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RIS Discussion Papers

Rise of Service Sector Outward Foreign Direct Investment from India: Trends, Patterns, and Determinants

Jaya Prakash Pradhan

RIS-DP # 63/2003

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Rise of Service Sector Outward Foreign Direct Investment from Indian Economy: Trends, Patterns, and Determinants

Jayaprakash Pradhan

Abstract: The rise of service sector outward FDI (O-FDI) activities has emerged as one of the most important aspects of Indian economy during nineties. The present paper reviews the recent trends and patterns and tries to identify determinants of such investment. As compared to the eighties, the character of service sector O-FDI flows has gone through several transformations. In the seventies it was largely a phenomenon led by firms from hotels & restaurants, finance and marketing segments and is being directed at developing regions in overwhelming cases and is mostly minority owned. In contrast, during nineties it was predominantly led by the software segment of the service sector, locationally developed country oriented and is largely majority-owned ventures. The rising trends in the service sector Investment Development Path (IDP) of Indian economy has been found to be related to the stylized aspect of economic growth expressed in terms of structural shift in economic activities. At the firm level the O-FDI behaviour of service sector firms is observed to be non-linearly related to the firm age and size, both relationships following inverted U-shape curves. Firm's innovation, export orientation and profitability are also found to be important explanators in the rise of O-FDI at the firm level. The import of capital goods, however, appears to have a negative impact on trans-border expansion of service sector firms.

Key Words: Service Sector; FDI
JEL Classifications: L8; F21

1. Introduction

One of the distinguishing but unnoticed features of Indian economy during 1990s has been the significant rise of outward foreign direct investment (O-FDI) activity of Indian enterprises. Measured by the value of O-FDI, the period 1996-March2001 alone saw an outflow of US$ 3,529 million, compared to US$ 734 million in 1991-95, US$ 107 million in 1986-90 and US$ 115 million in 1975-80. Importantly this increasing O-FDI activity from Indian economy is being driven by the service sector enterprises than the manufacturing firms. The contribution of service sector enterprises in O-FDI flows from economy has sharply increased from a meager 20 per cent in 1975-80 to 44 per cent in 1991-95 and further to 62 per cent in 1996-March 2001 (Table 1, Figure 1).

The developmental implications of O-FDI by manufacturing firms and service sector enterprises for the home economy can be expected to be different. First, the possibility of O-FDI substituting final exports from home country is nearly absent in the case of service sector whereas in the case of horizontal manufacturing O-FDI it is a rule rather than exception. By nature the production and consumption of services occur simultaneously except in the case of 'commoditification of services', and hence the domestic service sector firms can grow trans-border without having to contract its domestic production of services. In many cases service sector O-FDI in retail and wholesale trading can help in improving the global competitiveness of manufactured exports from the home country by ensuring better after-sales services to and closer interaction with global buyers. Secondly, particularly given the large pool of skilled labour force and strong research base built by the government interventions in the past decades it appears that many developing countries are having comparative advantages in various areas of service sectors like ICTs, trading, hotels, finance, consultancy, etc. This especially is true in the case of developing countries of Asia like Taiwan, Hong Kong, Singapore, Korea and India.[1] The O-FDI operation of these firms from service sector can further strengthen the global competitiveness of these economies in global market for services. As most of

[1] This is clearly reflected in the structure of O-FDI stock from these economies. In 1995, about 49.5% of O-FDI stock of Republic of Korea is in distributive trade, 11.5% in other services and only 39% in manufacturing. For Singapore, finance and insurance together accounted the largest chunk of O-FDI stock at about 89.5% in the year 1994, followed by 9.3% of other services and mere 1.2 percent of manufacturing. In 1993, about 34 % of the O-FDI stock of Taiwan is in services sector, 48% in transport equipment and 18% in other manufacturing. (Source: UNCTAD, 1997).

the industrialized countries are being transformed into service economies, the global market for services is growing at a much faster rate than traditional manufacturing goods. Therefore, the growth-contributing role of O-FDI from services can become more critical in the coming years than that from manufacturing sector.

Against the backdrop of the above fact, the present study is motivated by the objective to analyze the recent trends and patterns in service sector O-FDI from a developing country like India. Admittedly the topic of Third World MNEs is still an under researched area in the literature of international production, especially this is true in the case of service sector enterprises from developing countries. Many of the existing studies on TWMNEs concentrate primarily on O-FDI by manufacturing firms and then in identifying the determinants behind internationalization of those firms. The present study, by concentrating on service sector MNEs from a developing country like India, tries to fill in some analytical gaps in the existing literature. This paper begins with an examination of the rise of O-FDI activity from service sector of the economy with focus on its trend and patterns. It then looks for explanation behind such investment in general and derives implications for the economy. It then provides case studies of selected Indian service sector MNEs to further understand the phenomenon at the firm level. On the basis of this analysis the paper tries to derive some policy options for the economy in the final section.

2. Patterns and Trends in Service Sector O-FDI Activity from Indian Economy

The service sector O-FDI flows have risen at a faster pace than the O-FDI from manufacturing sector. The total estimated flows of O-FDI from service sector increased from mere US$ 24 million in 1975-85 to US$ 2,196 million in 1996-March 2001 as compared to the manufacturing O-FDI flows which have increased from US$ 88 million in 1975-85 to US$ 1,273 million in 1996-March 2001. On the average, for each dollar the economy invested abroad, about 62 cents of this dollar investment is made by the service sector enterprises during 1996-March 2001 (Table 1).

2.1 Sectoral Composition of Service Sector O-FDI

The changing sectoral pattern of service sector O-FDI over 1975-March 2001 has been summarized in Table 2 and Figure 2. With over 52 per cent of the service sector O-FDI flows during 1975-March2001, software emerged

Table 1: O-FDI from Indian Economy, 1975-March2001

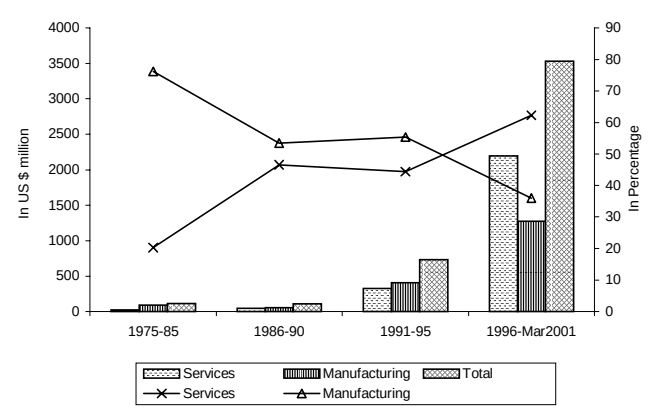
(in US $ million)

Period	*Services*		*Manufacturing*		*Total*	
	No	**Equity**	**No**	**Equity**	**No**	**Equity**
1975-85	56 (40.29)	23.57 (20.33)	80 (57.55)	88.35 (76.20)	139 (100)	115.95 (100)
1986-90	43 (47.25)	49.63 (46.61)	48 (52.75)	56.86 (53.39)	91 (100)	106.49 (100)
1991-95	356 (45.76)	325.77 (44.41)	419 (53.86)	406.2 (55.38)	778 (100)	733.5 (100)
1996-Mar2001	962 (53.95)	2196.4 (62.24)	817 (45.82)	1272.72 (36.07)	1783 (100)	3528.73 (100)
Total(1975-March01)	1417 (50.77)	2595.37 (57.87)	1364 (48.87)	1824.13 (40.67)	2791 (100)	4484.67 (100)

Source: Author's computation based on RIS[3] database (2002).
Note: Percentage shares in parentheses.

as the major service sector investor. The second largest service sector investor is the media, broadcasting and publishing, which accounted for over 28 per cent, followed by hotels and tourism and financial services (each with 5 per cent), and trading (4 per cent). It is important to note that the bulk of O-FDI from software segment was undertaken during the nineties. The estimated O-FDI flow from software was US$ 7 million during 1986-90

Figure 1: O-FDI from Indian Economy, 1975-2001



Note: Bars represent value of equity in US $ million; lines represent percentage share.

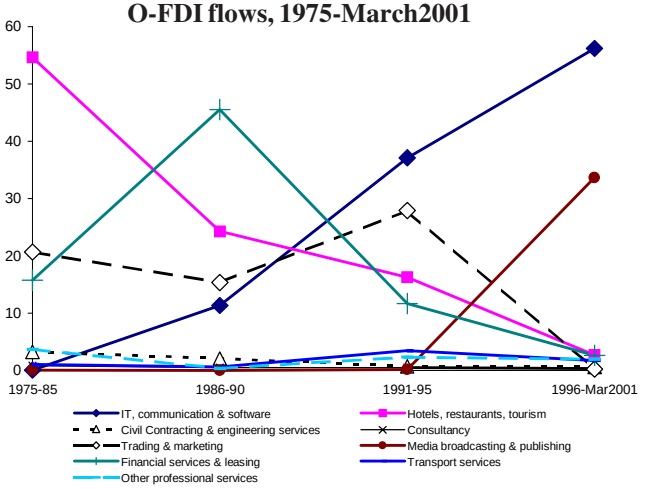
Table 2: Sectoral Composition of Service Sector O-FDI from India, 1975-2001

(in US $ million)

Sector	1975-85		1986-90		1991-95		1996-Mar2001		Total (1975-March01)	
	No	**Equity**	**No**	**Equity**	**No**	**Equity**	**No**	**Equity**	**No**	**Equity**
IT, communication & software	2 (3.57)	0.01 (0.04)	4 (9.30)	5.63 (11.34)	87 (24.44)	120.84 (37.09)	674 (70.06)	1233.65 (56.17)	767 (54.13)	1360.12 (52.41)
Hotels, restaurants, tourism	14 (25.00)	12.89 (54.69)	10 (23.26)	12.07 (24.32)	23 (6.46)	52.88 (16.23)	30 (3.12)	59.57 (2.71)	77 (5.43)	137.4 (5.29)
Civil Contracting & engineering services	4 (7.14)	0.77 (3.27)	2 (4.65)	1.03 (2.08)	19 (5.34)	2.45 (0.75)	25 (2.60)	14.12 (0.64)	50 (3.53)	18.36 (0.71)
Consultancy	6 (10.71)	0.2 (0.85)	1 (2.33)	0.23 (0.46)	7 (1.97)	1.53 (0.47)	24 (2.49)	6.54 (0.30)	38 (2.68)	8.49 (0.33)
Trading & marketing	13 (23.21)	4.87 (20.66)	14 (32.56)	7.60 (15.31)	132 (37.08)	90.89 (27.90)	14 (1.46)	5.56 (0.25)	173 (12.21)	108.92 (4.20)
Media, broadcasting & publishing	2 (3.57)	0.01 (0.04)			6 (1.69)	0.50 (0.15)	55 (5.72)	739.14 (33.65)	63 (4.45)	739.65 (28.50)
Financial services & leasing	9 (16.07)	3.72 (15.78)	8 (18.60)	22.6 (45.54)	39 (10.96)	37.92 (11.64)	57 (5.93)	57.57 (2.62)	113 (7.97)	121.81 (4.69)
Transport services	2 (3.57)	0.25 (1.06)	1 (2.33)	0.3 (0.60)	18 (5.06)	11.17 (3.43)	26 (2.70)	37.16 (1.69)	47 (3.32)	48.88 (1.88)
Other professional services	4 (7.14)	0.87 (3.69)	3 (6.98)	0.18 (0.36)	25 (7.02)	7.6 (2.33)	57 (5.93)	43.09 (1.96)	89 (6.28)	51.74 (1.99)
Total service sector	56 (100)	23.57 (100)	43 (100)	49.63 (100)	356 (100)	325.77 (100)	962 (100)	2196.4 (100)	1417 (100)	2595.37 (100)

Source: Author's computation based on RIS database (2002).
Note: Percentage shares in parentheses.

Figure 2 Percentage share of various sector in total service sector O-FDI flows, 1975-March2001



then it increased to $US 121 million during 1991-95 and then to US$ 1,234 million during 1996-March 2001. In terms of share in the total service sector, the contribution of software segment has risen steadily from less than 1 per cent during 1975-80 to 56 per cent during 1996-March 2001. The hotels and tourism on the other hand, had seen a declining share throughout 1975-March2001. Its share declined from a high of 55 per cent in 1975-80 to mere 3 per cent in 1996-March2001. The rise of media, broadcasting and publishing sector can be traced back to late nineties when firms like Zee Telefilms, Television Eighteen India Ltd, Videsh Sanchar Nigam Ltd, Iridium India Telecom and Travel Pack Market. & Leisure Service (I) Ltd had gone international by undertaking huge O-FDI plans.

2.2 The Geography of Service Sector O-FDI

One of the significant features of service sector O-FDI during nineties was the emergence of industrialized countries as the major host. Table 3, shows that majority of the cases of service sector approvals during 1975-90 were directed at developing countries of South-East and East-Asia, Africa, West Asia and South-Asia. Latin American and Central Asian developing countries remained unattractive for Indian service sector O-FDI flows. These developing countries claimed nearly 52 per cent of O-FDI approvals and about 76 per cent of total equity approved. The share of developed countries was 43 per cent in O-FDI

Table 3: Regional distribution of Indian service sector O-FDI, 1975-2001

(in US $ million)

Region	1975-90		1991-March2001	
	No	Equity	No	Equity
South-East and East-Asia	23 (23.23)	31.965 (43.67)	200 (15.14)	223.869 (8.88)
South Asia	7 (7.07)	6.964 (9.51)	58 (4.39)	22.799 (0.90)
Africa	10 (10.10)	10.231 (13.98)	120 (9.08)	225.6076 (8.94)
West Asia	9 (9.09)	3.391 (4.63)	74 (5.60)	25.1532 (1.00)
Central Asia	1 (1.01)	3 (4.10)	6 (0.45)	0.753 (0.03)
Latin America and Caribbean	1 (1.01)	0.051 (0.07)	25 (1.89)	185.404 (7.35)
Developing countries	51 (51.52)	55.602 (75.96)	483 (36.56)	683.5858 (27.10)
Western Europe	29 (29.29)	5.949 (8.13)	272 (20.59)	1000.918 (39.68)
North America	13 (13.13)	8.704 (11.89)	512 (38.76)	820.7155 (32.54)
Other Developed Countries	1 (1.01)	0.075 (0.10)	29 (2.20)	10.4399 (0.41)
Developed countries	43 (43.43)	14.728 (20.12)	813 (61.54)	1832.073 (72.64)
Central & Eastern Europe	5 (5.05)	2.868 (3.92)	25 (1.89)	6.51 (0.26)
Total service sector	99 (100)	73.198 (100)	1321 (100)	2522.169 (100)

Source: Author's computation based on RIS database (2002).
Note: Percentage shares in parentheses.

approvals and mere 15 per cent in equity approval. Among developed region, Western Europe and North America were the two preferred destinations of outward investment flows. The countries of Central and Eastern Europe had accounted about 5 per cent of the approved cases and 4 per cent of the approved equity. Regionally, thus service sector O-FDI from India was skewed towards developing

countries at least in terms of equity distribution. Further investigation at the country level revealed that it was even more concentrated in that the group of largest recipient 20 countries had accounted for 99 per cent of the equity amount. Singapore is the largest recipient of Indian service sector O-FDI, estimated to be US $ 21 million, nearly 29 per cent of the total O-FDI flows. Other important recipients were USA (12 per cent), Thailand (9 per cent), Sri Lanka and UK (8 per cent each) and Malaysia (6 per cent).

The geography of service sector O-FDI changed radically during the nineties with the emergence of developed countries as the major recipient of Indian O-FDI. During 1991-March2001, Indian service sector O-FDI was overwhelmingly concentrated in developed countries where 62 per cent of O-FDI approval cases and 73 per cent equity were located. Developing countries could manage to attract only 34 per cent of O-FDI approval cases and 27 per cent of the amount. Within developed region, countries of Western Europe and North America continued to be the major recipients. Among developing regions, South-East and East-Asian countries were the largest losers which witnessed their share declined to only 9 per cent of the total service sector equity during 1991-March 2001 from 43 per cent during 1975-90. Other losing developing regions are Africa, West Asia and Central Asia. Latin America and Caribbean regions was the only gainers from the developing region whose equity share became 7 per cent during 1991-March 2001 from less than 1 per cent of 1975-90 period. The service sector O-FDI continued to be highly concentrated in that the group of 20 largest recipient countries accounts for as high as 98 per cent of the equity approved during 1991-March 2001. Over this period USA turned out to be the largest recipient with US$ 907 million, nearly 36 per cent of total service sector O-FDI amount. The second largest recipient was the UK, which received an estimated amount of US$ 819 million, nearly 33 per cent of the total. Therefore the first two largest recipients together account for about 69 per cent of total service sector O-FDI during nineties. Other important host countries are Mauritius (9 per cent), Bermuda (6 per cent) and Hong Kong (4 per cent).

2.3 Equity Participation in Service Sector O-FDI

Another striking characteristics of Indian service sector O-FDI during 1990s is that the share of Indian equity participation has moved away from a minority participation prevailing in the prior 1990s situation to majority participation during 1990s. Out of 93 approvals of service sector O-FDI

Table 4 List of 20 largest host countries of service sector O-FDI from Indian, 1975-1990, 1991-March2001

(in US $ million)

Country	1975-90			Country	1991-March 2001		
	Equity	%	Rank		Equity	%	Rank
Singapore	21.223	28.99	1	UK	907.149	35.97	1
USA	8.604	11.75	2	USA	819.1963	32.48	2
Thailand	6.314	8.63	3	Mauritius	219.6576	8.71	3
Sri Lanka	6.028	8.24	4	Bermuda	153.753	6.10	4
UK	5.576	7.62	5	Hong Kong	102.2096	4.05	5
Malaysia	4.134	5.65	6	Singapore	74.8954	2.97	6
Seychelles	3.79	5.18	7	Austria	28.498	1.13	7
Kenya	3.65	4.99	8	Malaysia	23.54	0.93	8
Kazakhasthan	3	4.10	9	Cayman Island	20.84	0.83	9
Russia	2.839	3.88	10	U.A.E.	16.8802	0.67	10
Zambia	1.82	2.49	11	Germany	15.645	0.62	11
Saudi Arabia	1.55	2.12	12	Indonesia	14.799	0.59	12
Bahrain	1.016	1.39	13	Sri Lanka	13.768	0.55	13
Nepal	0.936	1.28	14	Luxembourg	12.798	0.51	14
U.A.E.	0.7	0.96	15	Liechtenstein	10.044	0.40	15
Mauritius	0.43	0.59	16	Netherlands	7.548	0.30	16
Zimbabwe	0.34	0.46	17	Japan	6.736	0.27	17
Hong Kong	0.278	0.38	18	Nepal	6.282	0.25	18
Netherlands	0.25	0.34	19	Italy	6.176	0.24	19
Egypt	0.125	0.17	20	Switzerland	5.84	0.23	20
Subtotal 20	72.603	99.19		Subtotal 20	2466.255	97.78	
Total Service sector	73.198	100		Total Service Sector	2522.169	100	

Source: Author's computation based on RIS database (2002).

Table 5 The Structure of Indian Ownership Participation in Service Sector O-FDI

Equity Range (%)	1975-90			1991-March2001		
	No of O-FDI Approval	Per cent	Cumulative Per cent	No of O-FDI Approval	Per cent	Cumulative Per cent
0-20	22	23.7	23.7	20	4.1	4.1
20-50	31	33.3	57.0	87	17.8	21.8
50-80	23	24.7	81.7	69	14.1	35.9
80-100	17	18.3	100.0	314	64.1	100.0
Total	93	100.0		490	100.0	

Source: Author's computation based on RIS-DSIR database (2002)
Note: Only those O-FDI approvals are taken for whom the information on Indian equity participation is available.

during 1975-90, there are as many as 53 cases which had Indian equity shares of less than 50 per cent (57 per cent of total number of approvals); 76 cases had shares of less than 80 per cent (82 per cent of total number of approvals); and only 17 cases had shares above than 80 per cent (18 per cent of total number of approvals). During 1991-March2001, the cases of shares above than 80 per cent account for 64 per cent of total number of approvals and the cases of shares above 50 per cent account for 78 per cent of total number of approvals.

2.4 Leading Service Sector Indian MNEs

Table 6 shows 35 leading service sector Indian MNEs, with at least five cases of O-FDI approvals. These total 35 MNEs claimed 266 O-FDI approval cases, accounting for about 18 per cent of all cases during 1975-March 2001 and about 21 per cent of total equity amount. Majority of these 35 service sector MNEs are in computer software (24 MNEs). There are only 3 MNEs in hotels and restaurants and one MNE each in shipping, trading and event management.

In terms of the number of O-FDI approvals, National Institute of Information Technology Ltd. (NIIT) turns out to be the largest Indian service sector MNE. It has to its credit 29 O-FDI approvals amounting to US$ 51 million, nearly 2 per cent of the total service sector O-FDI equity approved over the 1975-March2001. From a humble beginning in 1981, within a very short span of time, NIIT has emerged as a leading global player in the international computer education market and IT services offering a wide spectrum of services including e-

Table 6 Indian service sector MNEs with at least five cases of O-FDI approval

Company Name	No of approvals	Equity($ Million)	%	Activity
NIIT Ltd	29	51.296	1.98	Software development
Aptech Ltd.,	14	7.919	0.31	Software development
Ramco System Ltd.	12	25.18	0.97	Software development
Infosys Technologies Ltd.,	10	7.659	0.30	Software development
Information technologies Ltd	9	7.482	0.29	Software development
ISC Consultancy Services P. Ltd.,	9	0.554	0.02	Software development
MASTEK LTD	9	2.402	0.09	Software development
Oberoi hotels PVT LTD	9	2.025	0.08	hotels & restaurant
BFL Software Ltd.,	8	168.543	6.49	Software development
Globsyn Technologies	8	0.575	0.02	Software development
Great Eastern Shipping Co. Ltd.,	8	10.419	0.40	shipping
Tata Exports Ltd.,	8	3.264	0.13	trading
Akshay Software Technologies	7	0.2	0.01	Software development
Hexaware Infosystems	7	2.6599	0.10	Software development
Indian Hotels Co. Ltd.,	7	43.8556	1.69	hotels & restaurant
Silverline Industries Ltd.,	7	101.9471	3.93	Software development
Software Solutions Integrated	7	3.5064	0.14	Software development
Voltas International Ltd.,	7	1.194	0.05	Engineering, financial & other professional services

Table 6 continued

Table 6 continued

Company Name	No of approvals	Equity($ Million)	%	Activity
Melstar Information Technology	6	9.9035	0.38	Software development
Nucleus Software Offshore	6	0.395	0.02	Software development
Pertech Computers Ltd.,	6	7.67	0.30	Software development
Polaris Software Labs Pvt. Ltd.,	6	2.031	0.08	Software development
Punj Lyods	6	5	0.19	Engineering services & software development
Radiant Software Pvt. Ltd.,	6	2.825	0.11	Software development
Alberg Software Ltd.,	5	0.321	0.01	Software development
East India Hotels	5	24.62	0.95	hotels & restaurant
GIC & LIC	5	32.588	1.26	insurance
Kale Consultants Ltd.,	5	1.553	0.06	Software development
Larsen & Toubro Ltd.,	5	1.174	0.05	Communication & engineering services, Software development
Rolta India Ltd.,	5	6.3	0.24	engineering software & services
Satyam Computers Services	5	12.036	0.46	Software development
Solutions Machines	5	0.41	0.02	Software development
Telecommunications Consultants Ltd.	5	1.125	0.04	Telecom & Consultancy
Unit Trust of India	5	0.691	0.03	Financial services
Wizcraft Intl Entertainment	5	0.592	0.02	event management
Sub total 35	266	549.9155	21.19	
All companies	1491	2595.367	100	

Source: Author's computation based on RIS database (2002).

commerce, offshore development, applications maintenance and support, knowledge solutions, consultancy and data processing.

The evolution of NIIT can be seen in two phases. During 1980s the company focusing on the concept of IT education had expanded remarkably in the domestic market. After playing a major role in the accumulation of IT skills and know-how, the company diversified into the software domain and turned itself into a global business success during 1990s. One important strategy adopted by the company in its drive for the global expansion is O-FDI strategy. The brief period between 1994 and March 2001 had witnessed 29 O-FDI activities by the firm directed at both developed and developing countries (see Table 7). The developed region had attracted 13 O-FDI approvals of the company divided into 5 in the USA, 4 in the UK, 3 in the Netherlands and 1 in Japan. The rest 16 O-FDI approvals have gone into developing region, 9 in Singapore, 5 in Mauritius, and 2 in Indonesia. In terms of the equity amount Mauritius has claimed the largest chunk of O-FDI by the company at about US$ 33 million, accounting about 64 per cent of total O-FDI undertaken. It was followed by Singapore with US$ 9 million, nearly about 16 per cent of the total.

Apart from undertaking Greenfield trans-border investment, the company is recently involved in strategic asset seeking type of investment through brown field investment. The years 2002-03 has seen several acquisitions with international dimensions such as the acquisition of Osprey Systems in March 2002; Data Executives International (DEI) on September 2002 (*Business Line*, 2002), Cognitive Arts in February 2003, all are being in the US market. Out side the US market, the company had acquired AD Solutions AG of Germany specializing in developing custom solutions and providing development outsourcing services in 2002 to penetrate into European market (*Business Line*, 2002). These acquisitions had added to the strategic advantages of NIIT in the US corporate knowledge solutions market, high-end strategic consulting services for the finance and insurance sectors and had strengthened the NIIT management by adding high-calibre management and experienced consultants on the US and EU markets. Many acquisition plans of the company are in the pipeline like plan to acquire the custom development business of the US-based Click2learn (*Business Line*, 2002). Also the company has entered into several other strategic alliances to boast its global presence like agreement with the Chinese government for launching its educational programme in China, with Oracle Corp. for distributing NIIT's web-playable skillettes and other computer based training products, with Silicon Graphics for creating the Webmaster

programme, with Microsoft Corporation to launch the Microsoft Sales Specialist Programs, with SunGard Planning Solutions to leverage the expertise of the latter for delivering total business continuity solutions, etc.

With the competitive advantages strongly grounded in the availability of leading-edge IT skills and human assets, distinct quality superiority, flexibilities and timeliness in dealing with global buyers, strong R&D orientation and O-FDI activities, the company today stands as a US $207 million global IT company. The glory of being the only Asian company to be ranked among the Top 15 training companies in the world, eighth largest software provider from India and the top performing Global Growth Company, only indicate the immense growth potential that this Indian service sector giant may achieve in future.

Aptech Ltd is the second largest service sector outward investor in terms of the number of O-FDI approvals. It has got 14 O-FDI approvals aggregating to be of US$ 8 million (Table 8). All these O-FDI ventures were being undertaken in the latter half of the nineties. Geographically the O-FDI by Aptech is directed more at developed market region claiming more than four-fifth of O-FDI equity, the US (39.8 per cent), UK (26.5 per cent), Australia (8.7 per cent), and Ireland (8.9 per cent). Like NIIT, it also began by offering training and education in information technology in India and later diversified into software solutions after gaining a strong presence in the Indian training and education segment. The company has three training brands, namely Aptech Computer Education, Asset International and Arena Multimedia. The former caters to the software engineering needs of both the retail and corporate segments and latter two offers multimedia and design services. Due to overseas expansion strategy, the company is now operating globally with its subsidiaries in major software markets. The company has also undertaken a host of strategic alliances with many educational institutions like Open University, Columbia, Canada and IGNOU, India and with business companies like Microsoft, Oracle, IBM, Lotus, Pasona Tech, Australian IT Careers Institute (AITCI), etc to boast its trans-border expansion. Aptech also had undertaken strategic acquisitions to increase its presence in the international market. The acquisition of Specsoft Consulting Inc. (*Business Line*, 2000) and 37.5 per cent stake in Turboguard.com Inc. (*Business Line*, 2001) are attempts in this direction. The company is having major plans of increasing its presence in China where it is already running 44 IT education centers (*Business Line*, 2001), South Africa, Botswana, Namibia, New Zealand and Hungary (*Business Line,* 2000).

Table 7: The O-FDI operation of NIIT, 1994-2001

Country	Activity	Year (No. of O-FDI approval)	Total No of O-FDI approvals	Equity(Million $)
Indonesia	IT training	1995 (1), 1996 (1)	2 (6.90)	1.01 (1.97)
Japan	Software development	1995 (1)	1 (3.45)	3 (5.85)
Mauritius	Software development, Internet and E-Commerce Services	1998 (1), 2000 (3), 2001(1)	5 (17.24)	32.75 (63.85)
Netherlands	Software development	1999(1), 2000(2)	3 (10.34)	0.006 (0.01)
Singapore	Software development, motion picture, Civil engineering consultancy	1995 (2), 1996 (1), 1997 (1), 1998 (2), 2000(3)	9 (31.03)	8.53 (16.63)
UK	Software development	1995 (1), 1998 (1), 1999 (1), 2000 (1)	4 (13.79)	5 (9.75)
USA	Software development	1994 (1), 1995 (1), 1998 (2), 2000 (1)	5 (17.24)	1 (1.95)
Grand Total			29 (100)	51.296 (100)

Table 8: The O-FDI operation of Aptech, 1996-2001

Country	Activity	Year (No. of O-FDI approval)	Total No of O-FDI approvals	Equity (Million $)
Australia	Software development	1998 (1), 1999 (1)	2 (14.3)	0.687 (8.7)
Bahrain	Software development	1996 (1), 2000 1)	2 (14.3)	0.615 (7.8)
Bangladesh	Software development	1998 (1)	1 (7.1)	0.109 (1.4)
Ireland	Software development	1998 (1)	1 (7.1)	0.701 (8.9)
Malaysia	Software development	1997 (1)	1 (7.1)	0.037 (0.5)
Singapore	Software development	1997 (1), 2001 (1)	2 (14.3)	0.521 (6.6)
UK	Motion picture	1998 (1)	1 (7.1)	2.099 (26.5)
USA	Software development	1997 (1), 1999 (1), 2000 (2)	4 (28.6)	3.15 (39.8)
Grand Total			14 (100)	7.919 (100)

Source: Author's estimation based on RIS database (2002).
Note: Percentage shares in parentheses.

Ramco System Ltd. is another example of Indian Software Company that has emerged as an important service sector MNE from Indian economy. With 12 O-FDI approvals it stood as the third largest outward investor with US$ 25 million (Table 9). Half of these O-FDI approvals, namely 6 approvals have been directed at the US market. Switzerland has received 2 approvals and Germany, Malaysia, Singapore, Sri Lanka 1 approval each. In terms of equity amount, the US claimed about US$ 9.5 million, followed by US $ 7.5 million gone into Germany and US$ 4 million into Switzerland. Established in 1989, it has grown global over the years providing a range of enterprise solutions like packaged solutions, custom solutions, and secured converged networking solutions to carry voice, video and data across local and wide area networks. With more than 1, 000 customer installations across 30 countries spreading over 70 industry segments and service segment like finance, government, education, health, aviation, utilities, the company has a strong customer base globally. It has now 15 offices across seven countries such as the US (Lawrenceville, NJ; Lisle, IL; Milpitas, CA), UK (Harrow), Germany (Frankfurt), Switzerland (Basel), Singapore, Malaysia and India, employing more than 1,2000 IT professionals meant for R&D, application research, development and implementations. More than half of this manpower is engaged in R&D for the future generation enterprise solutions.

With 9 O-FDI approvals the Oberoi Hotels (P) Ltd., has emerged as the first non-software firm to be the eighth largest Indian service sector MNE. Out of these 9 O-FDI approvals, only 3 approvals belong to the period 1990s (Table 10). All other trans-border expansions were undertaken during late seventies and eighties. The Oberoi Group was founded in way back 1934 under the able leadership of Rai Bahadur Mohan Singh Oberoi. The rise of Oberoi Group as a major name in global tourism represents a success story of a developing country enterprise in achieving global competitiveness in another segment of the service sector. The Group now owns and manages 35 luxury and first class international hotels in seven countries such as Australia (The Windsor-Melbourne), Egypt (one each in Aswan, Cairo, El Arish, Sahl Hasheesh and two in Nile Crisers), India (one each in Agra, Bhubaneshwar, Kolkata, Udaipur, Ranthambhore; two each in Jaipur, New Delhi, Mumbai, Shimla), Indonesia (one each in Bali and Lombok), Mauritius (One), Saudi Arabia (one in Madina), and Sri Lanka (one in Colombo). Three Oberoi Hotels are members of The Leading Hotels of the world. The Group also undertakes several other activities that are closely linked with tourism other than hospitality services such as airline catering, travel and tour services, car rental, project management, etc. The competitive advantage

Table 9 The O-FDI operation of Ramco System Ltd., 1993-2001

Country	Activity	Year (No. of O-FDI approval)	Total No of O-FDI approvals	Equity (Million $)
Germany	Software development services	1995 (1)	1 (8.3)	7.5 (29.8)
Malaysia	Software development services	1995 (1)	1 (8.3)	0.32 (1.3)
Singapore	Software development services	1995 (1)	1 (8.3)	1.9 (7.5)
Sri Lanka	Software development services	1994 (1)	1 (8.3)	1.96 (7.8)
Switzerland	Software development services	1993 (1), 1999 (1)	2 (16.7)	4 (15.9)
USA	Software development services	1993 (1), 1996 (1), 1997 (1), 1998 (1), 2001(2)	6 (50.0)	9.5 (37.7)
Grand Total			12 (100)	25.18 (100)

Source: Author's estimation based on RIS database (2002).
Note: Percentage shares in parentheses.

Table 10: The O-FDI operation of Oberaoi Hotels PVT Ltd, 1975-1996

Country	Activity	Year (No. of O-FDI approval)	Total No of O-FDI approvals	Equity (Million $)
Australia	hotels & restaurant	1975 (1), 1995 (1)	2 (22.2)	0.075 (0.3)
Egypt	hotels & restaurant	1983 (1)	1 (11.1)	0.125 (1.2)
Hong Kong	hotels & restaurant	1990 (1), 1996 (1)	2 (22.2)	0.66 (1.2)
Nepal	hotels & restaurant	1977 (1)	1 (11.1)	0.26 (1.0)
Saudi Arabia	hotels & restaurant	1978 (1)	1 (11.1)	0.75 (13.6)
Singapore	hotels & restaurant	1988 (1)	1 (11.1)	0.08 (0.3)
UK	hotels & restaurant	1982 (1)	1 (11.1)	0.075 (0.3)
Grand Total			9 (100.0)	2.025 (100.0)

Source: Author's estimation based on RIS database (2002).
Note: Percentage shares in parentheses.

of the Group flows from a highly motivated and well-trained staff providing the best quality services as measured by good in-room facilities, personalized customer services, hi-tech business equipment and excellent English communication. The Group, particularly, its promoter EIH Ltd is now planning for a major expansion to the tune of Rs. 1,000 crore within three years both in the current and future hotel projects (*Business Line*, 2001). The new hotels projects of the Group that have been completed in 2001 are Oberoi in Mauritius, Oberoi Sahl Hasheez in Egypt, Wildflower Hall in Himachal Pradesh, and Amarvilas in Agra. The ongoing projects include project in Morocco venture (a joint venture equity partnership with the North Africa-based O&A Group), Udailvilas in Udaipur and Vanyavilas in Sawai Madhopur in Rajasthan.

Other service sector Indian MNEs are Infosys Technologies Ltd., Information technologies Ltd., ISC Consultancy Services (P) Ltd., Mastek Ltd., etc.

3. Explaining the Rise of Service Sector O-FDI

This section address to the question: what factors account for the dramatic rise of service sector as the dominant mode of internationalization of Indian enterprises in the 1990s? Two approaches have been adopted in this case: (1) macro-based and (2) micro-based. While in macro-based approach we have looked at the home country-specific determinants of service sector O-FDI through the framework of Investment Development Path (IDP), in micro-based approach the firm-specific factors have been examined through appropriate empirical framework.

3.1 Structural Changes and Indian Investment Development Path

Like many industrialized countries, Indian economy has seen tremendous transformation in her composition of national income. In particular, rapid expansion in the contribution of services sector towards national production has been an important phenomenon of her economic performance since Independence. Many traditional service sectors like trade, hotels and restaurants, real estate, public administration, transport, communications, banking and insurance have been rapidly growing in the last two decades and have been joined by new growth sectors like data processing, computer programming, engineering and consulting services, etc. Consequently, the half of the country's GDP is now originating from services sector and other half is being evenly distributed between industry and agriculture sector (Table 11). In terms of growth rate, the service sector is growing at a rate of 8 per cent per annum during 1990s, two-percentage

Table 11: Structure of Gross Domestic Production in Indian economy, 1975-2000

Period	Value-added from			Average Annual Growth rate (%)		
	Agriculture (% of GDP)	Industry (% of GDP)	Services (% of GDP)	Agriculture value added	Industry value added	Services value added
1975-85	37.44	22.31	37.91	3.14	5.68	5.67
1986-90	31.66	24.13	41.44	4.06	8.06	7.25
1991-95	30.53	24.24	42.65	2.31	6.25	7.09
1996-2000	27.22	24.34	46.05	2.89	5.28	7.93

Source: Author's computation based on WDI (2002).

point higher than growth rate of industry (6 per cent), and five-percentage point higher than growth rate of agriculture.

The rise of service sector as a major growth sector in the economy results from a number of reasons. First, the country had achieved a higher level and extent of human capital formation through formal, technical and professional education.[2] The presence of cheap and skilled human resources had played a critical role in the growth of the service sector. Secondly, technological revolution in microelectronics that has given rise to data goods like computers, computer equipment and peripherals, and data services like software, data processing, information storage and retrieval, and telecommunication services has led to a new service sector revolution. Given the strong scientific infrastructure and skill manpower that the country had build over the decades through active government interventions the country was able to successfully integrate these technological changes in its developmental strategies. Thirdly, the rise of service sector is an inevitable shift of economic activity from agriculture to industry and finally to service economies as observed in the case of industrialized countries. The provisions of infrastructure services like transportations, communications; business services like consultancy, finance and insurance; trade services like retailing, advertising, repair and maintenance; and public services like education and health care, not only facilitates but also makes possible the goods-producing activities of the extractive and manufacturing sectors. Therefore the rise of service sector represents a natural evolution of economic activity in the process of economic development. Thirdly, the accelerating process of globalization aided by the emergence of WTO regime, and domestic policy liberalization may offer better opportunities for service sector firms for growth on a global and local basis.

[2] The growth in the number of schools/institutions of different types ranging from primary to degree level and enrollment ratios at different levels of such education has been tremendous in the past. Over the period 1971-97, the increase was 49.6 per cent in the number of primary schools, 104.7 per cent in the number of muddle schools, 179.6 per cent in the number of high/higher secondary schools, 129 per cent in number of universities, and 215.1 per cent in the number of degree level institutions of general education. The increase is also quite significant in the case of number of degree level professional and technical institutions over the same period at about 154.3 per cent. Over the period 1971-1998, the enrollment ratio at primary level education has increased from 76.4 per cent to 89.7 per cent, 34.2 per cent to 58.4 per cent in case of middle level and 19.0 to 50.0 in the case of secondary level. (IAMR, 1999; WDI, 2002)

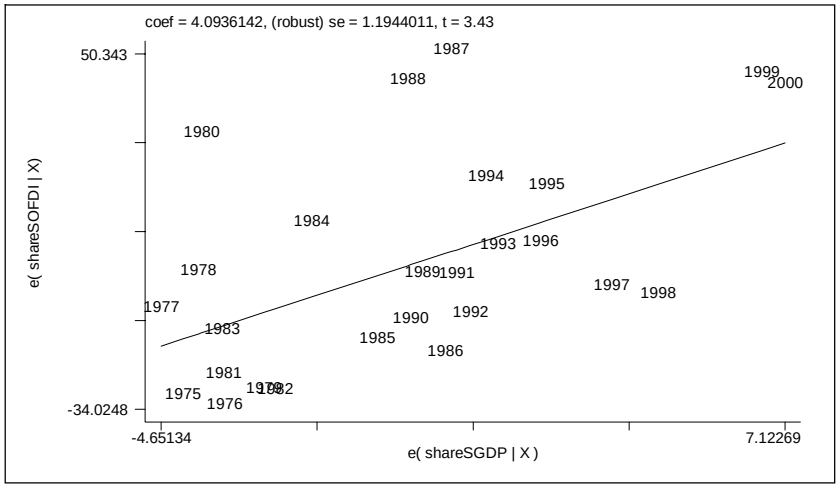
These structural changes in the economic activity of a nation can be expected to reflect in the trans-border business activities undertaken by firms from that country. This follows from the hypothesis of Investment Development Path (IDP) that visualizes that the outward and inward direct investment engagement of a country is systematically related to its economic development relative to the rest of the world (Dunning and Narula 1996). The process of economic development in India over the last five decades has led to significant infrastructural development, human capital formation, accumulated learning and technological capabilities that shape the extent and pattern of the ownership advantages of the domestic firms over different economic sectors relative to the rest of the world. Also policy shifts during nineties has improved India's location-bound competitiveness as a host to global production and also act as a push factor in the emergence of O-FDI activities. The government policy with respect to O-FDI has been considerably liberalized in the nineties by instituting and enhancing the scope of automatic approval system for O-FDI[3]. Over the nineties privatization of financial sector, airlines, education and health sector, have proceeded on a global scale and this also may have contributed to the changes in the competitive advantages of service firms.

These changes in international business environment and internal developments in the country had changed the O advantages of domestic firms and led them to engage in trans-border value-adding activities. It appears that these changes have affected more favorably the service firms as these firms were having competitive advantages directly arising out of rising education, technical and professional skills, and developments in the ICTs.

To see how the rise of service sector O-FDI is related to the economic development we have regressed the share of service sector O-FDI on the share of

[3] The O-FDI policy of India has evolved with a restrictive developmental perspective on the role of O-FDI. It is visualized as growth reducing as the country was suffering from resource scarcity and meager foreign exchange reserves. Hence only joint ventures were promoted with minority Indian ownership less than 50 per cent and even that minor equity participation was required to be in the form of exports of Indian made capital goods, equipment and know-how. Since October 1992 the O-FDI policy has been considerably liberalized and more recently the modified Guidelines for Indian Joint Ventures (JVs) and Wholly Owned Subsidiaries Abroad (WOSs) of July 12, 2002, has provided for an automatic route for cases with equity value up to US$100 million in any one financial year.

Figure 3: Relationship between the share of service sector in O-FDI flows and GDP



service sector in GDP. As presented in the Figure-3, the estimated Indian IDP is a rising line indicating that the O-FDI activities by service sector firms is emerging as the major mode of internationalization of the economy as service sector contribution is increasing in the GDP. Around 29 per cent of variation in the structure of O-FDI (i.e. the share of service O-FDI in total) from the economy is being explained by the structure of GDP (i.e. the share of services in GDP). Therefore, the emergence of service sector O-FDI can be explained by the economic development of India, particularly the structural change in economic activity.

3.2 Determinants of O-FDI activity at the firm level

The explanation offered in the above section through IDP framework only indicates that the past economic growth along with its structure has been responsible for the emergence of service sector MNEs from Indian economy. But the above aggregative analysis although useful in conceptualizing the dynamics of cross-border territorial expansion of Indian service firms, it does not by itself indicate what exactly are the sources of competitive advantages that had inspired these outward investors. In this section we will try to identify the set of firm-specific factors that are important in the rise of O-FDI activity by service sector enterprises. In doing so the study had estimated the following Tobit model:

The Model :

$$O-FDI_{it} = \beta + \chi_0\, AGE_{it} + \chi_1 AGE^2 + \chi_2 SIZE_{it} + \chi_3 SIZE_{it}^2 + \chi_4 RDINT_{it} + \chi_5 DISTECH_{it} + \chi_6 EMTECH_{it} + \chi_7 SELLINT_{it} + \chi_8 PRODVITY_{it} + \chi_9 MARGIN_{it} + \chi_{10} EXPOINT_{it} + \sum_n \delta_n SECDUM_n + u_{it} \quad if \quad RHS > 0$$

$$= 0 \quad if \quad RHS \le 0 \qquad (A)$$

Where:

$O\text{-}FDI_{it}$ is the internationalization intensity measured as the O-FDI equity held abroad as a percentage of net worth of *i*th firm in *t*th year.

AGE_{it}: The age of *i*th firm in number of years.

AGE^2_{it}: The squared term of the age of *i*th firm in number of years.

$SIZE_{it}$: Total sales of *i*th firm in *t*th year.

$SIZE^2_{it}$: The squared term of the sales of *i*th firm in *t*th year.

$RDINT_{it}$: Total R&D expenditure as a percentage of total sales of *i*th firm in *t*th year.

$DISTECH_{it}$: Royalties, technical and other professional fees remitted abroad by *i*th firm as a percentage of sales in the year t.

$EMTECH_{it}$: Import of capital goods by *i*th firm as a percentage of sales in *t*th year.

$SELLINT_{it}$: Selling expenditure of the *i*th firm as a percentage of sales in the year t.

$PRODVITY_{it}$: Labour productivity defined as the net value-added generated per rupee of wage cost (%)

$EXPOINT_{it}$: Export of *i*th firm as a percentage of sales in the year *t*.

$MARGIN_{it}$: Profit before tax as a percentage of sales.

$SECDUM_1$ to $SECDUM_n$ denotes sectoral dummies included in the estimation.

The model is the same empirical framework that we have developed to explain the O-FDI behavior of Indian manufacturing firms (see, Kumar and Pradhan, 2003, for more details).

Results

The model (A) has been estimated for a sample of Indian service sector firms based on RIS-DSIR database (2002). These firms came from four service sectors, namely, computer software, construction, hotels restaurants and trading. Out of total 1852 observations over 1989-90 to 2000-01, about 1661 observations are associated with firms with O-FDI and only 191 observations with firms without

O-FDI. For more details about the database see the appendix. Apart from furnishing the unstandardized raw tobit coefficients under the column-2 in Table 12, we also have provided Mc-Donald-Moffitt decomposition of tobit coefficients into effects on O-FDI intensity of firms with O-FDI (under column-3) and effects on O-FDI probability of firms without O-FDI (under column-4). Column-5 gives the standardized coefficients that are scale free and hence useful to see the relative strength of different independent variables in determining O-FDI behavior of service sector enterprises.

The positive and highly significant tobit coefficient for variable age strongly confirms the hypothesis that internationalization of Indian service sector firms depends crucially on their age. In particular, a 1-year increase in firm age would, on average, lead to an increase in the internationalization intensity of about 0.249, keeping other variables constant. The increase in the probability of non-investing firms to undertake O-FDI is about 0.0195 per cent. Therefore as the firm grows older, so also grows its stock of accumulated past knowledge and experiences on production as well business and this may provide some ownership-specific advantages helpful for its overseas expansion. Moreover, the quadratic term of age also comes out with a negative sign and is significantly different from zero. Thus the impact of age on the O-FDI activity of service sector firm is non-liner in nature. As firm age increases, the O-FDI activity of firm increases up to a threshold limit after which it starts decreasing. In addition, firm size also emerges as another important factor for the trans-border activity of service enterprises. The relationship between firm size and O-FDI is also found to be non-linear as represented by an inverted U shaped curve. Therefore, larger size firms are most likely to involve in O-FDI activities as they have the benefits of largeness like resources, preferential access to capital market, and more information on markets. But the benefits of largeness help firms only up to a limit and after that its effect on overseas expansion of firm turns negative. The estimated total effect of firm age and size has been presented in the Figure 4. Figure 4 shows that the O-FDI of sample firms increases with firm age up to 38 years and then starts declining. The positive contribution of firm size is limited up to Rs 3,143 crore and there after it turns to be negative.

The variable R&D intensity turns out with a positive and significant coefficient. Apart from age and size factor, the R&D activity is thus a pre-requisite for overseas expansion strategy of service firms. A one per cent increase in the R&D intensity of the sample firm, on average, will lead to 0.077 increase in the probability of service sector firms to undertake O-FDI and 0.0098 increase in the internationalization intensity of outward investing firms. The variable

Table 12: Determinants of O-FDI behavior of Indian service sector enterprises Dependent variable: Internationalization intensity (%)

Independent variable	Pooled Tobit Estimation			
	Coefficients (Robust Z-value)	McDonald-Moffitt Decomposition		Fully standardized coefficients
		Marginal effects at means		
		$\partial Ey^*/\partial x_i$	$\partial F(z)/\partial x_i$	
	Column-2	Column-3	Column-4	Column-5
AGE	1.84303** (2.40)	.2494869	.00195364	0.3695
AGE^2	-0.02434** (2.34)	-.00329445	-.0000258	-0.3800
SIZE	0.08241*** (4.75)	.01115554	.00008735	0.6359
$SIZE^2$	-0.00001*** (3.97)	-1.775e-06	-1.390e-08	-0.6638
RDINT	9.26388*** (2.96)	1.2540326	.00981987	0.0771
DISTECH	-10.13109 (1.37)	-1.3714241	-.01073911	-0.1381
EMTECH	-2.73914*** (3.99)	-.37079157	-.00290353	-5.8488
SELLINT	-0.33787 (0.85)	-.04573704	-.00035815	-0.0655
PRODVITY	-0.00254 (1.30)	-.00034394	-2.693e-06	-0.0433

Table 12 continued

Table 12 continued

Independent variable	Pooled Tobit Estimation			
	Coefficients (Robust Z-value)	McDonald-Moffitt Decomposition		Fully standardized coefficients
		Marginal effects at means		
EXPOINT	0.88363*** (3.99)	.11961551	.00093666	0.4771
MARGIN	0.08132** (2.17)	.01100781	.0000862	0.9888
Software_dummy	36.32454*** (3.13)	5.4125574	.05094968	0.1001
Construction_dummy	35.06525*** (3.33)	5.1440533	.04713854	0.1259
Hotels_dummy	38.53944*** (2.61)	5.8003337	.05552608	0.0936
Constant	-178.78289*** (4.84)	-24.201465	-.18951271	
Sigma	91.5824			
Log likelihood	-1425.367			
Wald chi2	35.22			
Prob> chi2	0.0014			
Obs. With O-FDI	1661			
Obs. With non O-FDI	191			
Observations	1852			

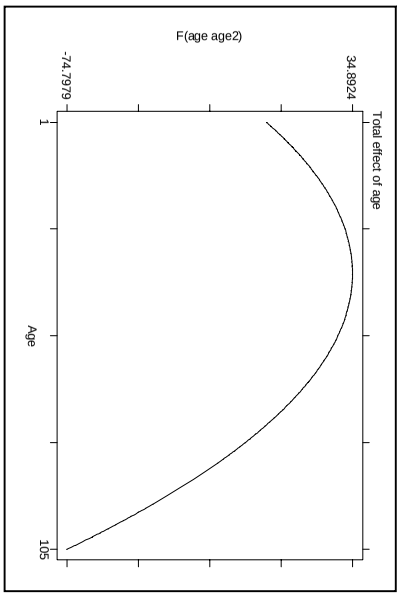
Absolute value of z-statistics in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

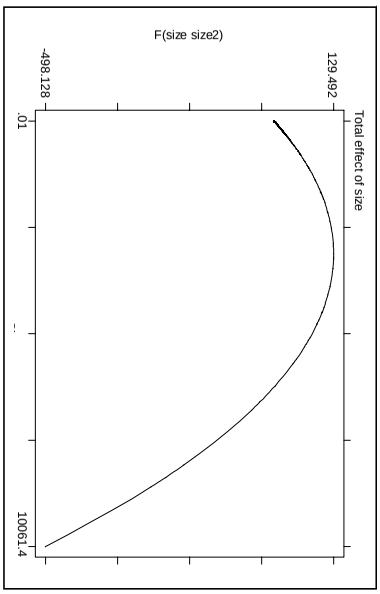
Note: 1. $\partial Ey^*/\partial x_i$ is the change in the expected value of dependent variable for cases above the limit (i.e. O-FDI >0) and $\partial F(z)/\partial x_i$ is the change in cumulative probability of being above the limit associated with an independent variable. 2. Marginal effects is for discrete change of dummy variable from 0 to 1; Trading is treated as the base category in the estimation for all sectors.

Figure 4: The total effects of firm age, firm size on O-FDI behaviour

(A) Firm Age and O-FDI



(B) Firm Size and O-FDI



technological payments intensity has turned out with a negative coefficient that is statistically not different from zero. This indicates that the global production activities of service sector Indian firms do not depend upon the disembodied foreign technology. The capital goods imports comes out with a negative impact and significant at 1 per cent level. This suggests that capital goods importing service sector firms are generally less likely to invest abroad and for those who have invested it is acting as a restrictive factor in their internationalization drive. Partly this negative impact can be explained by the

long pursued government policy that Indian equity should be in the form of exports of Indian made capital goods and know-how. Thus firms not having capabilities to manufacture machinery and equipment and rely on imports are restricted by the above policy provision in trans-border expansion. However, recent policy liberalization greatly reduced this requirement by enhancing the scope of cash payments under automatic approval route. The results also indicate that the trans-border expansion of the sample firms is not backed by any strong advertising advantages and labour productivity.

The export orientation is observed to be an important factor affecting the O-FDI activity of service sector Indian firms. It has got a positive coefficient and is statistically different from zero. Therefore export link helps firms to open production facilities abroad as it acts as a channel for accessing information on foreign markets, legal framework and business culture. The study also observed that profitability of the sample firms has been another significant factor determining their outward expansion. As O-FDI activities involves risks, uncertainty and large resources (financial as well human) for collecting initial information on foreign markets, it is natural that firms with small profit margins prefer to be confined to domestic market rather than engage in O-FDI activities. The sectoral differential intercept dummies of software, construction and hotels all came out to be significant. This suggests that O-FDI behaviour of service sector firms significantly varies over industries and in particular, the above-mentioned three sectors are reportedly having higher O-FDI behaviour of firms than that of trading sector.

In terms of relative contribution, the profit margin has emerged as the largest contributing factor in the O-FDI expansion of service sector firms. The second most important contributor is the variable firm size and is followed by export intensity and firm age.

In sum, the O-FDI behaviour of Indian service sector enterprises is found to be non-linearly affected by firm age and firm size and positively by R&D intensity, export intensity (%), and profit margins. While the variable embodied technology imports is found to have a negative impact, other firm characteristics like disembodied technology import intensity (%), labour productivity (%) and selling intensity (%) are found not to have any systematic impact on the O-FDI activities of Indian service sector firms. Moreover, the result demonstrates that service sector O-FDI behavior is sector specific.

Concluding Remarks

Recently Indian economy had witnessed a rapid growth in the internationalization process of service sector enterprises. This internationalization of services sector may be indicative of the global competitive advantages of Indian service firms deriving from the effective utilization of skills through information network and labour costs advantages available abundantly in the country. The character of O-FDI from service sector underwent several changes during nineties as compared to seventies and eighties. In nineties, major chunk of service sector O-FDI is being undertaken by software segment and it is being primarily destined to the developed region of the world economy. Also the Indian service sector firms are going for majority ownership/ fully owned subsidiaries during the nineties unlike the seventies and eighties where their O-FDI activities were essentially in the nature of minority ownership. The liberalization of O-FDI policy during nineties may explain only a part of the phenomenon. The economics of O-FDI based on IDP framework indicate that the rise of service sector as an important mode of internationalization of Indian economy may need to be explained by the level of economic growth along with its structural changes in the economic activities. The ability of Indian economy to increase its share of services in the total value-adding activities of the economy is undoubtedly an important factor in the rise of outward FDI from service sector. The process of economic development in India since Independence had seen significant expansion of general service infrastructure like finance, transport, communication and also progress in human and institutional capacity-building ensuring availability of human resources with skill ranging from the general education to technical know-how to higher professional training. These factors were the key to the rise of service sector as the major growth sector in the economy and largest contributor of O-FDI activities.

The trans-border diversification service production chains from the Indian economy can be better understood at the firm level. The research shows that firm age and size are two important firm-specific factors explaining the development of O-FDI from Indian service sector, particularly positively affecting firms O-FDI behavior up to a critical level and thereafter affecting negatively. Thus, government policy interested in promoting O-FDI can achieve more success if it is targeted at the smaller size and younger firms. Sufficient support and incentives are needed for these two groups of firms to induce them to undertake O-FDI activities as they generally lack huge financial and managerial resources and experiences required to engage in risky business of

O-FDI. Another key element of Indian service sector O-FDI strategy is the innovativeness of the services firms. This is especially true in the case of computer segment of Indian service sector. The level of competencies and sophistication achieved by Indian software firms in the domain of cognitive engineering, artificial intelligence, virtual reality, genetic algorithms, language-speech-image processing, knowledge solutions, training and education market is already attracting attention of global players like Microsoft, IBM, Oracle, etc. The government interventions for promoting investment in innovative activities of the service sector firm is hence required for encouraging Indian service firms to enter into global production. These may include fiscal benefits for R&D activities, facilitating the access of service firms to foreign technology and equipments, and strengthening of S&T infrastructure in the country. Private innovation may even indirectly depend upon the development and production of many general services like financial services, educational and technical services, transportation and communication services and hence government policy concentrating on the development of these services can also be useful.

The financial strength of a service sector firm is another crucial factor affecting its outward expansion strategy. The study shows that firms with higher profit margins have shown higher probability to diversify into global market through direct investment and also been able to diversify. Therefore, tax exemption incentives by the government can be expected to stimulate service firms to expand their operation aimed at the global production. The exporting strategy of service sector firms is found to have favourable impact on the their decision regarding whether establishing affiliates trans-border or not. Foreign presence through exporting may be crucial as it directly reduces the fixed cost associated with collecting information on foreign market, legal system, and culture.

Finally, the rise of O-FDI from services sector from India possesses strong implications for the movement of natural persons. The GATS commitments under Mode 4 largely linked the movement of natural persons to commercial presence. This gives MNEs flexibilities in moving executives and technicians across countries within their global corporate networks. Developing country firms without such commercial presence suffers from visa restrictions and economic need tests (ENTs) (UNCTAD, 1999). Therefore, O-FDI by service sector firms can greatly help the movement of natural persons from India and exploitation of its labour cost advantages to strengthening its presence in the world market for services.

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Appendix A: Dataset

The dataset used in the present study has been draws from **RIS-DSIR database** constructed from different sources at the Research and Information System for the Non-aligned and Other Developing Countries, as a part of the Department of Scientific and Industrial Research (DSIR) research project 'A Strategic Approach to Strengthening the International Competitiveness in Knowledge-based Industries: Some Explorations into the Role of FDI Inflows, Outward Investments, and Enterprise Level Technological Effort in Promotion of India's Knowledge Intensive Exports'. The dataset, which covers firm-level data on various financial variables like exports, imports, sales, R&D, outward investment, etc. of more than 500 Indian companies, has been compiled from the *PROWESS database* (2002), the Ministry of Commerce, the Ministry of Finance, and the India Investment Centre.

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