Overseas Acquisition versus Greenfield Foreign Investment: Which Internationalization Strategy is better for Indian Pharmaceutical Enterprises?

Pradhan, Jaya Prakash and Alakshendra, Abhinav

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Institute for Studies in Industrial Development
4, Institutional Area, Vasant Kunj, New Delhi - 110 070
Phone/Fax: +91 11 2689 1111; E-mail: info@vidur.delhi.nic.in
Website: http://isid.org.in

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Abstract

Very recently overseas acquisition and outward greenfield foreign investment have emerged as the two important modes of internationalization of the Indian pharmaceutical enterprises. This study examines the relative strengths and weaknesses of these strategies so as to suggest which between the two is a more effective internationalization strategy for the Indian pharmaceutical firms, given the nature of their ownership advantages. This analysis has been conducted in three stages. First, the internationalization process of the Indian pharmaceutical industry has been embedded into a four stage theory emphasizing on the emergence of different modes of internationalization like inward foreign investment, imports, exports, outward greenfield investment, overseas acquisition and contract manufacturing including inter-firm strategic alliances. Second, theoretical perspectives have been developed with regard to the different ways in which greenfield investment and overseas acquisition can maximize the revenue productivity of pharmaceutical firms' competitive advantages and/or to strengthen their competitive position. Third, case study of Ranbaxy Laboratories has been undertaken to empirically assess its experience with overseas acquisitions. The analysis indicates that the growth and internationalization of Indian pharmaceutical enterprises was critically dependent upon strategic government policies pursued in the past. The Indian experience offers a number of policy lessons to other developing countries wanting to build their domestic base in the pharmaceutical sector. Theoretical understandings indicate that acquisition is a more effective internationalization strategy than greenfield investment since the former not only provides all the benefits that the latter gives, but also several other competitive advantages important for firms' performance in world market. The experience of Ranbaxy shows that overseas acquisitions have augmented its intangible asset bundle including distribution and market networks and have provided access to an existing market.

JEL Classification

L65; L22; G34; F14; L20

Keywords

Indian Pharmaceutical Industry; Foreign Investment; M&As; Trade; Strategic Alliances.

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Jaya Prakash Pradhan[*] *and Abhinav Alakshendra*[**]

1. Introduction

Since the late 1990s, overseas acquisition has emerged as an important mode of trans-border business expansion by Indian pharmaceutical enterprises. Increasing number of them, irrespective of firm size, are acquiring business enterprises, brands, R&D laboratories across the world; some of these acquisitions are of regional and international significance (Pradhan, 2006). This growing incidence of overseas acquisition is overlapping the recent spurt in the intensity of Indian pharmaceutical firms to undertake greenfield outward investments commencing with the early 1990s. This phenomenon has added new dimensions to the internationalization process of the Indian pharmaceutical industry and indicates how rapidly the industry is being internationalized.

A variety of factors like adoption of a strong intellectual property right regime, liberalization of domestic policies with respect to industry, foreign investment, imports and major liberalization measures at the global level, have all contributed to this internationalization process. Increasing competitive pressures as a result of policy liberalization at home and emerging new global market opportunities due to extensive decline in overseas barriers to trade and investment have respectively pushed and pulled Indian pharmaceutical companies towards increasing internationalization.

The liberalization of outward foreign direct investment (FDI) policy regime during 1990s seems to have encouraged many Indian pharmaceutical firms to use trans-border FDI in

[*] Assistant Professor, Institute for Studies in Industrial Development, New Delhi. E-mail: jppradhan@vidur.delhi.nic.in

[**] Research Associate, Institute for Studies in Industrial Development, New Delhi. E-mail: alakshendra@vidur.delhi.nic.in

both greenfield and brownfield forms to diversify aggressively into the international markets. The limit of outward investment under the automatic approval of the Reserve Bank of India, which was just US $4 million in 1993–94[1], has increased considerably overtime. Indian firms are allowed up to US $100 million in a year in 2001–02[2], then to any amount up to 100 per cent of their networth in 2003–2004[3] and then further to 200 per cent of the networth in 2005–2006[4]. The government has also relaxed the restriction on Indian firms to access foreign capital markets to raise resources for outward greenfield investment through issue of American Depository Receipts (ADR)/Global Depository Receipts (GDR) in 1999–2000[5] for software enterprises and in 2000–01 for all firms[6]. In 2000–2001, with a view to encourage overseas acquisitions, government allowed Indian pharmaceutical firms to use ADRs/GDRs proceeds for acquiring overseas pharmaceutical companies[7]. Therefore, Indian policy regime has been equally encouraging greenfield and acquisitions abroad by the Indian pharmaceutical firms.

Given the backdrop of the macro policy regime in India encouraging internationalization of Indian pharmaceutical firms through both greenfield investments abroad and overseas acquisitions, without discriminating them, the present study attempts to examine which between the two is a more effective internationalization strategy for Indian pharmaceutical firms. This issue is equally important for policy makers to frame relevant policy regime and for firms that want to internationalize their business activities through outward investment route.

The study is organized as follows: Section-2 discusses the four internationalization stages of the Indian pharmaceutical industry during the post-independence period. Section-3 deals with theoretical and conceptual issues on whether greenfield investment or acquisition is a better market entry mode for Indian pharmaceutical firms. Section-4 presents case study of a selected Indian pharmaceutical firm, which has aggressively used both the greenfield and acquisition modes of market entry to evaluate which among these is more effective.

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1 Economic Survey 1997, Government of India, New Delhi.

2 RBI Circular, A.P. (DIR. Series) Circular No. 27, March 02, 2002.

3 RBI Circular RBI /2004/11 A. P. (DIR Series) Circular No.57, January 13, 2004.

4 RBI/2005/463 A.P. (DIR Series) Circular No. 42, May 12, 2005.

5 Economic Survey, 1999–2000, Government of India.

6 RBI Notification No. FEMA 19/RB-2000, May 03, 2000.

7 Notification, No. F. 15/22/99-NRI, Ministry of Finance, Department of Economic Affairs (Investment Division), dated March 23, 2000.

2. Four Stages of Internationalization Process

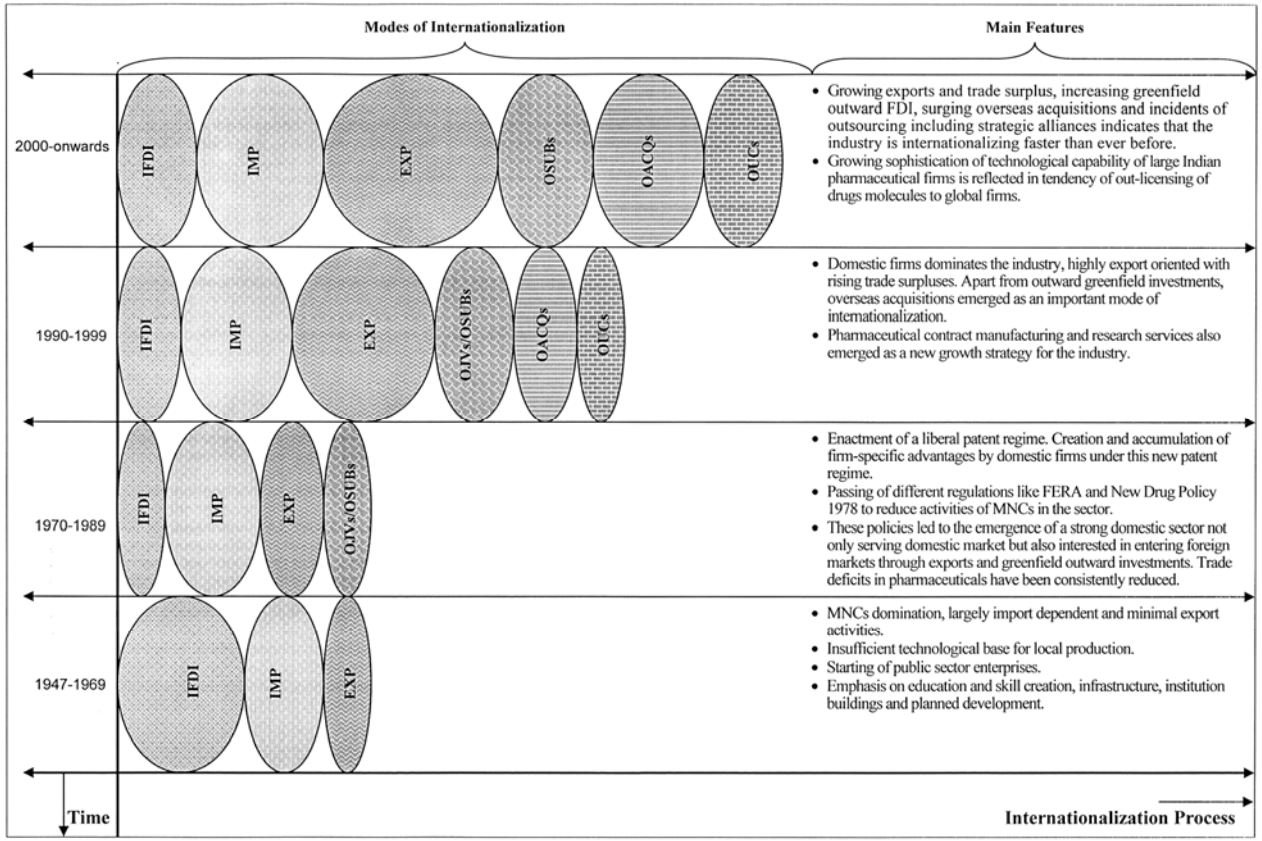
In the post-Independence era, the internationalization process of the Indian pharmaceutical industry can be seen through four stages divided into the following time periods: 1947–1969, 1970–1989, 1990–1999 and 2000-onwards. Each of these stages is marked by distinct developments in the internationalization process of the industry as summarized in Figure-1.

2.1. The First Stage of Internationalization: 1947–1969

The pharmaceutical industry is perhaps among a few sectors in the Indian economy whose foundation is built on the process of internationalization. During the first stage of internationalization over 1947–1969, inward FDI and imports served as the initial channels of overseas business links for the industry. The industry, which had a meagre production scale of Rs. 10 crore in 1947, was completely dominated by foreign affiliates with more than 90 per cent of the domestic market share. These foreign affiliates, which were primarily trading and marketing subsidiaries/branches of global firms based in developed countries, were least interested in local production. They were engaged in the imports of bulk drugs and then processed them into formulations to sell in the domestic market.

A long term product patent regime, namely the Patent and Designs Act 1911, which was in place in the country has provided a stronger intellectual protection to the products of the foreign firms and prohibited any kind of reverse engineering and processes developments by their domestic counterparts. In many instances, this stronger patent regime renders the compulsory license mechanism to be ineffective as foreign firms have obtained judicial injunctions whenever domestic firms are permitted to produce drugs locally at a royalty payment. There were a few domestic firms in the sector which were not capable of local production of bulk drugs due to lack of required technological capabilities. As a result of the strong patent protection and absence of competition from domestic enterprises, foreign firms enjoying a monopoly position were charging higher prices for their products in India. Thus, it is not surprising that the US Senate Committee headed by Kefauver in 1962 had observed that drugs prices in a poor country like India were among the highest in the world.

Figure-1
Internationalization Stages of the Indian Pharmaceutical Industry



Note: IFDI-Inward FDI; IMP-Imports; EXP-Exports; OJVs-Overseas Joint Ventures; OSUBs-Overseas Subsidiaries; OACQs-Overseas Acquisitions; OUCs-Outsourcing. In a notional sense the size of circle indicates its relative growth overtime and relative importance as mode of internationalization as compared to others.

Source: Own construction.

Given the high drugs prices, reluctance of foreign firms for local manufacturing and low domestic technological base to start indigenous production, the government has decided to directly intervene in the production of basic bulk drugs and to meet the health security of the people. This led to the establishment of two giant public sector enterprises between 1954 and 1961, namely the Indian Drugs and Pharmaceuticals Limited and the Hindustan Antibiotics Limited. This public sector investment played a very important role in the evolution of the industry by providing technological leadership for local production and stimulating private entrepreneurial skills related to the pharmaceutical industry in India. For example, some of the architects of large private Indian pharmaceutical companies like Dr. Reddy's Laboratories have come out from these large public sector companies.

The decisive role of the public sector in the initial phase of development along with its skill creation and crowding in effects on domestic private sector investment gave a lift to the indigenous production efforts in the industry. By the early 1980s, domestic players not only started meeting the domestic demand for several essential drugs at reasonable prices, but also began exploring export activities to other developing countries. So, exports have emerged as another mode of internationalization in the 1960s but in moderate quantum. The country continued to rely more on foreign firms and imports to meet the domestic demand for essential drugs. As a result of large imports and small exports, the country was consistently suffering from negative trade balance in pharmaceutical products as presented in Table-1.

Table-1
India's Trade in Medicinal and Pharmaceutical Products, 1962–1970

Year	*(US $million)*		
	Export	*Import*	*Trade Balance*
1962	2	22	-20
1963	2	17	-15
1964	4	17	-13
1965	5	20	-15
1966	5	18	-13
1967	5	26	-21
1968	5	22	-18
1969	7	24	-17
All Above Years	35	166	-131

Note: Figure is for India excluding Sikkim.
Source: Based on UNCOMTRADE Dataset, 2006.

2.2. The Second Stage of Internationalization: 1970–1989

The period 1970–1989 was a very critical stage in the internationalization process of the Indian pharmaceutical industry. Until this period the internationalization process was largely based on the activities of foreign firms in the industry and imports from the developed countries and not on the competitive capabilities of the domestic enterprises. The process became more advanced and matured during this phase as it was strongly promoted by the development of domestic skills and innovative capabilities of the domestic enterprises.

The growth of the domestic sector was tremendous in this period due to large-scale public sector investment in the previous period and implementation of a host of strategic government policies. The most important government policy was the enactment of the Patent Act 1970. This Act radically amended the existing regime for patent protection and greatly reduced the scope for and duration of drug patentability. It recognizes only process patenting for this sector and that also for a very short period of seven years.

The arrival of process patent regime had a strong and positive impact on local technological activities through reverse engineering, adaptation and process development. A large number of Indian domestic firms came into being by developing new cost-effective processes for drugs developed abroad and successfully competing with foreign firms operating in India as well as in exporting to third countries. Besides, the government investment in scientific, skill and physical infrastructure like public research institutions and laboratory facilities, general educational institutions, technical and managerial training centers, transport, energy and banking sectors, all have greatly helped the industry in its growth. These have provided the industry an easy access to the required financial, human and entrepreneurial capital.

The government also put strong pressures on foreign firms, hitherto engaged only in trading to start local production. Under the New Drug Policy 1978 foreign firms, which are engaged in producing formulations from imported bulk drugs and raw materials, are required to increase maximum local content in manufacturing bulk drugs within a two years period. New foreign investment projects are permitted only when they involve local production of bulk drugs and technology transfer. Large foreign firms are also postulated to start R&D facilities in India. The Foreign Exchange Regulation Act (FERA) in 1973 required that foreign firms, which are not engaged in local production of bulk drugs, must dilute their foreign ownership to 40 per cent.

The initial public sector investment in local production of bulk drugs through public sector companies, a liberal patent regime for domestic firms encouraging process and adaptive innovation and pressures on foreign firms for local production, have all contributed to the rapid growth of the Indian pharmaceutical industry. The production of bulk drugs and formulations has gone up nearly 7 and 9 times between 1974–75 and 1989–1990. These translate into a whopping 611 and 755 percentage changes correspondingly (Table-2). Much of this dramatic growth of the sector is contributed by the rise of domestic sector, which includes public sector, domestic large-scale sector and domestic small-scale sector. The share of the domestic sector increased from 62 per cent in 1974–75 to 82 per cent in the case of technology-intensive bulk drugs production and from 49 per cent to 60 per cent in the case of formulations. In the production of bulk drugs and formulation, the share of foreign firms got reduced to 18 and 40 per cent respectively. It is important to note that production of foreign firms has been increasing over time but their share has shrunk due to relatively phenomenal rise of production by domestic enterprises.

The increasing sophistication of the competitive assets of the Indian pharmaceutical firms brought new dynamisms to their internationalization process through increasing exports and emergence of greenfield outward foreign direct investment. The industry, which was exporting just about 5 per cent of the total production of bulk drugs in 1980–81, now exports as high as 54.8 per cent in 1989–90 (Table-2). Between 1982–83 and 1989–90, the exports share in total production of formulations increased nearly by 3 times from 3.4 per cent to 9.2 per cent. As a result of this dramatic growth in the export intensity, the amount of the total exports from the industry and its growth rates have surpassed the imports in the 1980s (Table-3) contrary to the trends observed during 1947–1969. The negative trade balances has given to trade surpluses in the late 1980s, thus, suggesting that exports have become the most dominant form of the internationalization of the industry. The industry enjoyed a trade surplus of $185 million during 1970–1989 as compared to a trade deficit of $131 million during 1962–1969.

Given their growing firm-specific advantages due to strategic government policies and improvement in home country infrastructural base, Indian pharmaceutical firms adopted OFDI as an alternative strategy to go for internationalization. Patent laxities and demand for cheap quality drugs in fellow developing countries promoted Indian firms to exploit their ownership advantages through overseas joint ventures (JVs). The first case of pharmaceutical overseas JV from Indian economy occurred in 1976 with an Indian firm, namely Sarabhai M. Chemicals undertaking JVs in Indonesia and Malaysia, one each. Since then a number of other firms followed greenfield FDI path for internationalization. A total of eleven companies have undertaken 15 overseas JVs in the 1970s and 1980s

(Table-4). Ranbaxy laboratories with 4 JVs stood as the most aggressive outward investors during this phase. It is followed by Sarabhai M. Chemicals with 2 JVs and other firms with 1 JV each. The most important character of this wave of pharmaceutical outward FDI is that all the JVs are targeted towards developing countries and majority are jointly owned with local companies in the host countries. Nigeria has been the top host country with 6 pharmaceutical JVs, followed by Malaysia with 3 JVs and Thailand with 2 JVs. Most of these JVs are for manufacturing in the host country. Of the 14 JVs on whom information on motivation is available, about 12 JVs are for manufacturing, 1 JV is for both manufacturing and marketing and 1 JV is for marketing only. This shows that the initial wave of outward FDI was to exploit ownership advantages through local manufacturing in the host countries and also in collaboration with local partners. Partly, the preference of Indian pharmaceutical company towards joint ownership was due to restrictive outward FDI policy that was in place during this period. The government policy permit only minority-owned ventures and that the outward equity contribution was required to be in the form of exporting Indian made capital goods, machinery and know how and not in cash transfer (Pradhan 2005).

Table-2
Pharmaceutical production in India, 1974–75 to 1989–1990

Year	*Production in Rs Crore*					*Exports as % of production*
	Domestic Sector	*% of total*	*Foreign Sector*	*% of total*	*Total*	
A. Bulk Drugs						
1974–75	56	62.2	34	37.8	90	
1975–76	78	60.0	52	40.0	130	
1976–77	87	58.0	63	42.0	150	
1978–79	144	72.0	56	28.0	200	
1979–80	173	76.5	53	23.5	226	
1980–81	184	76.7	56	23.3	240	4.7
1981–82	217	74.8	73	25.2	290	5.3
1982–83	253	77.8	72	22.2	325	3.5
1983–84	290	81.7	65	18.3	355	5.2
1984–85	309	82.0	68	18.0	377	7.8
1985–86	341	82.0	75	18.0	416	8.0
1986–87	NA		NA		458	19.0
1987–88	NA		NA		480	29.1
1988–89	NA		NA		550	44.2
1989–90	NA		NA		640	54.8
B. Formulations						
1974–75	197	49.3	203	50.8	400	
1975–76	260	46.4	300	53.6	560	
1976–77	408	58.3	292	41.7	700	

Year	Production in Rs Crore					Exports as % of production
	Domestic Sector	% of total	Foreign Sector	% of total	Total	
1978–79	NA		NA		1050	
1979–80	NA		NA		1150	
1982–83	960	60.0	640	40.0	1600	3.4
1983–84	1056	60.0	704	40.0	1760	3.5
1984–85	1096	60.0	731	40.0	1827	5.4
1985–86	1167	60.0	778	40.0	1945	5.5
1986–87	NA		NA		2140	4.8
1987–88	NA		NA		2350	3.8
1988–89	NA		NA		3150	5.0
1989–90	NA		NA		3420	9.2

Source: Based on following sources: i. Department of Chemicals and Fertilizers (1978) *Basic Data on Drugs Industry 1977–78*, New Delhi; ii. Indian Drugs Manufacturers' Association (1989) *Annual Publication 1989*, Mumbai; iii. Department of Science and Industrial Research (1990) *Technology Export Potential in Basic Drugs and Pharmaceutical Formulations*, A Report under the TATT Scheme, New Delhi.

Note: NA-Not available.

Table-3

India's Trade in Medicinal and Pharmaceutical Products, 1970–1989 in US $ million

Year	Export	Import	Trade Balance
1970	11	31	-20
1971	12	36	-24
1972	12	29	-17
1973	17	32	-16
1974	26	40	-14
1975	29	44	-15
1976	25	46	-21
1977	33	70	-37
1978	58	89	-31
1979	75	96	-21
1980	109	95	14
1981	109	93	16
1983	151	142	9
1984	197	115	81
1985	130	146	-16
1986	127	167	-41
1987	182	129	52
1988	255	162	92
1989	435	246	189
All Above Years	1993	1808	180

Note: Figure up to 1974 is for India excluding Sikkim and thereafter including Sikkim.

Source: UNCOMTRADE Dataset, 2006.

Table-4

List of Indian Joint Ventures and Wholly Owned Subsidiaries Abroad, 1976–1988

Company	*Year*	*Ownership*	*Country*	*JV / WOS*	*Date of Approval*	*Equity ($ million)*	*Field of Collaboration*	*Nature of OFDI*
Sarabhai M. Chemicals	1976	76.6	Indonesia	JV	29.07.1976		Antibiotics and pharmaceutical formulations	Manufacturing
Sarabhai M. Chemicals	1976	40	Malaysia	JV	15.09.1976		Pharmaceutical formulations	Manufacturing
Ranbaxy Laboratories Ltd.	1977	10	Nigeria	JV	18.10.1977	0.4	Drugs and Pharmaceuticals	Manufacturing
Alembic Chemical Works Co. Ltd.	1977		UAE		12.10.1977		Pharmaceutical products	Manufacturing
McGaw Ravindra Laboratories	1979		Malaysia		26.10.1979		Intravenous transfusion solutions and transfusion sets	Manufacturing
Chemosyn Pv. Ltd.	1980		Tanzania		22.12.1980		Pharmaceutical formulations	Manufacturing
Dabur Ltd.	1981	49.8	Nigeria		30.06.1981		Pharmaceuticals	Manufacturing
Indian Drugs and Pharmaceutical Ltd.	1982		Nigeria		08.02.1982		Pharmaceutical Products	Manufacturing
Unique Pharmaceutical Laboratories	1982	60	Nigeria	JV	18.10.1982		Pharmaceuticals	Manufacturing
Ranbaxy Laboratories Ltd.	1983	53.13	Malaysia	JV	27.10.1983	0.29	Drugs and Pharmaceuticals	Manufacturing and Marketing
United Chemalode Industries	1984	37.5	Nigeria	JV	06.05.1983		Pharmaceutical Formulations	Manufacturing

Company	*Year*	*Ownership*	*Country*	*JV / WOS*	*Date of Approval*	*Equity ($ million)*	*Field of Collaboration*	*Nature of OFDI*
Hoechst India Ltd.	1985	100	Nepal	WOS	30.12.1985		Drugs and Pharmaceuticals	
Lupin Laboratories	1987	65	Thailand	JV	03.12.1987	1.04	Bulk Drugs	Manufacturing
Ranbaxy Laboratories Ltd.	1987	41.33	Thailand	JV	25.02.1987	0.094	Drugs and Pharmaceuticals	Marketing
Ranbaxy Laboratories Ltd.	1988	40	Nigeria	JV	22.06.1988	1.172	Drugs and Pharmaceuticals	Manufacturing

Source: Based on various sources: i. Indian Investment Centre (1998) *Indian Joint Ventures & Wholly owned Subsidiaries Abroad Approved during the year 1996*, New Delhi; ii. Indian Investment Centre (1998) *Indian Joint Ventures & Wholly owned Subsidiaries Abroad Approved upto December 1995*, New Delhi; iii. Federation of Indian Chambers of Commerce & Industry (1986) *Indian Joint Ventures Abroad and Project Export*, New Delhi; iv. Federation of Indian Chambers of Commerce & Industry (1990) *Report of Workshop on Indian Joint Ventures Turnkey and Third Country Projects*, New Delhi.

2.3. The Third Stage of Internationalization: 1990–1999

The internationalization process of the Indian pharmaceutical industry has further accelerated during the period 1990–1999. As a part of the economic liberalization that India undertook and implemented transitory measures for intellectual property protection and other commitments under the World Trade Organization obligations, the policy regime governing the pharmaceutical industry has undergone rapid transformation. The licensing requirement for entry and expansion of the firms has been abolished, 100 per cent inward foreign investment has been allowed under the automatic approvals of the RBI, considerable liberalization of the outward FDI regime for greenfield and brownfield investments, extensive reduction in the price controls mechanism, free imports of formulations, bulk drugs and intermediates, etc. have been implemented during this stage. As a result of the above mentioned domestic liberalization coupled with the trans-border trade and investment liberalization has heightened competitive pressures in the domestic market as well as opened up new business opportunities abroad.

Export has emerged as the dominant mode of internationalization and has consistently taken over the imports, leading to a rising trade surplus in the pharmaceutical products. Between 1990 and 1999, the trade surplus has grown by a remarkable 19 times from $195 million to $3714 million (Table-5). The export intensity, measured as the proportion of total production exported, has grown from 56.6 per cent in 1990 to 96.9 per cent in 1998 for bulk drugs and from 9.7 per cent to 22.3 per cent for formulations. Thus, exports became the most aggressively pursued internationalization strategy for Indian pharmaceutical firms during the third stage of internationalization.

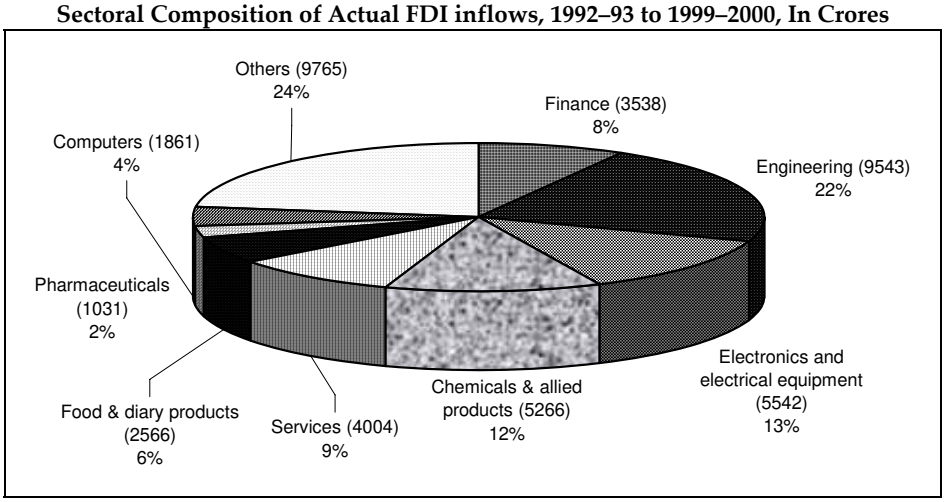
As a result of the liberalization of the inward FDI policy, one would expect foreign firms to expand their activities in India. It is interesting that such an expectation has not become an actuality. The actual FDI inflows into Indian pharmaceutical industry is estimated to be only Rs. 1031 crore over 1992–93 to 1999–00—just 2 per cent of the total amount received by the economy (Figure-2). This suggests that inward FDI continued to play a smaller role as a medium of internationalization strategy of the Indian pharmaceutical industry. The growing competitive strength of the incumbents based on decades of experience in process development, novel drugs delivery and marketing networks may be acting as a strong entry barrier for the new global players for foraying into the industry.

Table-5
India's Trade in Medicinal and Pharmaceutical Products, 1990–1999

Year	*(US $ million)*			*Exports as a per cent of total production*		
	Export	*Import*	*Trade Balance*	*Bulk Drugs*	*Formulations*	*Total*
1990	453	258	195	56.6	9.7	17.2
1991	483	228	256	80.3	10.6	21.6
1992	431	314	117	74.5	9.2	19.7
1993	483	258	225	78.0	11.2	21.9
1994	586	298	287	83.1	11.6	23.1
1995	724	405	319	60.3	13.6	21.3
1996	814	307	507	72.3	23.9	32.3
1997	947	389	558	82.8	23.2	33.9
1998	934	384	549	96.9	22.3	36.1
1999	1075	375	700	NA	NA	NA
All Above Years	6930	3216	3713	78	16	27

Source: Exports and imports data is from UNCOMTRADE Dataset, 2006. The exports intensity has been calculated based on following sources: i. Department of Chemicals and Fertilizers (1978) *Basic Data on Drugs Industry 1977–78*, New Delhi; ii. Indian Drugs Manufacturers' Association (1989) *Annual Publication 1989*, Mumbai; iii. Indian Drugs Manufacturers' Association (2001) 39th *Annual Publication 2001*, Mumbai.

Figure-2
Sectoral Composition of Actual FDI inflows, 1992–93 to 1999–2000, In Crores



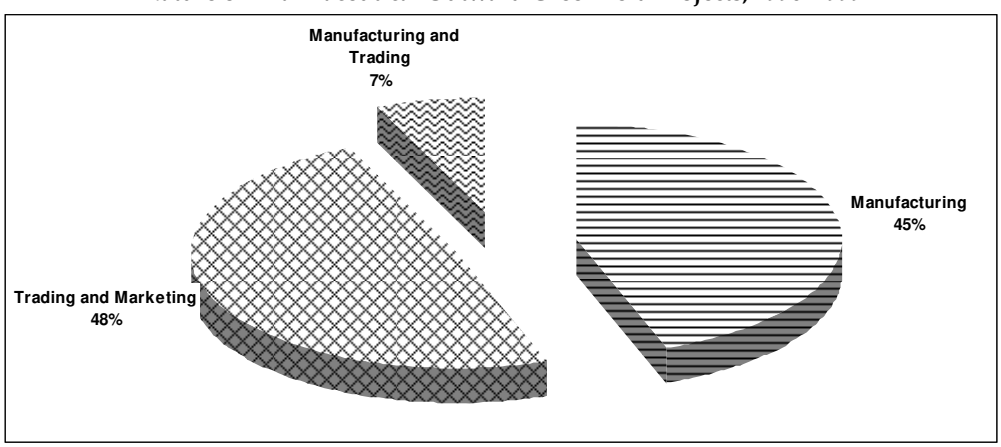
Source: RBI, Annual Report, various issues

The pharmaceutical outward FDI has become an established mode of internationalization with a large number of Indian pharmaceutical firms adopting it. Within a ten year period over 1990–1999, a total of 142 wholly-owned and joint ventures by Indian pharmaceutical companies have been approved (Appendix Table-A1). As compared to just 11 Indian pharmaceutical companies during 1970–1989, a total of 55 Indian companies over 1990–

1999 have adopted the greenfield investment as a strategy of international expansion. Ajanta Pharmaceuticals with 17 greenfield investment projects topped the list of outward investing firms. It is followed by Ranbaxy Laboratories with 13 projects, Core Healthcare, Dabur and Sun Pharmaceuticals with 7 projects each.

The character and nature of greenfield investments by Indian pharmaceutical firms underwent notable changes over 1990–1999. While in the period 1970–1989, overseas greenfield investments tend to be largely jointly owned by local partners in the host countries but preference for full ownership has been very strong during 1990s. Out of the 127 greenfield projects for which information on the nature of ownership is available, 64 are jointly owned and 63 are wholly-owned subsidiaries (Figure-3). As compared to the past where most of the greenfield investments were for manufacturing in the host location, the trade supporting greenfield investments emerged as the most important component of outward FDI. About 58 greenfield projects are for trading and marketing, 53 are for manufacturing and 8 are for both manufacturing and trading. This emergence of the marketing projects suggest that Indian pharmaceutical firms are giving special focus on building their own marketing, distribution and services centres abroad to boost their export activities.

Figure-3
Nature of Pharmaceutical Outward Greenfield Projects, 1990–1999



Source: Based on Appendix Table-A1.

Another important change in the character of greenfield outward FDI pertains to its geographical distribution. As compared to the second stage of internationalization where greenfield projects have been largely located in developing countries, the third stage witnessed a significant proportion of them being directed at the developed parts of the world economy. Of the 142 projects, developing countries attracted about 80 projects (56

per cent) and developed countries about 50 projects accounting for 35 per cent of the total (Table-6). Within developing countries most of the projects have been directed at the Asian and African countries. With the exception of Brazil, Latin America has not attracted any pharmaceutical greenfield projects from India. Among the top 10 host countries by projects number, 5 countries are developed countries including Russia. USA with 18 greenfield projects is the major host country. It is followed by Nepal with 13 projects, UK with 12 projects, Uzbekistan with 9 projects, Mauritius with 8 projects, Russia with 6 projects, China, Ireland, Netherlands and Thailand with 5 projects each.

It is interesting to note that a relatively higher proportion of greenfield projects directed to the developed countries are of marketing and trading type whereas those targeted at developing countries are of manufacturing type. Marketing and trading greenfield projects claimed about 57 per cent of the total cases in the case of developed countries whereas its share is just 40 per cent in the case of developing countries (Table-7). It could be that developing and least developed countries are more attractive for Indian pharmaceutical companies to start local production because they can exploit their ownership advantages of cost-effective process in such countries characterized by soft patent regimes and still have a long transition period to adopt the TRIPs regime. Developed countries with strong patent protection may be deterring manufacturing type Indian projects unless the projects involve off-patenting drugs and generics products. As there is stiff competition in the generic products and lower margin, trans-border production may also be risky when Indian companies could manufacture these products at much lower costs in India and export to the developed countries. It appears that establishing trade supporting networks in the developed countries to support exports from India is finding preference among Indian companies.

Table-6
Geographical Distribution of Pharmaceutical Outward Greenfield FDI, 1990–1999

Region/Country	*Outward Greenfield FDI in Number*											
	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*Total*	*Per cent*
Developed	1		2	6	2	4	11	9	9	6	50	35.2
European Union	1		1	3	1	2	8	5	5	2	28	19.7
France							1				1	0.7
Germany										1	1	0.7
Ireland				1			2		2		5	3.5
Luxemburg							1		1		2	1.4
Netherlands				1			1	3			5	3.5
Portugal	1										1	0.7
Spain			1								1	0.7
UK				1	1	2	3	2	2	1	12	8.5
Other Western Europe					1						1	0.7
Switzerland					1						1	0.7
North America			1	2		2	3	4	4	4	20	14.1
Canada				1				1			2	1.4
USA			1	1		2	3	3	4	4	18	12.7
Other Developed Countries				1							1	0.7
Australia				1							1	0.7
Developing Countries		3	3	8	3	4	17	19	13	10	80	56.3
Africa			1	1		1	5	5	2	1	16	11.3
Botswana								1			1	0.7
Ivory Coast									1		1	0.7
Kenya				1					1		2	1.4
Mauritius			1			1	4	2			8	5.6
Nigeria							1				1	0.7
South Africa								1			1	0.7
Uganda								1			1	0.7
Zimbabwe										1	1	0.7

Region/Country	*Outward Greenfield FDI in Number*											
	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*Total*	*Per cent*
Latin America									1	2	3	2.1
Brazil									1	2	3	2.1
Asia and Pacific		3	2	7	3	3	12	14	10	7	61	43.0
Azerbaijan			1						1		2	1.4
Bangladesh		1		1							2	1.4
China				1		1	2	1			5	3.5
Cyprus								1			1	0.7
Hong Kong			1		1	1			1		4	2.8
Indonesia								1			1	0.7
Jordan							1				1	0.7
Kazakhstan					1			1			2	1.4
Kyrgyzstan								1	1		2	1.4
Malaysia							1		1	1	3	2.1
Nepal		1		1			3	2	4	2	13	9.2
Sri Lanka				1			1			1	3	2.1
Tajikistan					1	1		1			3	2.1
Thailand							1	2	1	1	5	3.5
Turkmenistan				2			1				3	2.1
UAE		1								1	2	1.4
Uzbekistan				1			2	4	1	1	9	6.3
Central and Eastern Europe				2	1	3	2	3	1		12	8.5
Hungary				1			1				2	1.4
Russia				1		3		1	1		6	4.2
Ukraine					1		1	2			4	2.8
Grand Total	1	3	5	16	6	11	30	31	23	16	142	100

Source: Based on Appendix Table-A1.

Table-7

Nature of Outward Greenfield Projects over Developed and Developing Countries, 1990–1999

Nature of Projects	*Developed Countries*		*Developing Countries*	
	Number	*Per cent*	*Number*	*Per cent*
Manufacturing	16	36.4	35	52.2
Manufacturing and marketing	3	6.8	5	7.5
Marketing and Trading	25	56.8	27	40.3
Total	44	100	67	100

Source: Based on Appendix Table-A1.

During 1990s, the internationalization process of the Indian pharmaceutical industry became more complex with the emergence of another two new modes of internationalization like overseas acquisitions and contract manufacturing including strategic alliances. Although this stage witnessed just three Indian pharmaceutical companies, namely Ranbaxy Laboratories, Sun Pharmaceuticals and Wockhardt who have used overseas acquisition or brownfield investment as an internationalization strategy during 1995–1998 (Table-8), this was the beginning of an exploding phenomenon to be observed from 2000 onwards. Ranbaxy Laboratories as a part of its expansion strategy in the US market has acquired New Jersey based Ohm Laboratories in September 1995[8]. This acquisition helped Ranbaxy to develop its presence in the US OTC market and also provided manufacturing support for its approved abbreviated new drug application products. Sun Pharmaceuticals has used overseas acquisition as an entry strategy into the US generic markets and acquired about 30 per cent equity stakes in the Detroit-based Caraco Pharmaceutical Laboratories in 1997[9]. The acquired company is engaged in manufacturing and marketing of generic-drugs. To strengthen its presence in the European market, Wockhardt acquired UK-based Wallis Laboratory in 1998. Through this acquired entity, Wockhardt has been successful in supplying its own healthcare products into the UK healthcare chain. The acquired company, which was loss-making during acquisition year, has been turned into be a profitable venture in 1999.

A few numbers of Indian pharmaceutical companies have begun to try contract manufacturing as a strategy of expanding their transnational business operations. Firms like Ranbaxy Laboratories, Lupin Laboratories and Shasun Chemicals are forerunners in adopting this new avenue of growth based internationalization (Table-9). In 1993, Ranbaxy laboratories signed a contract manufacturing agreement with the US based

[8] Hindu Business Line (2002), 'Ranbaxy: A dose of US', Friday, January 11.

[9] Hindu Business Line (2005), 'Sun Pharma acquires Hungarian unit of US co', Thursday, August 11.

company Eli Lilly. As per the agreement Ranbaxy started supplying Cefaclor intermediate to the American company. Lupin Laboratories had a contract manufacturing agreement with American Cyanamid, USA to supply a key intermediate of the tuberculostatic ethambutol to the latter company. Shasun Chemicals, another Indian pharmaceutical company entered into a strategic alliance with Austin Chemical, USA in 1999. This alliance is for jointly developing process and providing custom manufacturing to multinational pharmaceutical companies operating in the regulated American market.

Table-8
Overseas Acquisitions by Indian Pharmaceutical Companies, 1995–1998

Month	*Year*	*Acquirer Company*	*Acquired Company*	*Amount ($ million)*	*Headquarter*
September	1995	Ranbaxy Laboratories	Ohm Labs		USA
	1997	Sun Pharmaceuticals	Stake of 30 % in Caraco Pharm Labs	8	USA
March	1998	Wockhardt Ltd	Wallis Laboratory	9	UK

Source: Pradhan (2006).

Table-9
List of Contract Manufacturing Agreements, 1993–1999

Indian Company	*Foreign Company*	*Year*	*Contact*	*Description of Contact*
Ranbaxy Laboratories	Eli Lilly, USA	1993	Contract Manufacturing	To source Cefaclor intermediate from Ranbaxy.
Lupin Laboratories	American Cyanamid, USA		Contract Manufacturing	Supplying a key intermediate for the tuberculostatic ethambutol to American Cyanamid.
Shasun Chemicals	Austin Chemical, USA	1999	Contract Manufacturing and Research	Joint process development and custom manufacturing to serve multinational pharmaceutical companies operating in the regulated American market.

Source: Pradhan (2006).

2.4. The Fourth Stage of Internationalization: 2000 onwards

The internationalization process of the Indian pharmaceutical industry has become widespread from 2000 onwards. Exports continued to accelerate, overtaking imports of pharmaceutical products by ever rising surpluses. During 2000–2004, Indian pharmaceutical exports aggregated $8.7 billion, much above total imports of $2.7 billion (Table-10). One of the major reasons for this dramatic exports expansion seems to be the efforts of Indian pharmaceutical companies to develop their own marketing and trade-

supporting centres in the developed countries and emergence of generics segments as cheaper alternatives to branded products in the face of rising health care costs of the households. Many of the Indian companies have built their own brand-names and formulations in developed countries markets and are known for their internationally certified manufacturing facilities for quality and safety. Apart from these advantages, Indian companies are also leveraging benefits from forging strategic and marketing alliances with local firms in the destination markets. All these factors are contributing to the success of India's pharmaceutical exports.

Table-10
India's Trade in Medicinal and Pharmaceutical Products, 2000–2004

Year	*(US $ million)*		
	Export	*Import*	*Trade Balance*
2000	1255	383	872
2001	1348	429	919
2002	1760	589	1171
2003	2022	635	1386
2004	2291	674	1616
All Above Years	8676	2710	5964

Source: UNCOMTRADE Dataset, 2006.

In the post-2000 period, inward FDI has also contributed to the increasing internationalization of the Indian pharmaceutical industry. Many foreign firms have shown increasing interest in the Indian pharmaceutical industry through direct investment. The quantum of their investment more than doubled between 2000 and 2005 from $48 million to $114 million (Table-11). The total amount of investment undertaken by foreign firms during 2000–2005 stood at $703 million, more than three times the investment they had undertaken over 1991–1999 ($210 million). As a consequence, the share of pharmaceuticals in the total FDI inflows has increased from less than 1 per cent in 1991–1999 to 3.4 per cent in 2000–2005. India's shifting from a weak patent regime to a stronger patent regime has taken place during this period and this final shift in the patent regime might have promoted hesitating foreign enterprises to enter into Indian market.

During this period overseas acquisitions by Indian pharmaceutical firms have assumed an established trend. In just six years during 2000–2006, the number of their trans-border acquisitions is totalled at 49 with an aggregate consideration of $1.3 billion (Table-12). Apart from the conventional motivation of gaining market access, objectives of such acquisitions become more complex and strategic in nature during this period. Accessing firm-specific strategic assets like internationally certified manufacturing facilities, new

products, research capability, brands, etc. and benefiting from operating synergies have become the main objectives of acquisitions.

Table-11
Approved FDI Inflows during 2000–2005

Period/Year	*FDI Inflows (US $ million)*		*Pharmaceuticals as % share of all sectors*
	Drugs and Pharmaceuticals	*All Sectors*	
1991–1999 (Aug–Dec)	210	49836	0.42
2000 (Jan–Dec)	48	2851	1.68
2001 (Jan–Dec)	89	3673	2.43
2002 (Jan–Dec)	53	3815	1.38
2003 (Jan–Dec)	58	2401	2.40
2004 (Jan–Dec)	342	3758	9.10
2005 (Jan–Dec)	114	4295	2.65
2000–2005 (Jan–Dec)	703	20792	3.38

Source: i. *SIA Newsletter*, January 2000; ii. *SIA Newsletter*, Vol XIII No. 10, February 2005; iii. *SIA Newsletter*, Vol XIV No. 10, February 2006.

Note: Exchange rate for dollars obtained from *Economic Survey 2005–2006* has been used to convert these two series into dollar terms.

The biggest ever overseas acquisition by an Indian pharmaceutical company is that of Dr Reddy's acquisition of Betapharm Arzneimittel GmbH, fourth-largest generics company in Germany[10]. The German entity markets high-quality generic drugs and has a strong track record of successful product launches. With a current portfolio of 145 marketed products, the company is one of the fastest growing generics companies in Germany. This acquisition is a strategic strategy by Dr Reddy to gain an entry platform for the European generics markets and achieve a significant scale in the global market. The acquired firm in turn is expected to leverage Dr Reddy's product development and marketing infrastructure to achieve further international growth and expansion in the long run. This acquisition also includes a research centre named the Beta Institute, which focuses on applied health management[11]. This research unit is an added advantage to the Indian company. The second important acquisition in terms of the size of consideration is the acquisition of Belgium-based Docpharma NV by Matrix Laboratories[12]. Docpharma is a leading generic company having presence in Belgium, Luxemburg, France, Italy and

[10] Hindu Business Line (2006), 'Dr Reddy's buys German co Betapharm for Rs 2,250 cr—Biggest overseas acquisition by an Indian pharma co', February 17.

[11] Hindu Business Line (2006), 'Dr Reddy's acquisition includes research centre', February 18.

[12] Domai.n-B.Com (2005), 'Matrix Labs acquires Belgian drug firm Docpharma for $263 m', June 20; Hindu Business Line (2005), 'Matrix to acquire Belgian drug firm Docpharma for $263 m', June 20.

the Netherlands. The company has a strong product portfolio of around 130 registered products in these markets. This acquisition is simultaneously motivated to gain an entry into the European market, to access trade supporting infrastructure and to benefit from business synergy. By this acquisition, Matrix got access to Docpharma's brands, trade names as well as its strong sales and marketing platform in the European countries. The integration of manufacturing capacity of the Indian firm with Docpharma's strong marketing and distribution networks is expected to lead to immense economies of business synergy. The third important overseas acquisition has been done by Ranbaxy Laboratories in December 2003[13]. It has acquired the generics business unit of RPG Aventis in France. Like earlier two acquisitions, this was Ranbaxy's strategy to get an entry into French generics market. Besides, this acquisition provided Ranbaxy access to a portfolio of 52 molecules, comprising 18 of the 20 best selling molecules in France and established marketing and distribution networks.

Geographically, the overseas acquisitions by Indian pharmaceutical firms continue to be directed at developed countries with USA, UK and Germany as top three targeted countries. Developed countries, who are market leaders in the pharmaceutical industry, have attracted nearly about 80 per cent of these acquisitions (Table-12). This further suggests Indian firms are using acquisition as a strategy of acquiring new knowledge that is being created and accumulated in the research-driven developed countries.

Table-12
List of Overseas Acquisitions by Indian Pharmaceutical Companies, 2000–March 2006

Month	*Year*	*Acquirer Company*	*Acquired Company*	*Amount ($ million)*	*Headquarter*
April	2000	Ranbaxy Laboratories	Basics, Germany-based generic company of Bayer AG	8	Germany
December	2001	Aurobindo Pharma Limited	60 per cent stake in Shanghai Wide Tex Chemical Co Limited		China
June	2002	Ranbaxy Laboratories	A brand called Veratide from Procter & Gamble Pharmaceuticals	5	Germany
September	2002	Ranbaxy Laboratories	10 per cent equity stake in Nihon Pharmaceutical Industry Co Ltd		Japan
March	2002	Dr Reddy's Laboratories Ltd	BMS Laboratories Ltd and Meridian Healthcare	13	UK

[13] Hindu Business Line (2003), 'Ranbaxy buys Aventis' generics unit in France', December 14.

Month	*Year*	*Acquirer Company*	*Acquired Company*	*Amount ($ million)*	*Headquarter*
			(UK) Ltd		
April	2002	Unichem	Niche Generics	5	UK
July	2002	Ranbaxy Laboratories	Liquid manufacturing facility from the New York-based Signature Pharmaceuticals Inc		USA
October	2002	Sun Pharmaceutical	Additional stake of 4 per cent in Caraco Pharmaceutical		USA
April	2003	Aurobindo Pharma Limited	The entire 50 per cent stake of Shanxi Tongling Pharmaceuticals Company Ltd (STPCL) in a Chinese joint venture	4	China
July	2003	Zydus Cadila	The formulation business of Alpharma France	6	France
December	2003	Ranbaxy Laboratories	RPG (Aventis) SA and its subsidiary OPIH SARL	86	France
July	2003	Wockhardt Ltd	CP Pharmaceuticals Ltd	18	UK
May	2003	Suven Pharmaceuticals Ltd	The assets of the New Jersey-based Synthon Chiragenics Corporation		USA
June	2004	Jubilant Organosys Ltd	80 per cent stake in two Belgium-based pharmaceutical companies— Pharmaceutical Services Incorporated NV and PSI Supply NV	16	Belgium
April	2004	Glenmark Pharmaceuticals	Laboratorios Klinger	5	Brazil
May	2004	Wockhardt Ltd	Esparma Gmbh	11	Germany
August	2004	Glenmark Pharmaceuticals	Two FDA approved products from Clonmel Healthcare Ltd		Ireland
December	2004	Nicholas Piramal India Ltd	The global inhalation anaesthetics (IA) business of Rhodia Organique Fine Ltd	14	UK
May	2004	Dr Reddy's Laboratories Ltd	Trigenesis Therapeutics Inc	11	USA
September	2004	Sun	Three brands from US-	5	USA

Month	*Year*	*Acquirer Company*	*Acquired Company*	*Amount ($ million)*	*Headquarter*
		Pharmaceutical	based Women's First Healthcare		
October	2005	Glenmark Pharmaceuticals	Servycal SA		Argentina
June	2005	Matrix Laboratories Ltd	Docpharma NV	263	Belgium
February	2005	Stides Arcolab	Additional stake of 12.5% in Strides Latina	6	Brazil
March	2005	Glenmark Pharmaceuticals	The hormonal brand, Uno-Ciclo, from Instituto Biochimico Indústria Farmacêutica Ltda	5	Brazil
July	2005	Nicholas Piramal India Ltd	17 per cent stake in BioSyntech, Inc.	7	Canada
September	2005	Matrix Laboratories Ltd	60 per cent stake in the Mchem group		China
June	2005	Torrent Pharmaceuticals Ltd	Heumann Pharma GmbH & Co Generica KG	30	Germany
August	2005	Sun Pharmaceutical	Valeant Pharma's manufacturing operations	10	Hungary
July	2005	Stides Arcolab	70 per cent stake in Beltapharm	2	Italy
November	2005	Dr Reddy's Laboratories Ltd	Roche's API unit	59	Mexico
July	2005	Stides Arcolab	A sterile manufacturing facility	8	Poland
December	2005	Glenmark Pharmaceuticals	Bouwer Barlett		South Africa
June	2005	Ranbaxy Laboratories	Efarmes Sa	18	Spain
April	2005	Dishman Pharmaceuticals & Chemicals Ltd	Synprotec Ltd	4	UK
October	2005	Nicholas Piramal India Ltd	Avecia Pharmaceuticals	17	UK
July	2005	Jubilant Organosys Ltd	Trinity Labs	12	USA
November	2005	Sun Pharmaceutical	Able Labs	23	USA
May	2005	Malladi Drugs	Novus Fine Chemicals	23	USA

Month	*Year*	*Acquirer Company*	*Acquired Company*	*Amount ($ million)*	*Headquarter*
		and Pharmaceuticals			
July	2005	Jubilant Organosys Ltd	64 per cent equity in Trinity Laboratories Inc and its subsidiary Trigen Laboratories Inc	12	USA
October	2005	Jubilant Organosys Ltd	Target Research Associates Inc	34	USA
June	2005	Stides Arcolab	60 per cent stake in Biopharma	1	Venezuela
March	2006	Marksans Pharma Ltd	Majority stake in Nova Pharmaceuticals		Australia
February	2006	Dr Reddy's Laboratories Ltd	Betapharm Arzneimittel GmbH	582	Germany
February	2006	Kemwell Pvt Ltd	Fizer's manufacturing plant in Sweden		Sweden
February	2006	Dishman Pharmaceuticals & Chemicals Ltd	51 per cent in IO3S Ltd		Switzerland
February	2006	Aurobindo Pharma Limited	Milpharm Ltd		UK
February	2006	Natco Pharma Ltd	NICK's Drug Store		USA
March	2006	Ranbaxy Laboratories	Patents, trademarks and equipmennt of Senetek's autoinjector business		USA
March	2006	Ranbaxy Laboratories	The unbranded generic business of Allen SpA, a division of GlaxoSmithKline		Italy

Source: Pradhan (2006).

A few incidents of contract manufacturing that took place in the 1990s have emerged as a dominant mode of internationalization of the industry during 2000–2005. A large number of firms, namely Ranbaxy Laboratories, Lupin Laboratories, Nicholas Piramal, Dishman Pharmaceuticals, Shasun Chemicals and Ind-Swift Laboratories have aggressively adopted this new strategy of growth (Table-13). This phenomenon now covers a wider range of inter-firm cooperation like strategic marketing alliances, collaborative research and out-licensing. The emergence of out-licensing is an interesting trend where leading Indian firms like Dr. Reddy's Laboratories and Ranbaxy started licensing out their technology to global firms. On 1st March 1997 and 1st June 1998, Dr. Reddy licensed out its two molecules, namely Balaglitazone and Ragaglitazar to Novo Nordisk of Denmark

for further development[14]. In 1999, Ranbaxy licensed out its novel drug delivery system, Cipro OD (once-a-day) formulation, to the German pharma major Bayer AG[15]. While Novo Nordisk discontinued the work on both molecules of Dr. Reddy[16], Bayer has successfully absorbed Ranbaxy's technology in its antibiotic Cipro XR and got approval from the US regulatory authority in 2002. Along this out-licensing phenomenon, numbers of Indian pharmaceutical firms have been chosen as partners by global firms for collaborative research on product development, which indicates the growing sophistication of the technological capabilities of Indian firms.

Table-13
An Illustrative List of Contract Manufacturing and Strategic Alliance Agreements

Indian Company	*Foreign Company*	*Year*	*Contact/Alliance*	*Description of Contact/Alliance*
Ranbaxy Laboratories	Schwarz Pharma AG, Germany	2002	Manufacturing and Marketing Alliance	To acquire the exclusive rights to develop, market and distribute Ranbaxy's New Chemical Entity RBx-2258 for the treatment of Benign Prostate Hyperplasia in USA, Japan and Europe
Ranbaxy Laboratories	Adcock Ingram, South Africa	2002	Marketing Alliance	To obtain exclusive selling and distributing rights of Ranbaxy's range of anti-retroviral products in South Africa
Ranbaxy Laboratories	Penwest Pharmaceuticals, USA	2002	Marketing Alliance	To get exclusive marketing rights of Penwest's Nifedipine XL in selected markets such as China, Malaysia, Singapore, Thailand, Philippines, South Africa, and Sri Lanka and non-exclusive rights in Mexico.
Ranbaxy Laboratories	Mallinckrodt Baker, USA	2003	Marketing Alliance	To market MBI JT Baker and Mallinckrodt's range of scientific laboratory products in the Indian

[14] India Infoline (2004), 'Dr Reddy's Research Foundation Pharmacophore 2004 Address by Dr K Anji Reddy, Chairman', January 17. Available at: http://www.indiainfoline.com/nevi/rere.html

[15] Hindu Business Line (2002), 'Ranbaxy to gain royalty from Bayer for Cipro', Tuesday, December 17.

[16] Hindu Business Line (2003), 'Novo Nordisk drops clinical trials on Dr Reddy's molecule', February 07.

Indian Company	*Foreign Company*	*Year*	*Contact/Alliance*	*Description of Contact/Alliance*
				market.
Ranbaxy Laboratories	Medicines for Malaria Venture (MMV), Geneva	2003	Collaborative Research Agreement	To develop anti-malarial drugs.
Ranbaxy Laboratories	GlaxoSmithKline, UK	2003	Collaborative Research Agreement	New drug discovery and development of new chemical entities for selected therapeutic groups using GSK's portfolio of patented molecules.
Lupin Laboratories	American Cyanamid, USA		Contract Manufacturing	Supplying a key intermediate for the tuberculostatic ethambutol to A Cyanamid.
Lupin Laboratories	Baxter Healthcare Corporation, USA	2004	Marketing Alliance	To exclusively distribute Lupin's generic version of ceftriaxone sterile vials for injection in the USA market.
Lupin Laboratories	Allergan Inc, USA	2004	Marketing Alliance	To promote Allergan's ZymarTM (gatifloxacin ophthalmic solution) in the US pediatric specialty segment.
Lupin Laboratories	Aspen Pharmacare Holdings, South Africa	2006	Manufacturing and Marketing Alliance	To development, manufacture and global marketing (except US, South Africa & India) of selected Anti-TB products.
Lupin Laboratories	Chester Valley Pharmaceuticals	2006	Marketing Alliance	To promote Atopiclair™ Nonsteroidal Cream to pediatricians in the US.
Nicholas Piramal	Medical Optics Inc., USA	2003	Contract Manufacturing	To supply opthalmic products to the American company for developed markets like the US, Europe and Japan.
Nicholas Piramal	Minrad, USA	2003	Marketing Alliance	For exclusive distribution and marketing of a new generation of inhalation anesthetic products.
Nicholas Piramal	Pierre Fabre, France	2004	Marketing Alliance	To exclusively sell Pierre Fabre's dermatology-related or skincare products in India.
Nicholas	Allergan Inc,	2004	Contract	To supply two eye-related,

Indian Company	*Foreign Company*	*Year*	*Contact/Alliance*	*Description of Contact/Alliance*
Piramal	USA		Manufacturing	anti-glaucoma active pharmaceutical ingredients, namely Levobunolol and Brimonidine to Allergan.
Nicholas Piramal	AstraZeneca AB, Sweden	2005	Collaborative Research Agreement	To be a partner in the development of processes for the manufacture of intermediates, active ingredients or bulk drugs for supply to AstraZeneca.
Nicholas Piramal	Pfizer International LLC	2005	Collaborative Research Agreement	To develop processes for Pfizer, provide scale-up batches for Phase trials and contract manufacture after the product is launched.
Dishman Pharmaceuticals	Solvay Pharmaceuticals, the Netherlands	2001	Contract Manufacturing	To supply an active ingredient of an anti-hypertension drug, Teveten, still under patent.
Dishman Pharmaceuticals	NU Scaan, UK	2005	Contract Manufacturing	To develop and manufacture bulk actives for nutraceutical products of NU Scaan.
Shasun Chemicals	Austin Chemical, USA	1999	Contract Manufacturing and Research	Joint process development and custom manufacturing to serve multinational pharmaceutical companies operating in the regulated American market.
Shasun Chemicals	Eastman Chemical, USA	2004	Contract Manufacturing and Research	To collaborate on the development and manufacture of performance chemicals.
Shasun Chemicals	Codexis, USA	2005	Contract Manufacturing	To manufacture the intermediate for a generic drug for Codexis.
Ind-Swift Lab	Teva Pharmaceutical, Israel	2005	Contract Manufacturing	To manufacture fexofenadine for Teva's successful anti-histamine generic formulations.

Source: Pradhan (2006).

3. Greenfield versus Overseas Acquisitions: Which is a better strategy?

As greenfield investments and overseas acquisitions have become increasingly prominent modes of internationalization of the Indian pharmaceutical industry in the recent years, it is important from firm's and policy makers' point of view to examine which one among these two is relatively a more effective internationalization strategy to pursue. Is blanket policy encouragement to be given to both these strategies or should there be a discriminatory policy to maximize overall gains from internationalization. Could Indian pharmaceutical firms gain more from undertaking overseas acquisitions than greenfield investments? The purpose of this section is to answer this question by examining the relative strengths and weaknesses of both these strategies from theoretical perspectives and empirical analysis and to identify the most suitable strategy for Indian pharmaceutical firms to pursue.

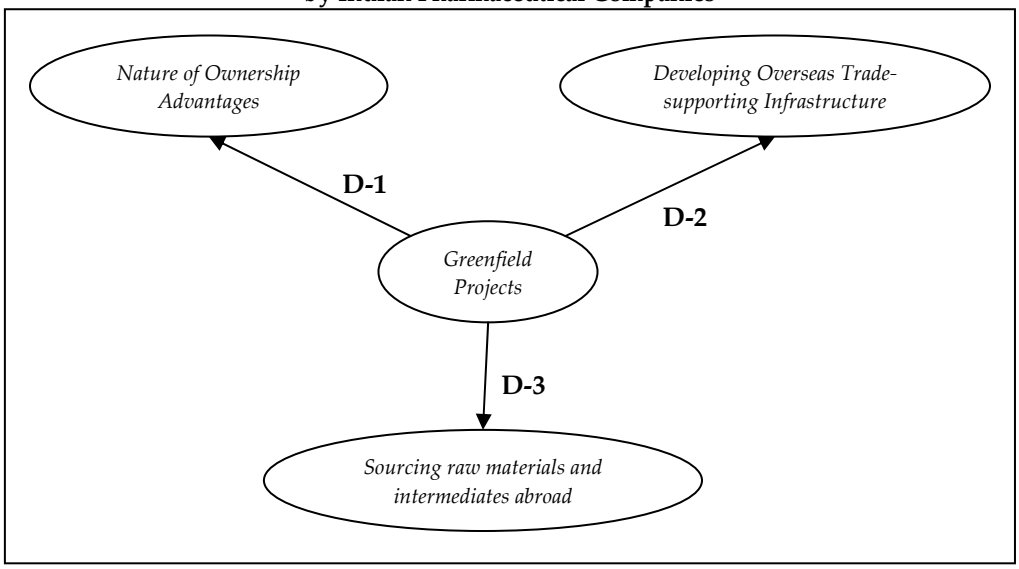
3.1. Theoretical Perspectives

The basic objective of a firm's internationalization strategy, be it greenfield or brownfield investment, is to sustain and enhance its competitive advantage in the global market. This means that this strategy should help in augmenting firm-specific strategic and competitive assets and/or should maximize economic returns to these assets. Therefore, the choice between overseas acquisitions and greenfield investments by Indian pharmaceutical firms depends upon which one serves as the superior competitive tool for these firms when compared to the other.

3.1.1. Greenfield Investment

Let's consider first the case of greenfield investment as an internationalization strategy intended to maximize competitive gains for Indian pharmaceutical firms. As far as the greenfield investment strategy is concerned, we have conceptualized three dimensions that link greenfield investment with firms' competitive position (Figure-4). The fist, **D-1**, is the role of greenfield investment as a medium of maximizing economic gains from the competitive assets of the Indian pharmaceutical firms through overseas production. The second, **D-2**, is to undertake greenfield investment to built trade-supporting networks aboard, which may in turn allow exploitation of competitive advantages via enhanced exports from India. The third, **D-3**, is to undertake greenfield investment to source quality raw materials and intermediates from aboard which may in turn help in improving productivity and competitive strength. These three dimensions are discussed below in detail.

Figure-4
Three Competitive Dimensions of Greenfield Investment Strategy by Indian Pharmaceutical Companies



Source: Own construction.

D-1: Greenfield Investment and Exploiting Ownership Advantages

The mainstream theory of FDI, industrial organization approach, infers that overseas greenfield projects for horizontal production may be commercially a more useful strategy when firms possess a pool of competitive and monopolistic assets (Hymer 1960; Caves 1971). These firm-specific assets, which could be product, technology, brands, managerial and marketing skills and so on, offer the firms some competitive and monopolistic advantages *vis-à-vis* their competitors. These advantages in turn can be commercially exploited the most through greenfield ventures in the host countries rather than by exporting from home country or licensing out to third parties. Hence, greenfield investments for overseas production as a useful internationalization strategy is critically linked to the competitive resource endowments of Indian pharmaceutical firms. If these firms possess such firm-specific intangible assets, then greenfield investment can maximize revenue productivity of these assets, not brownfield investment. Firms have more technical and functional flexibities in the way their firm-specific assets are transferred to overseas locations and put into productive use in the case of greenfield investments than in brownfield investments.

The major competitive advantages of Indian pharmaceutical firms lay in their technological capabilities to develop most efficient processes and to a limited extent, in innovating new ways of delivering drugs. As discussed earlier the Indian Patent Act 1970

and other strategic government interventions have played pivotal roles in the creation and accumulation of these competitive assets by pharmaceutical firms. However, ownership advantages on account of product developments are quite limited among Indian pharmaceutical firms.

The present profile of competitive and ownership advantages of Indian firms can be exploited through greenfield investment for production in a smaller number of least developed countries where TRIPs regime is yet to come into force. Indian firms can produce on-patented drugs in these countries to maximize gains from their competitive advantages based on process innovation. Although, such an internationalization strategy is a short-run phenomenon before the transition period to adopt TRIPS regime comes to an end for these countries.

For on-patented products, greenfield investment is no longer a viable strategy to exploit advantages of cost-effective processes in developing countries, which have implemented TRIPs recently and also in developed countries where strong patent regime already exists. The competitive advantages of process development can be exploited in developed countries only in the case of generics and off-patented drugs. However, there are a number of doubts regarding overseas production being a good option than exports from home country. Indian pharmaceutical firms may be better-off by exporting from home country as they have internationally certified manufacturing units at home and enjoy significant cost advantages due to cheap technical manpower in India. This suggests that overseas production through greenfield investment have limited scope for exploitation of the ownership advantages of Indian pharmaceutical firms based on cost effective processes.

D-2: Greenfield Investment and Developing Overseas Trade-supporting Infrastructure

Undertaking greenfield investment to develop trade-supporting networks overseas like distribution and marketing units, after-sales service and customer care centres, etc. can be predicted to be a useful strategy to maximize returns from competitive assets of the Indian pharmaceutical firms through enhanced exports from India. For Indian pharmaceutical companies creating their own trade-supporting and marketing networks overseas is a better strategy rather than relying on third-party or marketing agents. Given the efficient and low cost manufacturing facilities approved by various international agencies like USFDA, a formidable knowledge pool of technical, engineering and R&D workforce, essential R&D infrastructure and a facilitating trade policy regime, Indian companies are better placed to produce in the home country and export to overseas

markets in the case of generics and off-patented drugs. Their own marketing affiliates would ensure better sales to the overseas buyers, thus leading to higher export performance. Therefore, when Indian pharmaceutical firms are scaling up their export activities, undertaking marketing and trade-supporting FDI is essential for Indian pharmaceutical firms.

D-3: Greenfield Investment and Accessing Quality Raw Materials Overseas

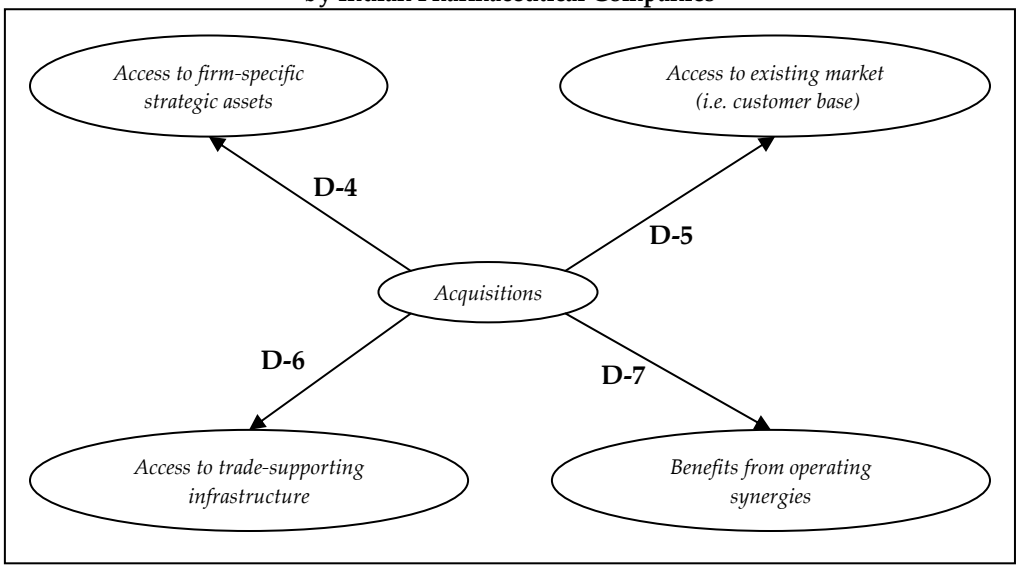
Companies can improve their competitive position by securing exclusive sources of quality raw materials and intermediates overseas by undertaking greenfield investments. However, the Indian pharmaceutical industry has achieved tremendous progress in terms of meeting its own requirements of inputs of production. In the early years of Independence, the industry basically lacked local sources of basic raw materials and intermediates for local manufacturing of drugs and pharmaceuticals. With consistent government interventions and change in patent regime in 1970, the industry emerged with near self-sufficiency in quality raw materials and intermediates. Given that the industry is practically self-sufficient in raw materials to manufacture the entire range of therapeutic groups, the need to undertake greenfield investments for securing raw material sources overseas may have a limited potential for the competitive position of these firms.

The above discussion suggests that the role of greenfield investment for local production and sourcing of raw materials abroad may have a limited impact on the competitive gains of the Indian pharmaceutical companies. There is a great merit in undertaking greenfield investment to boost overseas marketing and trading presence of the Indian companies to support export activities.

3.1.2. Overseas Acquisitions

There are four dominant ways in which overseas acquisitions can affect the competitive strength of the Indian pharmaceutical companies (Figure-5). First, it can be a strategy to gain access to firm-specific assets like new products, brands, technology and skills, thus, augmenting competitive assets base of the Indian pharmaceutical firms (**D-4**). Second, it can provide easy access to an existing market in foreign countries like customer base of the acquired company (**D-5**). Third, Indian firms can also get access to marketing and distribution channels of the overseas entity (**D-6**). Fourth, the Indian company may benefit from operating synergies from overseas acquisitions (**D-7**).

Figure-5
Four Competitive Dimensions of Brownfield Investment Strategy by Indian Pharmaceutical Companies



Source: Own construction.

D-4: Overseas Acquisition and Access to Firm-specific Assets

Overseas acquisition can play a major role in strengthening a firm's competitive asset bundle by facilitating access to new products, new technologies, brands and new knowledge of the acquired entity. This type of brownfield investment is known as strategic assets-seeking FDI and is primarily motivated to take advantage of knowledge and research capabilities that exist in foreign countries. These assets can be crucial for technology laggards like Indian pharmaceutical firms that are still lacking in advance competitive advantages based on product development. Interestingly, a large number of Indian pharmaceutical firms are now adopting acquisition as a strategy of acquiring new product portfolios, brands, research laboratories and technologies (Pradhan, 2006). Overseas acquisition is a less risky way of acquiring advanced technological capabilities rather than undertaking long-period R&D activities involving huge resources. Acquisition may involve substantial costs but with a higher liquidity in the domestic capital and financial markets and easy access to the international capital markets, Indian pharmaceutical firms have shown their ability to raise needed resources to undertake such knowledge seeking brownfield investments (Pradhan, 2006). Hence, we can predict that overseas acquisition can be instrumental by brining in new tangible and intangible assets to the Indian pharmaceutical firms.

D-5: Overseas Acquisition and Access to Existing Market

Unlike greenfield investments where a firm needs to create a market in the overseas countries unless its products were previously exported, overseas acquisition provides an easy access to an existing market. Through overseas acquisition the acquiring firm gains an immediate market access in the form of the customer base of the targeted company, thus eliminating competition. For Indian pharmaceutical firms that are striving to enhance their market position in the world generic markets, overseas acquisition can be a quicker market entry strategy than greenfield investment.

D-6: Overseas Acquisition and Access to Trade-supporting Infrastructure

Exporting to the overseas markets, apart from other factors, crucially depends upon the exporters' access to a well-developed marketing and after-sales infrastructure abroad. For many reasons relying on third party marketing agents may not be a good strategy in the long run and exporters would like to have their own export-supporting networks aboard. An easy way to do this is to acquire an overseas company having established marketing and distribution networks, rather than undertaking greenfield investment. Because Indian pharmaceutical firms have increasingly resorted to exporting as the main mode of internationalization, developing marketing networks in the overseas markets is of vital importance. In this case acquiring an existing company seems to be a better option for the Indian pharmaceutical companies for getting quick access to such marketing infrastructure for export activities.

D-7: Overseas Acquisition and Operating Synergies

One of the strategic and long-term economic gains that can arise from overseas acquisition is increased operating and business synergy between acquired and acquiring entities. In many ways this can also be a useful way for the firms to improve their competitive positioning through overseas acquisition route. For example, when an Indian generic player—with a strong product portfolio but lacking access to overseas distribution networks—chooses to acquire a generic company in a foreign market that has excellent distribution channels, then their combined entity reap economies of operating synergies. Since Indian pharmaceutical companies are still laggards in variety of competitive dimensions, we predict that horizontal overseas acquisition to create a global value-chain has a great potential to reap substantial operating synergies.

The above discussions suggest that as far as Indian pharmaceutical firms are concerned, greenfield investment has a limited scope for exploiting ownership advantages by the Indian pharmaceutical companies via direct production and securing of overseas sources

of raw materials for them. However, it has a great potential in building trade-supporting networks overseas for promoting exports from India. Overseas acquisition, as compared to greenfield investment, offers more benefits to Indian pharmaceutical firms. Overseas acquisition simultaneously provides access to established marketing networks, tends to augment Indian firms' ownership advantages by new products and other firm-specific intangible assets, ensures an existing market and guarantees gain from business synergies. Thus, overseas acquisitions can be viewed as more value creating and competitive strategy for Indian pharmaceutical firms than undertaking greenfield investments.

3.2. An Empirical Case Study: Ranbaxy Laboratories

After theoretically predicting that overseas acquisition is a better internationalization strategy than greenfield investments for Indian pharmaceutical firms, we are interested in empirically verifying this proposition. As the acquisition is a recent phenomenon, comparing benefits of such a strategy *vis-à-vis* greenfield investment suffers from serious limitation both in terms of availability of required data and a short time period. It is well understood that the full benefits of acquisition can only be realized with a time gap as the effective integration of the two business models can be a lengthy and tougher process facing the cross-border differences in the political, economic and cultural systems. Further, the performance of the acquired company itself may not capture all the economic benefits that acquisition endows on the acquiring firm like access to new products, technology, know-how, skill, marketing distribution, etc. Keeping in mind all the above limitations, we proceed to discuss the case of Ranbaxy Laboratories, which is the forerunner from the Indian pharmaceutical industry to adopt both the internationalization strategies of greenfield and brownfield investments. Our approach in the case study would be to examine the stand-alone performance of the acquired subsidiaries following the acquisition year and discern possible benefits that Ranbaxy obtained from it. Although such an approach has not compared the economic performances (e.g., sales growth and rates of profit) of greenfield subsidiaries *vis-à-vis* brownfield subsidiaries, mainly due to lack of data and acquisition being very recent, still this can reveal the benefits that acquisition provides to the acquiring firm. As mentioned earlier, a usable database comprising financial information about the overseas subsidiaries of Indian multinational firms is not available and hence the study has to rely on the data supplied by Ranbaxy Laboratories itself upon authors' request and other supplementary reports from newspapers and magazines. Ranbaxy Laboratories like many other firms does not attach the balance sheets of its subsidiaries in the annual report in view of exemption granted by the Central Government under Section 212(8) of

the Companies Act 1956, otherwise annual reports of the company would have been a useful source.

3.2.1. Ranbaxy Laboratories: Domestic Growth

Since a firm comes into being in the domestic market before it expands into the international market, understanding firm's growth in the domestic market is a precursoring step to understand its international growth. In the domestic market a firm emerges to satisfy human wants by organizing production and allocating resources and thereby maximizing its objective functions like profit, sales or growth. Once a firm emerged in the market, whether it will survive or grow shall depend upon its capability to create and accumulate a set of firm-specific competitive capabilities like technology, skills and marketing strength to favourably discriminate ones' product from the others. Once a firm captures a dominant share in the national market based on its created and accumulated strategic assets, it tends to explore market opportunities overseas.

The case of Ranbaxy clearly verifies that the emergence of outward investments (both greenfield and brownfield) is crucially linked with its domestic growth and government policies. The company came into being in Amritsar in the 1950s as a distributor company for A. Shionogi, a Japanese pharmaceutical company[17]. It was promoted by Ranjit Singh and Gurbux Singh, former employees of the said Japanese company's trading branch in India. This period was the first stage of internationalization of the Indian pharmaceutical industry where multinational firms were dominating the domestic market and domestic firms like Ranbaxy used to distribute imported medicines from the global firms. In early 1960s, Bhai Mohan Singh acquired the company and got into manufacturing of antibiotics in 1960 through collaboration with Italian pharma company Lapetit Spa (Milan). A few years later, the company overtook the joint venture antibiotics plant in Okhla and became a public limited company in 1973 to raise resources from Indian Stock Exchange. These resources were utilized to finance bulk drugs manufacturing facilities at Mohali, India.

The enactment of a soft patent regime in 1973, a discriminatory drug and pricing policy with respect to foreign firms, have been the instrumental factors that nursed Ranbaxy's dramatic growth in the domestic market and eventually in the global market. The company copied technologies from other countries like Hungary and developed new processes from patented products of multinational firms in India. The enlarging size of

[17] Hindu Business Line (2006), 'Bhai Mohan Singh: Pioneer of pharma', March 29; Economic Times (2006) 'Story-teller was the story', April 12.

human capital like chemical engineers, technicians, scientists, pharmacists and chemists due to national investments in skill formation has played a great role in enhancing Ranbaxy's ability to invent cost-effective processes. The launching of the sleeping pill, Calmpose, a generic formulation of the hugely popular Roche's patented Valium tranquillizer, has strongly enhanced Ranbaxy's presence in the domestic market. In 1978 and 1985, Ranbaxy developed novel processes for the manufacturing of the antibiotic doxycycline and ranitidine respectively. Eventually, this growing technological strength has provided Ranbaxy with significant cost advantages in next 30 years or so and increased its market share significantly. This also led to the starting of the internationalization process of the company through greenfield outward investments into developing countries.

3.2.2. Ranbaxy Laboratories: Internationalization Process and Emergence of Outward Investment

In the literature of international business, normally export is viewed as the first mode of internationalization of a firm and then comes the greenfield outward investment. It is interesting to note that greenfield investment has been the first internationalization strategy of Ranbaxy and is followed by export. In 1977 the company used the joint venture route to internationalize its business activities. Its first international joint venture has been set up in Nigeria with a minority ownership of 10 per cent. As per the existing outward FDI policy regime of the home country at that time, the company's equity contribution has to be in the form of exports of Indian made capital goods and know-how. Normally cash transfer was not permitted at that time (Pradhan 2005). The company supplied equipments against its share holding in the joint venture unit in 1978. The production of this overseas joint venture began in October 1979. The main motives of Ranbaxy's Nigeria venture were to exploit its process advantage in a least developed country where there is unfulfilled demand for cheap drugs and slackness in patent regulation. The outward greenfield investment in southern countries is viewed by the firm as diversifying risk across regions strongly backed by the Indian government policies aimed at enhancing south-south cooperation. The receptive attitude of the governments in host developing countries towards southern investment also has been another important factor that contributed to the Indian firms' internationalization process including that of Ranbaxy Laboratories.

The second international joint venture of Ranbaxy has been directed at Malaysia in 1983. This joint venture is formed by Ranbaxy, the Indian government and Malaysian

shareholders[18]. Clearly, this was a strategy of the Indian government policy of sharing India's development experience with other developing countries through technology transfer. In the present joint venture, Ranbaxy had about 53 per cent of ownership, much higher than the percentage of equity it had in the Nigerian joint venture. Since then Ranbaxy Laboratories has expanded its geographical presence through joint venture to new countries like Thailand, Canada and China, and through wholly-owned subsidiaries in countries like the Netherlands and Hong Kong during 1980s–90s (Table-4 and Appendix Table-A1). At the end of 2005, the number of subsidiaries and joint ventures of Ranbaxy stood at 50 covering a total of 30 countries including India (Table-14). There has been a definite shift of Ranbaxy's preference towards full-ownership in its overseas ventures. In 48 overseas ventures Ranbaxy now holds majority or full-ownership and has just two overseas joint ventures. USA turns out to be the major host with 6 overseas ventures, followed by Thailand and UK with 4 and 3 overseas ventures respectively.

Table-14
List of Subsidiaries and Joint Ventures of Ranbaxy Laboratories as in 2005

Subsidiary	*Country of incorporation*	*Shareholding (%)*	*Remark*
Domestic Subsidiaries			
Ranbaxy Drugs and Chemicals Company (A public company with unlimited liability)	India	100	Subsidiary
Ranbaxy Drugs Limited	India	100	Subsidiary
Rexcel Pharmaceuticals Limited	India	100	Subsidiary
Solus Pharmaceuticals Limited	India	100	Subsidiary
Vidyut Investments Limited	India	100	Subsidiary
Ran Air Services Limited (Formerly Vidyut Travel Services Limited)	India	100	Subsidiary
Gufic Pharma Limited	India	98	Subsidiary
International Subsidiaries			
Ranbaxy (Netherlands) B.V ("RNBV")	Netherlands	100	Subsidiary
Ranbaxy N.A.N.V	Netherlands	100	Subsidiary
Ranbaxy (S.A.) (Proprietary) Limited	South Africa	100	Subsidiary
Ranbaxy Inc.(Formerly Ranbaxy Pharmaceuticals, Inc)	USA	100	Subsidiary
Ranbaxy Pharmaceuticals, Inc	USA	100	Subsidiary
Ranbaxy USA, Inc	USA	100	Subsidiary
Ohm Laboratories, Inc	USA	100	Subsidiary
Ranbaxy Laboratories Inc	USA	100	Subsidiary
Ranbaxy Holdings (UK) Limited	UK	100	Subsidiary
Ranbaxy (UK) Limited	UK	100	Subsidiary

[18] Malaysian Industrial Development Authority (2003), 'Ranbaxy ups stake in local ops', March 07.

Subsidiary	*Country of incorporation*	*Shareholding (%)*	*Remark*
Ranbaxy Ireland Limited	Ireland	100	Subsidiary
Ranbaxy (Hong Kong) Limited	Hong Kong	100	Subsidiary
Ranbaxy Egypt (L.L.C.)	Egypt	100	Subsidiary
Ranbaxy Poland S.P Zoo.	Poland	100	Subsidiary
Ranbaxy Pharmaceuticals B.V	Netherlands	100	Subsidiary
Ranbaxy Europe Limited	UK	100	Subsidiary
Basics GmbH	Germany	100	Subsidiary
Ranbaxy Do Brasil Ltda.	Brazil	100	Subsidiary
Ranbaxy Panama, S.A.	Panama	100	Subsidiary
Ranbaxy Vietnam Company Limited	Vietnam	100	Subsidiary
Ranbaxy Pharmacie Generiques SAS (Formerly RPG (Aventis) S.A.)	France	100	Subsidiary
Office Pharmaceutique Industriel et Hospitalier SARL ("OPIH SARL")	France	100	Subsidiary
Ranbaxy PRP (Peru) S.A.C.	Peru	100	Subsidiary
Laboratories Ranbaxy, S.L.	Spain	100	Subsidiary
ZAO Ranbaxy	Russia	100	Subsidiary
Ranbaxy Portugal - Com E Desenvolv De Prod Farmaceuticos Unipessoal Lda	Portugal	100	Subsidiary
Ranbaxy Australia Pty. Ltd	Australia	100	Subsidiary
Ranbaxy Italia S.p.A	Italy	100	Subsidiary
Ranbaxy Hungary Kft	Hungary	100	Subsidiary
Ranbaxy Mexico S.A. de C.V	Mexico	100	Subsidiary
Ranbaxy Pharmaceuticals Canada Inc	Canada	100	Subsidiary
Unichem Distributors Ltd.	Thailand	99.96	Subsidiary
Bounty Holdings Company Limited	Thailand	99.3	Subsidiary
Unichem Pharmaceuticals Limited	Thailand	98.5	Subsidiary
Ranbaxy Unichem Company Limited (Formerly Ranbaxy (Thailand) Co. Ltd.)	Thailand	88.56	Subsidiary
Ranbaxy Nigeria Limited	Nigeria	84.89	Subsidiary
Ranbaxy (Guangzhou China) Limited	China	83	Subsidiary
Ranbaxy Farmaceutica Ltda. (Formerly Ranbaxy S.P. Medicamentos Ltda)	Brazil	80	Subsidiary
Ranbaxy Signature, LLC	USA	67.5	Subsidiary
Ranbaxy Malaysia Sdn. Bhd.	Malaysia	68.05	Subsidiary
Sonke Pharmaceuticals (Proprietary) Limited	South Africa	100	Subsidiary
Nihon Pharmaceutical Industry Co., Ltd	Japan	50	Joint Venture
Thembalami Pharmaceuticals (Pty.) Ltd.	South Africa	50	Joint Venture

Source: Ranbaxy Annual Report 2005.

Most importantly, a number of overseas subsidiaries of Ranbaxy have been acquired through brownfield investment. Starting with the acquisition of Ohm Laboratories in

1995, Ranbaxy has pursued inorganic route to growth via overseas acquisitions to diversify into new markets and products like pharmaceutical generics and to acquire firm-specific intangible assets like technologies, skills and brand names. Ranbaxy Pharmacie Generiques SAS and Basics GmbH are other two subsidiaries that Ranbaxy had acquired abroad (Table-12). In the first three months of 2006, Ranbaxy had already acquired two generics companies, namely Terapia in Romania and Ethimed in Belgium, besides acquiring a large unbranded generic product portfolio of Allen S.p.A. in Italy. Therefore, both greenfield as well as brownfield investments have emerged as important internationalization strategies of Ranbaxy. As compared to greenfield outward investment like overseas joint ventures, exports of pharmaceutical products as an internationalization strategy had started in the late 1980s. Undertaking overseas joint ventures has been a great source of learning for operating in international markets and has helped the company in exporting pharmaceutical products from the home country. Malvinder Singh, President of Ranbaxy has described the importance of undertaking overseas joint ventures in the internationalization of the company as follows:

> "Our first joint venture was in Nigeria (1977), then we went to Malaysia, and then to Thailand. There we picked up and learnt what it meant to operate in an international market, at patent regimes, at marketing and distribution. It is completely different. So we moved up the value chain in our products and up the export markets from developing nations to developed nations. By that time 1993 had come. We said it is not just India; it (the market) is global of which India is one market. A huge emphasis would be on research and development—that really is the thrust of the pharma industry in terms of products[19]."

3.2.3. Ranbaxy's Experience with Brownfield Subsidiaries

In this section we will examine Ranbaxy's experience with three acquisitions done in different countries, namely Ohm Laboratories in USA, Basics GmbH in Germany and Ranbaxy Pharmacie Generiques SAS in France.

Ohm Laboratories

In the early 1990s, the US emerged as one of Ranbaxy's faster growing export market. It has established a wholly-owned greenfield subsidiary, namely Ranbaxy Pharmaceuticals Inc. (RPI) in 1994 with the basic objectives of undertaking sales, marketing and distribution supports for its generic and branded prescription products in the US market.

[19] rediff.com (2004), 'Ranbaxy is what it is because we took risks', *The Rediff Interview*/Malvinder Singh, President, Ranbaxy, November 25. Available at: http://ia.rediff.com/money/2004/nov/25inter.htm

It soon realized that creating marketing networks alone in a competitive market like the US is not a sufficient strategy unless there is a strong manufacturing support at the local level. Ranbaxy wanted to gain access to additional marketing and sales infrastructure, customer base and an established manufacturing facility to quickly expand its presence in the US pharmaceutical market and thus acquired the Ohm Laboratories headquartered in North Brunswick, New Jersey in 1995. Ohm Laboratories is a relatively younger player in the US OTC market starting its operation in 1982[20]. This acquisition provided Ranbaxy with access to US-FDA approved manufacturing facilities for a narrow portfolio of over-the-counter (OTC) products covering tablets, caplets and capsules in the categories of analgesics, anti-diarrheals, laxatives, antacids, cough and cold preparations.

Since the acquired entity was relatively a younger player with a narrow range of products, Ranbaxy was faced with the challenges of expanding its product line and also broadening existing customer base. Ranbaxy decided to expand manufacturing facilities at Ohm Laboratories and build a new US-FDA-approved state-of-the-art manufacturing facility by July 1996[21]. The enhanced production capabilities and processes are now capable of offering manufacturing supports to a diversified line of OTC branded and generic pharmaceuticals. Along with this overhauling of product range and manufacturing capabilities, sustained efforts were put in expanding marketing and sales and further upgradation were undertaken in packaging capabilities. Moreover, the business activity of Ohm Laboratories has been successfully aligned with that of Ranbaxy Pharmaceuticals Inc.

With the implementation of these integration programmes and creation of capacities for new products and marketing, in the coming years promising results started flowing from this acquisition (Box-1). The OTC products business of Ohm Laboratories grew impressively—demonstrating an annual average rate of 45 per cent in sales during 1996–2001. Barring the year 1999, the profit before tax (PBT) has also shown a positive trend during 1996–2001, achieving a total PBT of US$ 3.2 million (Table-15). This growth is a result of well-planned business strategy integrating manufacturing and sales and marketing activities that in turn made Ranbaxy a popular brand in the OTC segment of the US healthcare system. The Annual Report 1999 of Ranbaxy while reviewing its global operation has following points to make on the role of Ohm Laboratories:

[20] Business Wire (1995), 'Ranbaxy acquires Ohm Laboratories', September 25.

[21] Business Wire (1996), 'Ohm Laboratories Completes New State-of-the-Art Manufacturing Facility; India's Ranbaxy Laboratories U.S. Arm To Produce Broader Line of Oral Generic Pharmaceuticals', July 31.

"The focus of business at Ohm Laboratories Inc. has been the achievement of being recognized and accepted as a prominent supplier of OTC products to end-users of packaged & finished dosage forms, for sale to retail outlets under their own private label brands. The Company's efforts in this direction have established strong relationships with a number of retail outlets, including Retail Pharmacies, Mass Merchandisers and Food Outlets. During the course of 1999, Ohm Laboratories also maintained its business as a bulk supplier of finished OTC dosage forms, to targeted customers who supply dosage forms to other segments of the market."

Box-1
Benefits of Acquiring Ohm Laboratories

- Positive contribution to the global revenue of acquiring company.
- Providing access to the US OTC market, marketing infrastructure and advanced manufacturing capabilities.
- Providing manufacturing support to the marketing arm of the acquiring company, namely Ranbaxy Pharmaceutical Inc.
- Filing and receiving approvals for ANDAs of the acquiring company. Some of these ANDAs are developed by Ohm laboratories itself. For example, in 2001 Ohm Laboratories had developed, filed and manufactured Advil Cold and Sinus Tablets (an ibuprofen and pseudoephedrine combination product)[a]. The first interstate shipments were made by its marketing partner, Perrigo of Allegan, Michigan on October 8, 2001. It was the ANDA applicant to file for the product and represents the first generic equivalent with an AB rating to Whitehall Laboratories Inc's Advil cold and sinus tablets, an over-the-counter combination product for nasal congestion, headache, fever, body aches and pains. In September 2003, Ohm Laboratories had received approval from the US FDA to manufacture and commercialize its ANDA for Loratadine 10 mg tablets, which is the generic equivalent of Schering-Plough's long-acting tricyclic antihistamine agent Claritin[b]. Recently in September 2005, Ohm Laboratories received US FDA approval to manufacture and market Pseudoephedrine Hydrochloride Extended-Release Tablets USP, 120 mg[c].
- Ohm Laboratories is also a channel of knowledge-spillovers from the US market to Ranbaxy Laboratories

Notes: (a) FIRMABIZ.com (2001), 'Ranbaxy's US subsidiary launches ibuprofen-pseudoephedrine combination product', October 10; (b) Hindu Business Line (2001), 'Ranbaxy arm in marketing tie-up for Advil tablets', October 11; (c) Ranbaxy (2005), 'Ranbaxy Gains Approval to Market Pseudoephedrine Hydrochloride Extended-Release Tablets', Press Release September 28.

Apart from contributing positively to the global revenue of Ranbaxy and creating its brand awareness with the US consumers and retail traders in the private label OTC segment, Ohm Laboratories has endowed Ranbaxy with several other important benefits. It has played an important role in reducing Ranbaxy's timelines in accessing the US market by filling and securing approvals for several of its ANDA (Abbreviated New Drug Applications). As of April 2005, Ranbaxy has a total of 151 product filings, of which 99 have been already approved by the US-FDA and 52 are pending for approval[22]. Importantly some of these ANDAs have been developed, filed and manufactured by Ohm Laboratories itself (see Box-1). The advanced capabilities of Ohm Laboratories in research and new product development is not only producing these ANDAs, but also acting as a knowledge-absorber for Ranbaxy from the US innovation system.

Table-15
Sales and Profit Before Tax of Ohm Laboratories, 1996–2001

Year	*In US$ Million*			
	Ohm Laboratories		*Ranbaxy Pharmaceuticals Inc. {Including Ohm Laboratories, Ranbaxy Schein & Ranpharm}*	
	Sales	*PBT*	*Sales*	*PBT*
1996	8.4	NA	NA	NA
1997	11.6	0.2	NA	NA
1998	19.5	0.5	NA	NA
1999	15.3	-1.2	NA	NA
2000	21.1	0.7	NA	NA
2001	43.1	3	NA	NA
2002	NA	NA	296	44.89
2003	31.9	NA	413	45.46
2004	37	NA	426	50.76
2005	NA	NA	333	-28.55

Source: Data for Ohm Laboratories has been collected from Ranbaxy Annual Reports, various years. Data for Ranbaxy Pharmaceuticals Inc. {Including Ohm Laboratories, Ranbaxy Schein & Ranpharm} has been collected from Ranbaxy's head office via special request from authors.

Basics GmbH

After achieving a critical market position in the US market in the late 1990s, Ranbaxy Laboratories has expanded its acquisition based business strategy to include other lucrative markets such as Europe. Germany being the third largest generics market in the world has attracted its attention. As a part of the entry strategy into the generics market in Germany, Ranbaxy has acquired Bayer's generics business (trading under the name of

[22] Ranbaxy (2005), 'Ranbaxy Q1, 05 Global Sales At USD 261 Mn', Press Release April 28.

Basics) in Germany in April 2000 with a total consideration of US $7.1 million[23]. Later this acquired business was incorporated into a newly set up wholly-owned subsidiary, Basics GmbH. The immediate benefits that flows from this acquisition was that Ranbaxy became the owner of a portfolio of twenty products hitherto marketed under Basics, their brand loyalties and an established marketing and distribution networks. This provided a quick business base to cater to a fast growing generic market, namely Germany. Through existing marketing networks, Ranbaxy found it easier to introduce new products of its own to the portfolio of the Basics GmbH.

The performance of the acquired business has been that its sales have grown phenomenally since acquisition year 2000. The total sale of the company was just $1.8 million in 2000. It increased five-fold in 2002 and eleven-fold in 2005 (Table-16). In the initial four years from acquisition, margins on the acquired business continued to be negative but became positive since 2004. The summation of margin figures for all the years during 2000–2005 reveal a positive figure of $1.15 million. This suggests that Ranbaxy has been able to successfully turn around the loss-making acquired entity into a profitable venture just three years after the acquisition. It is important to note that Basics GmbH now generates a turnover of $20.40 million, which is twice the value of its total asset ($9.2) in 2005.

Table-16
Sales, Profit Before Tax and Total Asset of Basics GmbH, 2000–2005

Year	*In US $ Million*		
	Sales	*PBT*	*Asset*
2000	1.80	-0.60	NA
2001	5.70	-0.90	NA
2002	9.89	-1.47	12.3
2003	9.21	-0.24	10.0
2004	16.92	1.70	8.8
2005	20.40	2.66	9.2

Source: i. 2002–2005 data for Basics GmbH has been collected from Ranbaxy's head office via special request from authors; ii. 2000–01 data is from Ranbaxy Annual Report 2001.

Therefore, Ranbaxy has reaped several benefits by acquiring Bayer's generic business in Germany like gaining access to growing German generic market, a new product portfolio, brand loyalties and marketing infrastructure and a positive profitable contribution from the acquired company towards its global revenue.

[23] Business World (2004), 'PHARMA M&AS: What's the big deal?' June 28.

Ranbaxy Pharmacie Generiques SAS

Ranbaxy continued its market expansion strategy in the European generic markets and has targeted the French generic market. The size of this market is estimated at about 652 million euros and is the fifth largest in size after the US, Japan, Germany and UK[24]. Ranbaxy acquired France-based generic player RPG Aventis and its subsidiary, OPIH SARL, in December 2003. RPG Aventis was the only generic arm of the global pharmaceutical player, Aventis and it undertakes sales and marketing activities. With sales of 44 million euros in 2002, the acquired entity was ranked fifth in the French generic market. After acquisition the name of the acquired business has been changed into Ranbaxy Pharmacie Generiques SAS.

In a market where Ranbaxy did not have a presence, this acquisition immediately catapulted Ranbaxy to be the fifth largest market player and provided a branded portfolio of 52 products, of which 18 are among the 20 best selling products in the market[25]. Ranbaxy also got access to an established marketing and distribution networks in the French market. As a result of this acquisition, Germany has emerged as the third largest market for Ranbaxy after USA and India with sales of $73 million in 2004[26]. Table-17 provides the sales, profit before tax and asset of the acquired company for 2004 and 2005. It can bee seen that although Ranbaxy has been able to increase sales of the acquired company from the pre-acquisition value of 44 million euros in 2002 to a post acquisition value of 59.5 million euros in 2005, margins from the business is still under pressure and are negative. Since the effective acquisition year is 2004, it seems that for positive results to flow from the transfer and integration of this newly-acquired company would take few more years.

Table-17

Sales, Profit Before Tax and Total Asset of *Ranbaxy Pharmacie Generiques SAS*, 2004, 2005

Year	*In million Euros*		
	sales	*PBT*	*Asset*
2005	59.47	-2.4	38.67
2004	58.21	-1.25	40.43

Source: Data collected from Ranbaxy's head office via special request from authors.

Although it is very early to assess the contribution of this acquisition, overall RPG Aventis has provided three direct benefits to Ranbaxy. It has provided access to existing

[24] Hindu Business Line (2003), 'Ranbaxy buys Aventis' generics unit in France', December 14.
[25] Hindu Business Line (2003), 'Ranbaxy buys Aventis' generics unit in France', December 14.
[26] Ranbaxy Annual Report 2004, p. 54.

leadership position in a hitherto new market for the company, an established marketing and distribution networks and a portfolio of well-known generic products. Turnaround in profitability may take place only after a few years.

4. Conclusion and Policy Implications

India is among a few developing countries to have a globally competitive pharmaceutical industry. The study shows that the evolution, growth and internationalization of Indian pharmaceutical industry during past decades were critically linked to suitable national policies undertaken at appropriate times. These strategic government policies initiated domestic capability building in technology, skill and entrepreneurship developments related to pharmaceutical industry and were extremely successful in developing a globally competitive industry from a non-existent production base. The main lesson from India's experience in pharmaceutical industry is that government intervention is indispensable for developing countries wanting to build their domestic base in such technology-intensive industries. Market forces do play an important role once the process of capacity building by government intervention achieves a critical level but they are incapable of initiating such a process. Had India left everything to the market forces to initiate its domestic capability building in a knowledge-based industry like pharmaceuticals then India would not have achieved the competitive strength it possess in the industry today. The industry might have continued to be dependent upon imports of bulk drugs and foreign firms, which are enjoying strong patent monopoly under the colonial patent act and might have continued to simply distribute imported drugs and charging maximum prices.

Other developing countries, following Indian experience, should start public sector enterprises to create required technologies, skills and production processes to manufacture drugs indigenously. Public investment in pharmaceutical research, research institutions and laboratory facilities, technical centres for specific entrepreneurial and skill creation like training of pharmaceutical scientists, engineers, and pharmacy practitioners, etc. are essential policy tools. With the emergence of TRIPs regime, adopting a soft patent regime is no more a viable policy tool for capacity building for these governments. However, these developing countries can target off-patented segment of life-saving drugs as a starting point and try to move upwards. As creating required technologies for this segment is very costly they can obtain these via licensing agreements from global players or from developing country players like India. As the cost of technology transfers from developed country multinationals may be higher and also they are may be less willingness, developing countries should strive to secure technology from their fellow countries like India. Since Indian firms have shown great

intensity to undertake joint ventures in fellow developing countries under the 'south-south' cooperation pursued by developing countries in the past, the potential of such cooperation may still be relevant today.

As far as Indian policy makers are concerned, this study suggests that they should encourage overseas acquisitions over greenfield investment strategy as more effective internationalization strategies. As far as competitive advantages of Indian pharmaceutical firms are concerned, outward greenfield investment in the form of developing trade supporting networks overseas offer the most important route of exploiting such advantages. Overseas acquisition not only enhance competitive advantages by providing access to new product portfolios, technology and skills, but also ensure established marketing and distribution networks, an existing market and scope to benefit from operating synergies. The experience of Ranbaxy laboratories with three overseas acquisitions shows that these advantages have played an important role in enhancing competitive strength of the acquiring firm in targeted market. This finding suggests that policy makers should take appropriate measures to remove barriers for Indian pharmaceutical companies to acquire overseas business. Besides according automatic approvals to overseas acquisition applications, India should develop a suitable support programme to help pharmaceutical firms in overseas acquisitions. This support framework may involve access to consultancy services in evaluating the acquisition opportunities in overseas market, provision of cheap credit for acquisition and insurance coverage against political risks, human resource development and management training to effectively integrate acquired entity in the face of cross-country differences in culture, business practices and legal system, etc. Since a large number of Indian pharmaceutical firms are acquiring companies abroad, establishing databases on such acquisitions and economic performances of acquired entities, are important for analyzing their contribution to national development. Finally, the study suggests that Indian pharmaceutical enterprises may be better off by adopting overseas acquisition to enhance their global presence than undertaking overseas greenfield investment.

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Appendix

Table-A1
List of Joint Ventures and Wholly Owned Subsidiaries Abroad by Indian Pharmaceutical Firms, 1990–1999

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
Glenmark Pharmaceutical Ltd.	1990	50.77	Portugal	JV	24.10.1990		Pharmaceuticals	Manufacturing
Elegant Apparels Pvt. Ltd.	1991	40	Bangladesh	JV	25.02.1991		Manufacture of Paracetamol	Manufacturing
Dabur Ltd.	1991	80	Nepal		09.10.1991		Drugs and Pharmaceuticals	
Gujarat Injects Ltd.	1991	6.67	UAE	JV	10.10.1991		I.V.Fluids	
Torrent Exports Ltd.	1992	50	Azerbaijan	JV	21.04.1992		Pharmaceuticals	Marketing
Ranbaxy Laboratories Ltd.	1992	80.13	Hong Kong	WOS	24.06.1992		Drugs and Pharmaceuticals	
Mideast (India) Ltd.	1992	100	Mauritius	WOS	06.11.1992		Drugs and Pharmaceuticals	
Malladi Drugs and Pharmaceuticals Ltd.	1992	33	Spain	JV	17.11.1992		Drugs and Pharmaceuticals	Manufacturing
Cheminor Drugs Ltd.	1992	75	USA	WOS	20.11.1992	0.192	Trading of Bulk Drugs and Intermediatyes	Trading
Shalaks Pharmaceuticals Ltd.	1993	80	Australia		05.08.1993		Drugs and Pharmaceuticals	
Velvette International Pharma Products Ltd.	1993	40	Bangladesh		30.07.1993		Drugs and Pharmaceuticals	
Ranbaxy Laboratories Ltd.	1993	50	Canada	JV	28.05.1993		Drugs and Pharmaceuticals	
Ranbaxy Laboratories Ltd.	1993	70	China	JV	21.09.1993		Drugs and Pharmaceuticals	Manufacturing and Marketing

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
Sun Pharmaceuticals	1993	100	Hungary	WOS	06.12.1993		Pharmaceuticals	
Wockhardt Ltd.	1993	100	Ireland	WOS	08.12.1993		Pharmaceuticals	Trading
V.B. Ltd.	1993	100	Kenya	WOS	24.12.1993		Pharmaceutical Preparations	Manufacturing and marketing
Ace Laboratories	1993	33.18	Nepal		21.04.1993		Pharmaceuticals	Manufacturing and Marketing
Ranbaxy Laboratories Ltd.	1993	100	Netherlands	WOS	11.05.1993	2	Pharmaceuticals	Marketing
Sun Pharmaceuticals	1993	100	Russia	WOS	06.12.1993		Pharmaceuticals	
Velvette International Pharma Products Ltd	1993	40	Sri Lanka	JV	22.11.1993		Herbal Ayurvedic Products	Manufacturing and marketing
Ajanta Pharma	1993	50	Turkmenistan	JV	07.05.1993		Drugs and Pharmaceuticals	Marketing
Ajanta Pharma	1993	50	Turkmenistan	JV	04.03.1993		Drugs and Pharmaceuticals	
Cadila Exports Ltd.	1993	100	UK	WOS	18.03.1993		Drugs and Pharmaceuticals	Manufacturing and Trading
Wockhardt International Ltd.	1993	49	USA		21.12.1993		Drugs and Pharmaceuticals	Manufacturing and marketing
Ajanta Pharma	1993	51	Uzbekistan	JV	12.04.1993		Drugs and Pharmaceuticals	
Kopran Ltd.	1994	100	Hong Kong	WOS	13.04.1994		Drugs and Pharmaceuticals	
Ajanta Pharma	1994	50	Kazakhstan		12.07.1994		Pharmaceutical and allied products	Manufacturing
Sun Pharmaceuticals	1994	100	Switzerland	WOS	19.04.1994		Drugs and Pharmaceuticals	Trading
Madhur Pharma & Research Labs	1994	49.03	Tajikistan		01.09.1994		Drugs and Pharmaceuticals	

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
Kopran Ltd.	1994	100	UK	WOS	06.06.1994		Pharmaceuticals and Chemicals	Trading
Sun Pharmaceuticals	1994	100	Ukraine	WOS	20.04.1994		Drugs and Pharmaceuticals	Trading
Cipla Ltd.	1995	55	China		14.11.1995		Drugs and Pharmaceuticals	
Dr.Reddy's Labs Ltd.	1995	100	Hong Kong	WOS	07.02.1995		Drugs and Pharmaceuticals	
Ajanta Pharma	1995	90	Mauritius		12.01.1995		Drugs and Pharmaceuticals	
Core Healthcare Limited	1995	100	Russia	WOS	29.11.1995		Drugs and Pharmaceuticals	
Dr.Reddy's Labs Ltd.	1995	76	Russia		27.04.1195		Drugs and Pharmaceuticals	Manufacturing
Dr.Reddy's Labs Ltd.	1995	35	Russia		24.08.1995		Drugs and Pharmaceuticals	
Ajanta Pharma	1995	35	Tajikistan		04.01.1995		Drugs and Pharmaceuticals	
Core Healthcare Limited	1995	49	UK		24.08.1995		Drugs and Pharmaceuticals	
Sun Pharmaceuticals	1995	100	UK	WOS	20.06.1995		Drugs and Pharmaceuticals	
Natco Pharma	1995	85	USA		08.09.1995		Drugs and Pharmaceuticals	
Shasun Chemicals	1995	89.71	USA		02.03.1995		Drugs and Pharmaceuticals	
Ranbaxy Laboratories Ltd.	1996	70	China	JV	15.05.1996	1.75	Drugs and Pharmaceuticals	Manufacturing and Marketing
Ranbaxy Laboratories Ltd.	1996		China	JV	01.08.1996	0.65	Drugs and Pharmaceuticals	Manufacturing
Cheminor Drugs Ltd.	1996	100	France	WOS	14.06.1996	0.189	Drugs and	Trading

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
							Pharmaceuticals	
Nukem Remedies Ltd.	1996		Hungary	JV	15.07.1996	0.151	Drugs and Pharmaceuticals	Trading
Cadila Healthcare	1996	100	Ireland	WOS	14.08.1996	0.078	Drugs and Pharmaceuticals	Trading
Wockhardt Ltd.	1996	100	Ireland	WOS	13.09.1996	14.5	Drugs and Pharmaceuticals	Manufacturing
Medicrop Technologies India Ltd.	1996	51	Jordan	JV	11.11.1996	0.026	Drugs and Pharmaceuticals	Trading
Lupin Laboratories	1996	100	Luxemburg	WOS	06.12.1996	4	Drugs and Pharmaceuticals	Trading
Ranbaxy Laboratories Ltd.	1996	35	Malaysia	JV	04.01.1996	0.358	Formulations	Manufacturing
Ajanta Pharma	1996	75	Mauritius	JV	12.08.1996	0.75	Drugs and Pharmaceuticals	Manufacturing
Ajanta Pharma	1996		Mauritius	JV	01.08.1996	0.2	Pharmaceutical formulations, etc.	Manufacturing
J B Chemicals	1996	100	Mauritius	WOS	27.11.1996	1	Bulk Drugs, injections, tablets, etc.	Trading
Nicholas Piramal India	1996	100	Mauritius	WOS	10.09.1996	1.65	Drugs and Pharmaceuticals	Trading
Adhyatama Invetments	1996	100	Nepal	WOS	06.08.1996	0.169	Drugs and Pharmaceuticals	Trading
Concept Pharmaceutical Ltd.	1996	100	Nepal	WOS	01.08.1996	0.169	Pharmaceutical Products	Marketing
Dabur Ltd.	1996		Nepal	JV	10.07.1996	1.267	Drugs and Pharmaceuticals	Manufacturing
Dr.Reddy's Labs Ltd.	1996	100	Netherlands	WOS	01.03.1996	0.5	Licensing the right for	Manufacturing

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
							manufacturing of drugs	
USV Ltd.	1996	100	Nigeria	WOS	23.07.1996	0.061	Drugs and Pharmaceuticals	Trading
Parenteral Drugs	1996		Sri Lanka	JV	08.07.1996	0.603	Intravenous Fluids, Tablets & Capsules	Manufacturing
Ranbaxy Laboratories Ltd.	1996	41.33	Thailand	JV	18.05.1996	0.213	Drugs and Pharmaceuticals	Manufacturing
Ajanta Pharma	1996		Turkmenistan	JV	01.07.1996		Drugs and Pharmaceuticals	Manufacturing
Cadila Healthcare	1996		UK	JV	01.08.1996	1.4	Health Care Products	Manufacturing
Core Healthcare Limited	1996	100	UK	WOS	10.08.1996	1.47	Drugs and Pharmaceuticals	Manufacturing
Shahnaz Hussain Herbal Ltd.	1996	100	UK	WOS	01.03.1996	0.128	Herbal Ayurvedic Products	Manufacturing and Trading
Parenteral Drugs	1996		Ukraine	JV	08.07.1996	0.552	Intravenous Fluids, Tablets & Capsules	Manufacturing
Ajanta Pharma	1996		USA	JV	25.07.1996	0.18	Drugs and Pharmaceuticals	Trading
Malladi Drugs and Pharmaceuticals Ltd.	1996	100	USA	WOS	23.10.1996	0.02	Drugs and Pharmaceuticals	Trading
Nukem Remedies Ltd.	1996	90	USA	JV	07.02.1996	0.9	Ayurvedic Products	Marketing
Cadila Healthcare	1996	60	Uzbekistan	JV	18.10.1996	0.06	I.V.Fluids, Pharmaceuticals Formulations and Disposables	Trading

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
							Devices	
Core Healthcare Limited	1996	60	Uzbekistan	JV	18.10.1996	0.06	Drugs and Pharmaceuticals	Trading
Nicholas Piramal India	1997	66.26	Botswana	JV	21.07.1997	0.164	Drugs and Pharmaceuticals	Manufacturing
Glenmark Pharmaceutical Ltd.	1997	100	Canada	WOS	19.07.1997	0.281	Drugs and Pharmaceuticals	Manufacturing
Wockhardt Ltd.	1997		China	JV	02.12.1997	4.2	Drugs and Pharmaceuticals	Manufacturing
Dishman Pharmaceuticals	1997	100	Cyprus	WOS	30.08.1997	0.15	Drugs and Pharmaceuticals	Trading
Recon Ltd.	1997	51	Indonesia	JV	06.01.1997	0.51	Drugs and Pharmaceuticals	Manufacturing
Ajanta Pharma	1997	87.5	Kazakhstan	JV	04.07.1997	3	Drugs and Pharmaceuticals	Manufacturing
Ajanta Pharma	1997	41.87	Kyrgyzstan	JV	27.06.1997	1.57	Drugs and Pharmaceuticals	Manufacturing
Ace Laboratories	1997	50	Mauritius	JV	29.10.1997	0.589	Pharmaceuticals	Manufacturing
Ajanta Pharma	1997	88	Mauritius	JV	07.07.1997	0.813	Drugs and Pharmaceuticals	Manufacturing
Akshata Holdings	1997		Nepal	JV	30.09.1997	0.436	Drugs and Pharmaceuticals	Manufacturing
Dabur Ltd.	1997		Nepal	JV	27.10.1997	5	Drugs and Pharmaceuticals	Manufacturing
FDC Ltd.	1997	100	Netherlands	WOS	20.01.1997	0.5	Drugs and Pharmaceuticals	Trading
Ranbaxy Laboratories Ltd.	1997	100	Netherlands	WOS	31.07.1997	28	Drugs and Pharmaceuticals	Trading
Ranbaxy Laboratories Ltd.	1997	100	Netherlands	WOS	27.02.1997	10	Drugs and Pharmaceuticals	Manufacturing
Torrent	1997	100	Russia	WOS	06.01.1997	0.16	Drugs and	Trading

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
Pharmaceuticals							Pharmaceuticals	
Lupin Laboratories	1997	60	South Africa	JV	15.04.1197		Drugs and Pharmaceuticals	Trading
Ajanta Pharma	1997	37.5	Tajikistan	JV	01.01.1997	0.095	Drugs and Pharmaceuticals	Manufacturing
Lupin Agro Chemicals	1997		Thailand	JV	16.01.1997	0.555	Drugs and Pharmaceuticals	Manufacturing
Lupin Laboratories	1997	60	Thailand	JV	16.01.1997	0.981	Drugs and Pharmaceuticals	Manufacturing
Kopran Ltd.	1997	50	Uganda	JV	22.02.1997	1.35	Drugs and Pharmaceuticals	Manufacturing
Dishman Pharmaceuticals	1997	100	UK	WOS	23.05.1997	0.264	Drugs and Pharmaceuticals	Trading
Serene Industries Ltd.	1997		UK	JV	01.12.1997	1.663	Drugs and Pharmaceuticals	Trading
Ajanta Pharma	1997	100	Ukraine	WOS	30.05.1997	0.05	Drugs and Pharmaceuticals	Trading
Core Healthcare Limited	1997	100	Ukraine	WOS	22.10.1997	0.1	Drugs and Pharmaceuticals	Trading
Natco Pharma	1997		USA	JV	08.10.1997	1.5	Drugs and Pharmaceuticals	Manufacturing
Pharmaceutical Products of India Ltd.	1997		USA	JV	24.07.1997	0.1	Pharmaceutical products, bulk drugs, intermediates	Trading
Sun Pharmaceuticals	1997		USA	JV	20.04.1997	26.68	Drugs and Pharmaceuticals	Manufacturing
Ace Laboratories	1997	60	Uzbekistan	JV	15.01.1997	0.291	Drugs and Pharmaceuticals	Manufacturing
Ajanta Pharma	1997	100	Uzbekistan	WOS	31.05.1997	0.05	Drugs and Pharmaceuticals	Trading

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
Core Healthcare Limited	1997		Uzbekistan	JV	20.01.1997	2.908	Drugs and Pharmaceuticals	Trading
Core Healthcare Limited	1997		Uzbekistan	JV	10.11.1997	6.7	Drugs and Pharmaceuticals	Trading
Core Worldwide Ltd	1998	100	Azerbaijan	WOS	24.03.1998	0.012	Drugs and Pharmaceuticals	Trading
Core Worldwide Ltd	1998	100	Brazil	WOS	24.03.1998	0.01	Drugs and Pharmaceuticals	Trading
Aurobindo Pharma	1998	100	Hong Kong	WOS	04.09.1998	0.15	Drugs and Pharmaceuticals	Trading
Wockhardt Ltd.	1998	100	Ireland	WOS	27.10.1998	8.395	Drugs and Pharmaceuticals	Manufacturing
Wockhardt Ltd.	1998	100	Ireland	WOS	11.02.1998	8	Drugs and Pharmaceuticals	Manufacturing
Core Worldwide Ltd	1998	100	Ivory Coast	WOS	24.03.1998	0.011	Drugs and Pharmaceuticals	Trading
Core Worldwide Ltd	1998	100	Kenya	WOS	24.03.1998	0.01	Drugs and Pharmaceuticals	Trading
Mayo India Ltd.	1998		Kyrgyzstan	JV	10.02.1998	0.561	Drugs and Pharmaceuticals	Manufacturing
Lupin Laboratories	1998	100	Luxemburg	WOS	07.08.1998	2	Drugs and Pharmaceuticals	Manufacturing
Ranbaxy Laboratories Ltd.	1998		Malaysia	JV	16.09.1998	0.376	Drugs and Pharmaceuticals	Manufacturing
Ace Laboratories	1998		Nepal	JV	30.11.1998	0.235	Drugs and Pharmaceuticals	Manufacturing
Adhyatama Investments	1998	100	Nepal	WOS	08.07.1998	0.442	Drugs and Pharmaceuticals	Trading
Colgate Palmolive	1998	100	Nepal	WOS	09.01.1998	3.556	Drugs and Pharmaceuticals	Manufacturing
Dabur Ltd.	1998		Nepal	JV	10.07.1998	2.528	Drugs and	Manufacturing

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
							Pharmaceuticals	
Lupin Laboratories	1998		Russia	JV	12.02.1998	0.009	Drugs and Pharmaceuticals	Trading
Ranbaxy Laboratories Ltd.	1998		Thailand	JV	17.07.1998		Drugs and Pharmaceuticals	Trading
Dabur Ltd.	1998		UK	JV	06.03.1998	2.439	Personal & healthcare products	Manufacturing
Max India	1998	100	UK	WOS	03.08.1998	0.5	Drugs and Pharmaceuticals	Trading
Ajas Components P Ltd.	1998	100	USA	WOS	21.07.1998	0.075	Drugs and Pharmaceuticals	Trading
AR Chhadda & Co.	1998	100	USA	WOS	26.05.1998	0.1	Drugs and Pharmaceuticals	Trading
Aurobindo Pharma	1998	100	USA	WOS	26.05.1998	0.1	Drugs and Pharmaceuticals	Trading
Shasun Chemicals	1998	100	USA	WOS	25.05.1998	0.015	Drugs and Pharmaceuticals	Trading
Ajanta Pharma	1998	100	Uzbekistan	WOS	16.02.1998	0.15	Drugs and Pharmaceuticals	Trading
Core Worldwide Ltd	1999	100	Brazil	WOS	20.02.1999	1	Drugs and Pharmaceuticals	Trading
Dr.Reddy's Labs Ltd.	1999		Brazil	JV	20.09.1999	1.5	Drugs and Pharmaceuticals	Trading
Atmasantulana Ayurveda Ltd.	1999	100	Germany	WOS	08.11.1999	0.028	Drugs and Pharmaceuticals	Trading
Ranbaxy Laboratories Ltd.	1999		Malaysia	JV	27.09.1999	0.129	Drugs and Pharmaceuticals	Manufacturing
Adhyatama Invetments	1999	100	Nepal	WOS	11.03.1999	0.186	Drugs and Pharmaceuticals	Trading
Dabur Ltd.	1999		Nepal	JV	16.02.1999	3.6	Drugs and	Manufacturing

Company	*Year*	*Ownership*	*Country*	*JV/WOS*	*Date of Approval*	*Equity $ million*	*Field of Collaboration*	*Objective of OFDI*
							Pharmaceuticals	
Cadila Pharmaceuticals	1999	100	Sri Lanka	WOS	24.11.1999	1.997	Drugs and Pharmaceuticals	Manufacturing
Aurobindo Pharma	1999		Thailand	JV	19.07.1999	0.052	Drugs and Pharmaceuticals	Trading
Kopran Ltd.	1999		UAE	JV	31.07.1999	2.582	Drugs and Pharmaceuticals	Manufacturing
Dabur Ltd.	1999	100	UK	WOS	18.8.1999	2.5	Drugs and Pharmaceuticals	Trading
Aurobindo Pharma	1999	100	USA	WOS	25.10.1999	0.2	Drugs and Pharmaceuticals	Manufacturing
Cadila Pharmaceuticals	1999	100	USA	WOS	08.12.1999	0.005	Drugs and Pharmaceuticals	Trading
Shasun Chemicals	1999	100	USA	WOS	21.12.1999	2	Drugs and Pharmaceuticals	Trading
Sun Pharmaceuticals	1999		USA	JV	15.03.1999	5.3	Drugs and Pharmaceuticals	Manufacturing
Gufic Ltd.	1999		Uzbekistan	JV	19.01.1999	0.25	Drugs and Pharmaceuticals	Manufacturing
Rallis India Ltd.	1999		Zimbabwe	JV	31.07.1999	1.108	Drugs and Pharmaceuticals	Manufacturing

Source: Based on various sources: i. Indian Investment Centre (1998) *Indian Joint Ventures & Wholly owned Subsidiaries Abroad Approved during the year 1996*, New Delhi; ii. Indian Investment Centre (1998) *Indian Joint Ventures & Wholly owned Subsidiaries Abroad Approved upto December 1995*, New Delhi; iii. Unpublished firm level outward investment data collected from the Ministry of Finance through the Research and Information System (2002), New Delhi.

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Institute for Studies in Industrial Development
4, Institutional Area, Vasant Kunj, New Delhi - 110 070, INDIA
Phone/Fax: +91 11 2689 1111; E-mail: info@vidur.delhi.nic.in
Website: http://isid.org.in

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