to these questions have gained importance with the bilateral and plurilateral trading options becoming available to the developing countries.

In spite of the significance of the issue, particularly to the developing countries, there is hardly any literature on the impact of trade on FDI flows. Some studies indicate that FDI is used to preserve markets that were previously established by exports (Grosse and Trevino, 1996) while others have suggested that FDI and, in particular, U.S. FDI, follows exports (Eaton and Tamura, 1994). Though a large number of studies have been undertaken on the impact of FDI on trade, the impact of trade on FDI inflows yet remains to be estimated empirically.

There are reasons to expect that different kinds of trade would influence FDI flows differently. Thus, one would expect differential impact of trade associated with cross-border or international vertical integration, and vertical and horizontal intra-industry trade<sup>2</sup> on inward FDI flows in developing countries. While trade associated with cross-border vertical integration may boost FDI by providing incentives of cost reduction, intra-industry trade may discourage the FDI that seeks economies of scale.

It is evident from the above that the impact of different kinds of trade on FDI flows in developing countries is not only an important and useful area for research but also holds great significance for the policy makers. However, this paper, which makes an attempt to address these issues in the context of Indian industries, has a limited aim. An analysis of the impact of India's trade liberalisation of the 1990s on FDI in Indian industries is presented in the paper using industry-level and firm-level data. The relationship between trade and FDI is studied also in a regional context with the help of state level data on trade and FDI. Further, the paper examines the differential impact of trade associated with cross-border vertical integration and intra-industry trade on FDI inflows.

The rest of the paper is organized as follows. The next section presents a quick review of the relevant literature. Section 3 describes the trends in trade and FDI in Indian manufacturing in the pre and post-reform period, as a background to the empirical analysis presented in the paper. Section 4 sets out some hypotheses

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<sup>2</sup> Horizontal intra-industry trade is trade in final products which are differentiated by attributes, while vertical intra-industry trade is trade in final products which are differentiated by quality.

regarding the effect that economic reforms, particularly trade liberalisation, may have had on FDI inflows and how the effects of intra-industry trade and inter-industry trade on FDI inflows differ. Section 5 presents the results of econometric analysis. Section 6 summarises and concludes.

## *2. Review of the Literature*

There exists an extensive literature on the impact of FDI on trade. Following Mundell (1957), it was long thought that FDI substitutes trade. The proposition was challenged by Agmon (1979), and subsequently a number of studies emphasised potential complementarities between FDI and trade. This literature has been reviewed by Ethier (1994, 1996) and Markusen (1995, 1998). However, recently, there have been some studies that have explored further the relationship between FDI and trade by taking a unified approach, which postulates simultaneous determination of the two flows in developed countries (Markusen and Maskus, 2001).

These studies on trade and FDI mentioned above can be divided into three categories: First, those that argue that the determinants of FDI and trade are similar and therefore what determines trade also determines FDI flows (Ekholm, 2002). Second, those that estimate econometric models in which FDI, exports and imports are determined simultaneously and argue that all three are endogenous variables and therefore their interactions should be taken into account (Hejazi and Safarian, 2003). Lastly, those that look at the impact of regional trade agreements on FDI flows (Binh and Haughton, 2002; Worth, 2002). Banga (2004) shows that regional trading agreements like ASEAN and APEC can influence FDI inflows into the region as the risks associated with investments decline with greater regional integration. Though the above studies have to some extent noted the effects of trade on FDI inflows, they have not exclusively captured these effects by empirically determining the effects of different kinds of trade on FDI inflows. This paper adds to the existing literature by investigating the impact of trade associated with cross-border vertical integration and intra-industry trade on FDI flows for the Indian industry in the post reforms period.

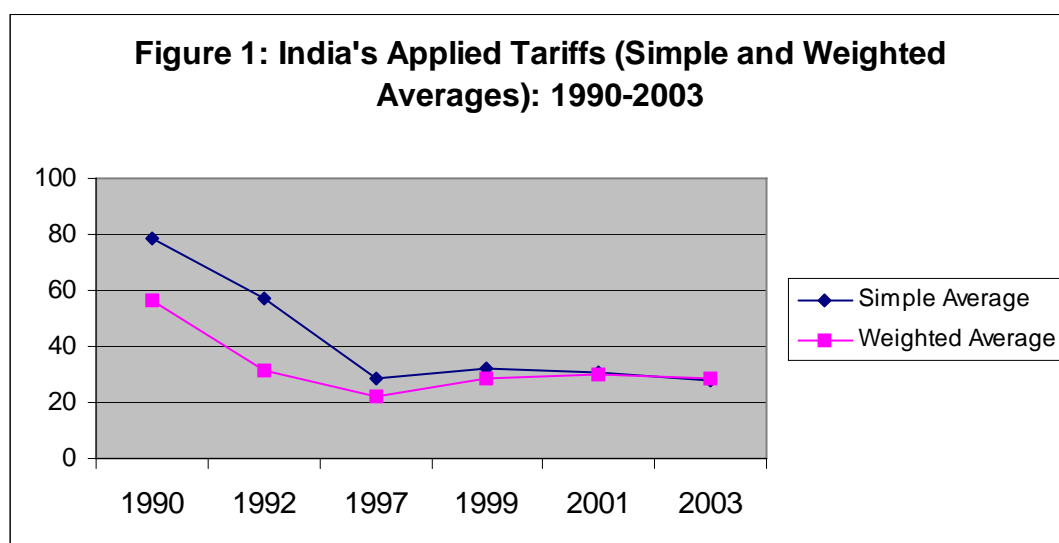
## *3. Trends in FDI and Trade Flows in Indian Manufacturing Sector*

The economic reforms programme initiated by the Indian government in 1991 aimed at rapid and substantial integration of the Indian economy with the global economy in a harmonised manner. Accordingly, the industrial policy in the post-reforms period mainly aimed at de-licensing, privatisation, and FDI promotion, which was coupled with trade liberalisation in the manufacturing sector. To attract FDI, the policy regime for FDI was liberalised considerably. The first step in this direction was the grant of automatic approval, or exemption from case by case approval, for equity investment of up to 51 per cent and foreign technology agreements in identified high-priority industries. Gradually, FDI has been permitted in almost all industries.

Not only has the restrictions on foreign equity investments gone down, several incentives to encourage FDI in manufacturing sector have also been undertaken e.g., tax incentives, tax holidays, etc. Also, to protect the interest of foreign partner and ensure proper treatment and facilitate business operations of foreign firms, India has

signed a number of bilateral investment treaties (BITs). India has also become a member of MIGA (Multilateral Investment Guarantee Agency).

Along with the efforts to improve FDI flows, trade has been encouraged to a large extent by a substantial lowering of nominal rates of protection (NRP). The NRP fell from 90.8 per cent for the aggregate manufacturing sector in the year 1980-81 to 35 per cent in the year 1997-98, while effective rate of protection (ERP) fell from 99.5 to 41 per cent during the same period (Goldar and Saleem, 1992; and Nouroz, 2001). Simple average of applied tariffs on all products declined from 78.7 per cent in 1990 to 28.1 per cent in 2003, while the weighted average declined from 56.1 per cent to 28.2 per cent (Figure 1). Along with this, the coverage of non-tariff barriers (NTB) has also been reduced in the post-reforms period (Pursell, 1996; Mehta, 1999).



In accordance with the tariff reforms, there has been a considerable and consistent improvement in the trade flows as a proportion of GDP as shown in Table 1. While trade as a percentage of GDP increased from 15.7 per cent in 1990 to 30.8 per cent in 2002, the post reform period witnessed a marked acceleration in the growth of both exports and imports. During the period 1970-71 to 1979-80 real export as a ratio of GDP grew at a rate of 3.7 per cent per annum, while in the period 1980-81 to 1989-90 it grew -0.6 per cent per annum; and in the period 1990-91 to 1998-99 the growth was around 4.6 per cent per annum (Goldar, 2002). On the other hand, real imports as a ratio of GDP grew at a rate of 1.1 per cent per annum, 0.3 per cent per annum and 7.9 per cent per annum in these three periods respectively. Imports of goods and services as a percentage of GDP in fact has been larger than exports of goods and services as a percentage of GDP (Table1). It may be noted, however, that while the gap between the two ratios was more than three percentage points in 1980, it was only 1.5 percentage points in 2003.

Along with the rapidly increasing trade volumes, Actual FDI flows rose from around USD 300 million in 1992-93 to more than USD 3 billion in 1997-98 and reached USD 7.5 billion in the financial year 2006. FDI as a percentage of gross capital formation increased from around 0.31 per cent in the 1990 to 2.6 per cent in 2002.

**Table 1: Trends in India's FDI and Trade Flows: 1980 to 2003**

Year	Trade (% of GDP)	Foreign direct investment, net inflows (% of GDP)	Imports of goods and services (% of GDP)	Exports of goods and services (% of GDP)
1980	15.7	0.0	9.5	6.3
1981	14.9	0.0	8.8	6.1
1982	14.5	0.0	8.4	6.1
1983	14.0	0.0	8.1	6.0
1984	14.4	0.0	7.9	6.5
1985	13.2	0.0	7.8	5.4
1986	12.5	0.0	7.2	5.3
1987	12.9	0.1	7.1	5.7
1988	13.7	0.0	7.6	6.1
1989	15.4	0.1	8.3	7.1
1990	15.7	0.1	8.6	7.1
1991	17.2	0.0	8.6	8.6
1992	18.7	0.1	9.8	9.0
1993	20.0	0.2	10.0	10.0
1994	20.4	0.3	10.3	10.0
1995	23.2	0.6	12.2	11.0
1996	22.4	0.6	11.8	10.6
1997	23.0	0.9	12.1	10.9
1998	24.1	0.6	12.9	11.2
1999	25.5	0.5	13.7	11.8
2000	28.5	0.5	14.6	13.9
2001	27.6	0.8	14.1	13.5
2002	30.8	0.7	15.6	15.2
2003	30.5	0.7	16.0	14.5

Source: world Development Indicators

However, it is interesting to note that as the Indian economy became more open and receptive to the world, growth of trade has been much faster than that of FDI (Figure 2). The ratio of FDI inflows to the annual rate of capital formation in

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