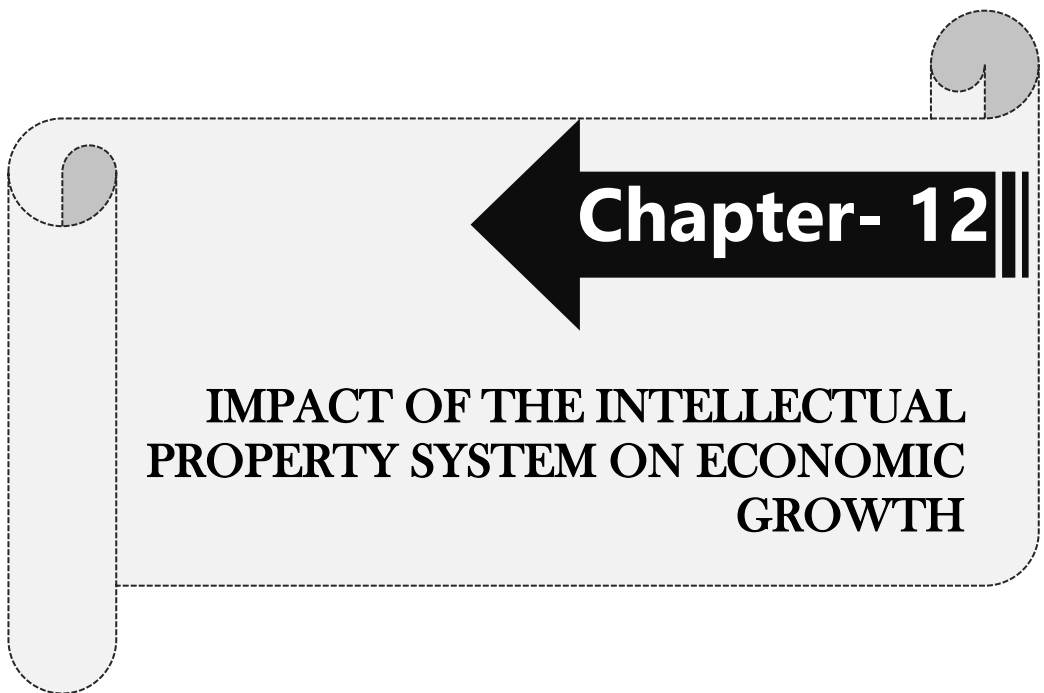


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Chapter- 12

IMPACT OF THE INTELLECTUAL PROPERTY SYSTEM ON ECONOMIC GROWTH

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Research Questions

- 1) How does the IPR regime affect the growth indirectly?
- 2) How does the patent regime stimulate patenting activity?

Chapterisation

- 1) Introduction
- 2) Outline: Present IP System in India
- 3) Case Studies: 1. PHARMACEUTICAL SECTOR
- 4) Biotechnology Sector
- 5) Information Technology Sector

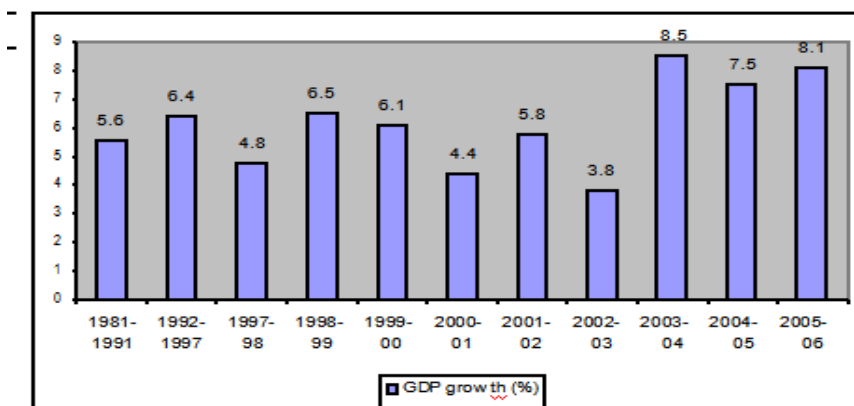


Fig.1 GDP GROWTH RATES (%)

Trend of Applications filed:

A survey on the trend of patents applications and design applications filed in India over the last 15 years clearly shows a rising trend after the year 2002-03(Fig2&3).

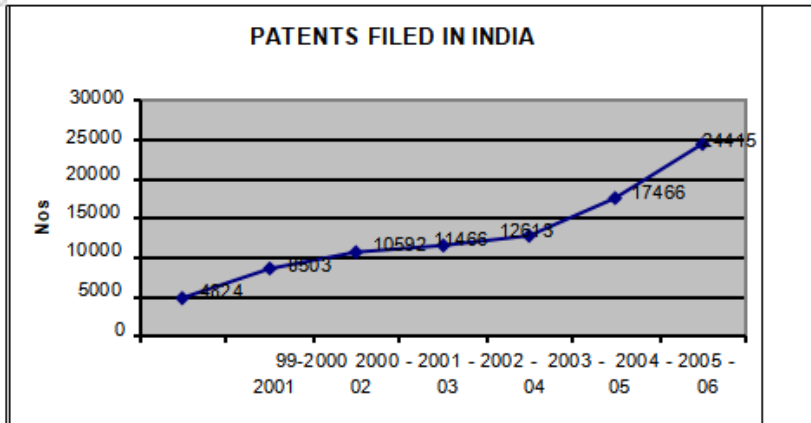


Fig.2 The year wise pattern of Patent filed in India

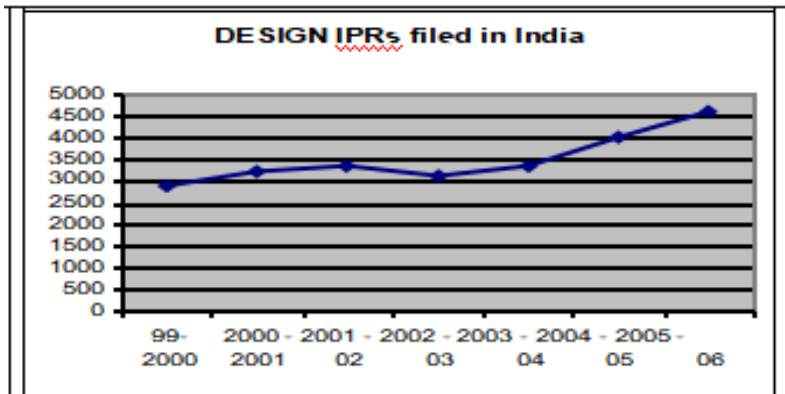


Fig.3 The year wise pattern design IPR filed in India

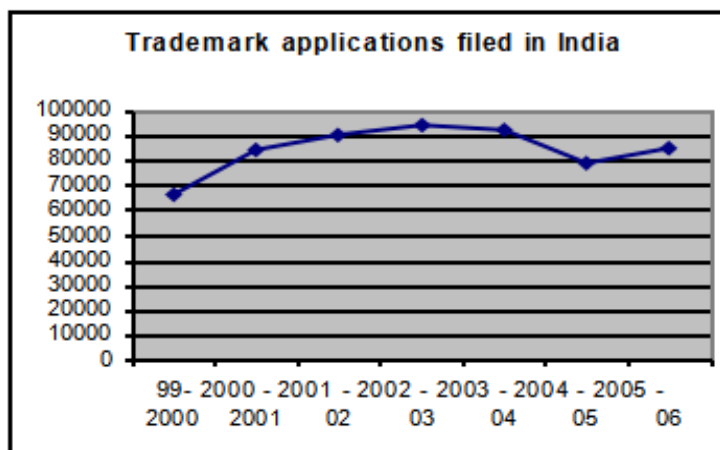


Fig.4 Year wise Pattern of trademark application

RANBAXY-

Headquartered in India, is an integrated, research based, international pharmaceutical company, producing a wide range of quality, affordable generic medicines, trusted by healthcare professionals and patients across geographies. It is ranked among-st the top ten generic companies worldwide.

- **KEY INDICATORS:**
- Founded in 1961 in Gurugram.
- Total sales : \$ 1.03 billion (2004), \$ 1.2 billion (2005).
- Exports account for 58 percent of sales. Largest markets include: U.S., Brazil, Russia, China.
- 28% of sales are in the U.S. market.
- Sales generic drugs in over 100 foreign countries, manufacturing operations in 7 countries, and offices in 44.
- R&D budget: \$75 million (2004).
- Employment: 1,700

DR. REDDY'S LABORATORIES-

Dr. Reddy's is India's third largest integrated company offering a range of generic and branded drugs and active pharmaceutical ingredients. Most of Dr. Reddy's sales are of branded drugs reversed engineered versions of drugs patented in the West. In 2005, branded drugs accounted for 41 percent of total revenues and APIs accounted for 34 percent.	KEY INDICATORS: • India's 3rd largest drug producer. • Revenues: \$502 million (July 2006). • 66% of revenues earned in foreign markets. • 41% of earning derived from formulations. • Investing 6.5% of sales in R&D. • Employees: 7,525.
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BIOCON-

Biocon is India's leading biotechnology enterprise. Over the past 28 years, it has evolved from an enzyme manufacturing company to a fully integrated bio-pharmaceutical enterprise, focused on healthcare. It applies its proprietary fermentation technologies to develop innovative and effective bio-molecules in diabetology, oncology, cardiology and other therapeutic segments. The success of Biocon, has been because of its ability to develop innovative technologies and products and to rapidly leverage them to adjacent domains. This unique "integrated innovation" approach has yielded a host of patented products and technologies that have enabled multi-level relationships with our global clientele.	KEY INDICATORS • Income from research services increased by 52% to Rs. 1,006 million in 2005-2006 from Rs. 662 million in 2004-2005 • Total Income increased by 9% to Rs. 7,932 million • R&D spend increased 76% to Rs. 764 million • Dividend recommended at 50% (Rs. 2.5 per share) • Operating Margins sustained at a healthy 30% at Rs. 2,340 million
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WIPRO-

Wipro is fourth largest company in the world in terms of market capitalization in IT services and has its presence in 35 countries along with 10 near shore development centers. The list of industries that Wipro has are as follows: Automotive, Avionics, Computer Peripherals, Computing Platform, Consumer Electronics, Distribution & Logistics, Energy & Utilities, Finance, Government, Health Science, High Technology, Insurance, Manufacturing, Media & Entertainment, Mobile Devices, Retail, Semiconductors, Software Products, Storage Technologies, Telecom and Travel & Transport. Wipro is the largest third party global R&D services provider and has over two decades of experience in software products engineering. It has partnership with a leading, US based semiconductor manufacturer for automotive System-on-Chips (SOC). In semiconductor segment, it provides services in SOC, ASIC, Board, FPGA, Embedded OS / RTOS Development and Porting, Diagnostics and Firmware, and System Software for SOC.	KEY INDICATORS • Founded in 1945 • Headquarter: Bangalore • Service line: VLSI: ASIC & Soc designs, complete system designs, DSPs, multimedia codecs, product strategy & lifestyle management, product support, firmware development, application software development. • 2005 revenue: \$ 2.4 million • 2005 net profit: \$ 456 million
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Results of Analysis

Summary of Industrial data

Company	No. of Patents filed during 1995-2005	Employee	R & D Budget (US \$ in millions)	Total Global Sale (US \$ in millions)	Revenue (US \$ in millions)
Dr. Reddy's Laboratories	205	7525	50.40	534.5	24300
Ranbaxy Laboratories	259	1700	75	1,176	4500
BIOCON	800	3000	81.25	13.8	2100
WIPRO	13 (2007)	20000	--	1700	1,353

R&D Expenditures in Major Sectors Indian Industry

Sectors	1999	2000	2001	2002	2003	2004
Chemicals:	184.4	187.6	222.4	278.8	306.1	447.9
Machinery	98.5	102.9	108.0	109.8	111.4	153.8
Textiles	7.8	5.8	8.1	7.6	8.0	6.9

Patents filed by Indians and Foreigners:

A comparison of patents filed by Indians and foreigners shows that the share of Indians in patents have increased over the years surpassing the foreigners in the year 2004-2005 (Fig 5)

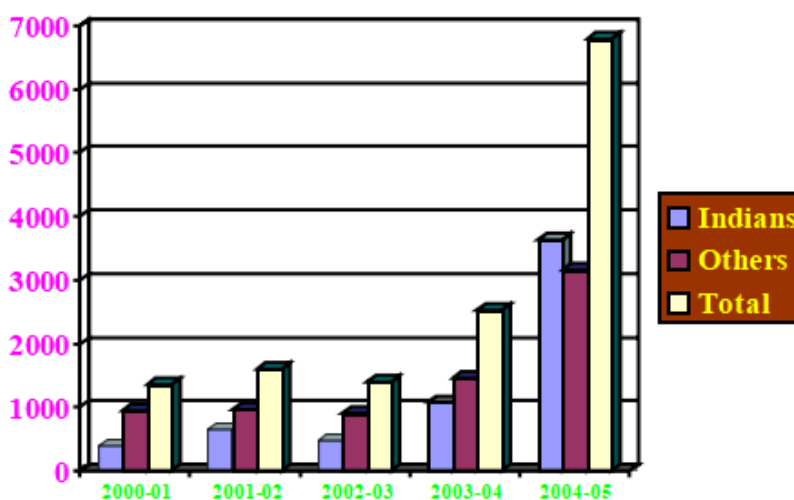


Fig.5 Patents granted to Indians and others (Source DST)

Ratio of R&D to Sales of Major Sectors of Indian Industry:

Sectors	Dec-95	Dec-98	Dec-99	Dec-00	Dec-01	Dec-02	Dec-03	Dec-04
Chemicals	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.4
Drugs & Pharmaceuticals	1.4	1.3	1.5	1.6	2.1	2.7	2.9	4.1
Food & beverages	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Machinery	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.8
Textiles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

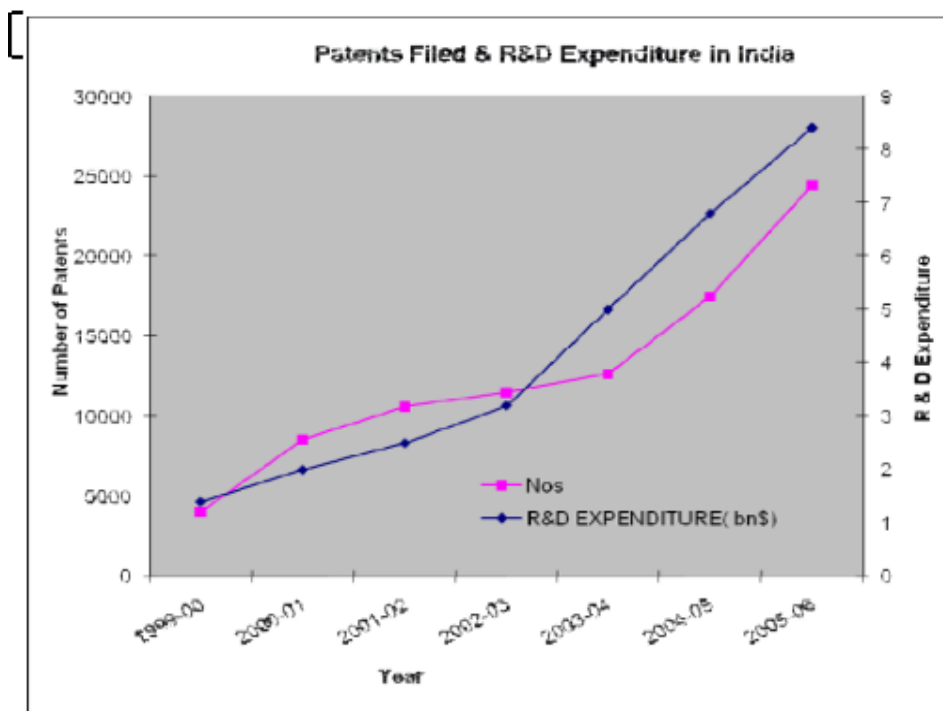


Fig.4. Relationship between Patents filed and R & D expenditure

Table 4.1: Impact on IP Creation - Results

Specification	Model
Dependent Variable : Patents Obtained / Applied	
R & D	Coefficient : 1.55 t-value : 11.88**
GDP	Coefficient : 5.87 t-value : 4.97**
IP Index	Coefficient : 8.82 t-value : -2.69*
Intercept	Coefficient : -26.97 t-value : -2.53
Coefficient of Determination	0.78

* and ** indicates significance at 1% and 5% level.

Table: 4.2. GDP

Variables	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
National accounts						
Real GDP (at 1999/00 factor cost)	4.4	5.8	3.8	8.5	7.5	9.0
Real GDP at factor cost (Rs billion, 1999/00 prices)	18,647.7	19,729.1	20,477.3	22,225.9	23,896.6	26,045.3
Real GDP at market prices (Rs billion, 1999/00 prices)	20,308.7	21,366.3	22,162.6	24,022.5	26,022.3	28,424.8
Current GDP at factor cost (Rs billion)	19,254.2	21,001.9	22,653.0	25,494.2	28,559.3	32,509.3

Table 4.3. Total factor productivity in India, 1978-2006

(Annual %change)

	Overall		Agriculture		Industry		Services	
	1978-9	1993-0	1978-9	1993-0	1978-9	1993-0	1978-9	1993-0
	3	6	3	6	3	6	3	6
Output	4.5	6.5	2.7	2.2	5.4	6.7	5.9	9.1
Employment	2.1	1.9	1.4	0.7	3.3	3.6	3.8	3.7
Capital	1.0	1.8	0.2	0.7	1.4	1.7	0.3	1.1
Land	-0.1	0.0	-0.1	-0.1	n.a.	n.a.	n.a.	n.a.
Education	0.3	0.4	0.2	0.3	0.4	0.3	0.4	0.4
TFP	1.1	2.3	1.0	0.5	0.3	1.1	1.4	3.9
Labour	2.4	4.6	1.3	1.5	2.1	3.1	2.1	5.4
productivity								
Capital	1.8	2.4	1.7	0.5	1.4	2.2	3.5	5.5
productivity								

Table 4.4 Impact on Business Activities: Results

Specification	Model
Dependent Variable : Domestic Production represented by GDP	
Capital	Coefficient : 0.288 t-value : 11.88**
labour	Coefficient : 0.367 t-value : 15.91**
IP Index	Coefficient : 1.003 t-value : 103.99
Intercept	Coefficient : -0.001 t-value : 0.46
Coefficient of Determination	0.95

* and ** indicates significance at 1% and 5% level.

Table: 4.5 Foreign Direct Investments in India

Year	Foreign Direct Investment			
	Equity	Reinvested Earnings	Other Capital	Total
1991-92	129			129
1992-93	315			315
1993-94	586			586
1994-95	1314			1314
1995-96	2144			2144
1996-97	2821			2821
1997-98	3557			3557
1998-99	2462			2462
1999-2000	2155			2155
2000-01	2400	1350	279	4029
2001-02	4095	1645	390	6130
2002-03	2764	1833	438	5035
2003-04	2229	1460	633	4322
2004-05	3778	1904	369	6051
2005-06	5820	1676	226	7722
2006-07	9513	944	135	10592

Source: Reserve Bank of India Hand book of Statistics and Bulletin (March 2007)

Table 4.6 Share in total foreign direct Investment

Sectors	Share in total Foreign direct Investment (Percentage)
Electrical equipment including computer software and electronics	17.03
Services	16.96
Telecommunication	9.32
Transportation	8.44
Fuels (power and refinery)	6.67
Chemicals other than fertilizers	5.21
Drugs and Pharmaceuticals	2.83
Food Processing	2.77
Cement	2.35
Metallurgical Industries	1.97
Consultancy services	1.46
Textiles	1.25
Miscellaneous mechanical & engineering	1.22
Hotel & Tourism	1.20
Trading	1.05

Source: India FDI fact sheet ; http://dipp.nic.in/fdi_statistics/india_fdi_index.htm

Table: 4.7. Impact on FDI Inflows - Results

Specification	Model
Dependent Variable : FDI	
GDP	Coefficient : -601.23 t-value : -1.17**
IP Index	Coefficient : -49.08 t-value : -0.48
Population	Coefficient : 7577.89 t-value : 4.12**
Intercept	Coefficient : -1122.09 t-value : -0.97
Coefficient of Determination	0.79

* and ** indicates significance at 1% and 5% level.

REFERENCES

1. Annual Report of the Deptt. of Information Technology (DIT), Ministry of Communications and IT (MoC & IT, Government of India 2004-05 (www.mit.gov.in) and IPR Manuals published by its IPR Division on (i) Copyrights, (ii) Patents, (iii) Designs and (iv) Report on Trademark and Domain Names.
2. Strategic Review 2004 and 2005, the IT Industry in India National Association of Software and Services Companies (NASSCOM), New Delhi, India (www.nasscom.org)
3. Interim Economic Report On India Situation In November 2006 - Embassy Of Switzerland Ref. No. 512.0-Dej-Nmo New Delhi, November 9, 2006
4. Banga, R. (2003b), "Impact of Government Policies and Investment Agreements on FDI Inflows," Indian Council for Research on International Economic Relations (ICRIER), Working Paper (116), November.
5. Chakraborti, A. (2001), "The Determinants of Foreign Direct Investment: Sensitivity Analyses of Cross-Country Regressions," *Kyklos*, 54 (1), pp. 89-113
6. Guha, A., and Ray, A.S. (2002), "Multinational versus Expatriate FDI: A Comparative Analysis of the Chinese and Indian Experience," In T.N. Srinivasan, (ed.) *Trade, Finance and Investment in South Asia*, New Delhi, Social Science Press.
7. Guha, A., and Ray, A.S. (2004), "India and Asia in the World Economy: The Role of Human Capital and Technology," *International Studies*, 41(3).
8. RBI (2007), *Monthly Bulletin*, March 12, Mumbai.

9. Lucas, R.E.B. (1993), "On the Determinants of Direct Foreign Investment: Evidence from East and Southeast Asia," *World Development*, 21 (3), pp.391-406.
10. Palit, A. (2006), 'Role of Technological Capabilities in Enhancing FDI Flows in Developing Asia-Pacific Economies,' UN-ESCAP, ARTNeT Policy Brief, 9, November; Bangkok.
11. UNCTAD (2005), *World Investment Report, Statistical Annex*, New York and Geneva.