Chapter 2

Review of Literature and Research Design of the Study

2.1 Introduction:

India resorted to liberalization regime by opening the economy and paving the way for foreign investment. During the post liberalization period since 1991 different issues emerged as regard to inflow of FDI in India. As India suffered technological backwardness and institutional rigidities in such a scenario pharmaceutical industry was the only potential to the beneficiary of economic liberalization through FDI. However, this is the optimistic part of the consequences. There is a pessimistic part not ignorable either. Economists quite often belong to either of two view points.

The pessimistic group led by Charles Kindleberger (1992) viewed FDI as a source for exploitation for the host countries by multinationals. Such exploitation ranges from inappropriate technology, labour exploitation, transfer pricing etc. to high repatriation and economic exploitation. The optimistic group, led by the famous development economist Michael Todaro (1999) opines a careful scrutiny of the host country to ensure capital formation, technological development, employment generation and promotion of living standards. FDI in pharmaceutical industry in India had not been informed of this consequence and the present study aims to analyze these.

2.2 Statement of the problem:

The advent of FDI in the Indian economy has given birth to a number of interesting and noteworthy problems which are discussed below:

1) The entry of FDI would give rise to economics of scale and higher productivity by the use of latest technology. It is well known that FDI brings with it latest technology that is being used in the developed countries. So the host country gets the advantages of the use of latest technology. Besides FDI brings novel concepts of managerial skills.

2) FDI generates more employment. With the inflow of FDI in a developing economy, the investment process gets boost and a large number of projects start that lead to the generation of employment in almost every sector of the economy. It also provides an opportunity to the idle work force of the host countries.
3) FDI paves the way to have large volume of foreign exchange. It helps in enhancing exports for the host country. So the increase will directly influence the foreign exchange of the host country, which consequently helps it to maintain large volume of foreign exchange and improve its BOP position.

4) Another significant issue which has cropped up in the wake of FDI is the development of social sector. The Indian industries are predominantly labour intensive. Human capital in terms of quality was not a big problem in India due to its huge population added emphasis must be laid on the quality and efficiency in work by MNCs. FDI also enhanced our educational system. Since 2003, the Indian government has been allowing 100% FDI in education, which means that foreign schools, colleges and universities can set up wholly subsidiaries in India.

The pharmaceutical industry has been chosen for research for many reasons. First this sector play an important social role for it is directly concerned with the health of the people which is a basic need of every citizen. Second is that the contribution of the pharmaceutical companies in the spheres of production, earning foreign exchange and investment in Indian economy has been quite significant. Third, this industry is a research based one. R&D activity is one of the basic needs of the industry.

The role of FDI is an important consideration for the fast growing pharmaceutical industry as FDI always helped in boosting exports with the setting up of the state-of-the art infrastructure facilities and latest technological skills, which further helps the export industry to stay afloat in the international competitiveness and sustained growth which, emergence of the pharmaceutical industry as one of the fastest growing among all the industries, especially in terms of exports. Therefore by taking into consideration all these it is inferred that FDI has a very important role play in the development of economies like India, which is lagging far behind in growth and development as compared to other developed countries.

2.3 Review of Literature:

A lot of research has already been done across the globe for analyzing the various aspects of FDI. In the development literature, well reflected in the international as well as the Indian discourse, there has been a lot of debate generated about inflows of
FDI for different sectors and their impact. Some of the major works are reviewed here. For simplification purpose the studies have been divided into two categories.

The Global Perspective:

Bransteeter et al. (2007) in their study of “Intellectual Property Rights, Imitation and FDI: Theory and Evidence” tried to analyses the effect of strengthening Intellectual Property Rights (IPRs) on the level and composition of industrial development in the developing countries. They developed a North South Product cycle model in which Northern innovation, Southern imitation and FDI are all endogenous variables. The study predicts that IPR reform in the South leads to increased FDI from the North as the Northern firms shift production to the Southern affiliates. This FDI accelerates Southern industrial development. Besides as the production shifts to the South, the Northern resources will be reallocated to R&D, driving an increase in the global rate of innovation. The study finds that MNCs expand the scale of activities in reforming countries after the IPR reforms.

Analyzing the influence of strengthening IPRs on FDI inflow, Glass and Saggi (2000) in their paper “Intellectual Property Right and FDI” developed a product cycle model with endogenous innovation, imitation and FDI and determined how stronger intellectual property rights protection in South affects innovation, imitation and FDI. They find that stronger IPR protection keeps multinational safer from imitation, but no more so than Northern firms. Hence FDI decreases with strengthening of Southern IPR Protection because an increase in the list of invitation crowds-out FDI through tighter southern resource scarcity.

A study carried out in an edited volume by Narula and Lall (2006) “Understanding FDI Assistant Economic Development” emphasizes the factors that led to an optimization of the benefits from FDI for the host country. Despite the diversity of the countries covered and the methodology used in the study, it points to a basic paradox. “With weak local capabilities, industrialization has to be more dependent on FDI. However, FDI cannot drive industrial growth without local capabilities.” They clearly show that market forces cannot substitute for the role of the government and argue in favour of a proactive industrial policy. Therefore FDI per se does not provide growth opportunities unless the domestic industrial sector exists which has the necessary technological capacity to profit for the externalities from MNC activity.

Blomstrom and Kokko (2005) in their study “The Economics of Foreign Direct Investment” suggest that the use of investment incentives to attract more FDI is
normally not an efficient way to raise national welfare. The strongest theoretical motives for financial subsidies to attract investment are spillovers of foreign technology and skills to local industry. They argue that these benefits may not be an automatic consequence of foreign investment. The potential spillover benefits are realized only if the local firms have the ability and motivation to invest in absorbing foreign technology and skills. To motivate subsidization of foreign investment, it is, therefore necessary at the same time to support learning and investment in local firms as well.

Haskel et al. (2004) in their study “Does Inward FDI Boost the Productivity of the Domestic firms” tried to find out whether there are any productivity spillover from FDI to the domestic firms and if so, how much should the host countries be willing to pay to attract FDI to their countries. Using plant level panel covering U.K. manufacturing during 1973-1992 they estimate a positive correlation between domestic plants, Total Factor Productivity (TFP) and the foreign affiliates share of activity in that industry. The study suggests that a 10 percent point increase in foreign presence in the UK industry raises the TFP of that industry’s domestic plants by about 0.5 percent. These estimates are used to calculate the job value of these spillovers. And calculated values appear to be less than per job incentives that the government has granted in some cases.

In the study on “Human capital formation and FDI in Developing Countries, Lyamoto (2003) has taken a view of the complex linkages between the activities of the MNCs and the policies of host developing countries. The study indicates that a high level of human capital is one of the key components for attracting FDI as well as for the host countries to get maximum benefits from these activities. He finds that one way to improve human capital formation and attract more FDI is to provide a strong incentive for MNCs and investment promotion agencies to participate in formal education and vocational training for workers employed with domestic firms. Besides FDI promotion activities can target high value added MNCs that are more likely to bring new skills and knowledge to the economy that can be tapped by the domestic enterprises.

In an interesting article “Intellectual Property Rights, Technology and Economic Development: Experiences of Asian Countries” Kumar (2003) critically examined the role of intellectual property protection regime with reference to Asian countries. The study indicates that the top 10 countries account for 84 percent of global resources
spent on R&D activity with controlled 94 percent of the technological output in terms of patent taken out in the US and receive 91 percent of global cross border royalties and technology license fees annually. Therefore it affects the prices of a large number of important drugs and thus affects the health systems in poorer countries and lead to income transfer from poorer to richer countries. Besides, it will adversely affect the manufacturing activity in developing countries and may increase their imports but does not guarantee increased FDI inflows, access to technological R&D investment in tropical diseases. He suggests that developing countries should build adequate provisions for compulsory licensing in their IPR legislation in order to safeguard them from possible abuses of monopoly power obtained by patent owners. Government may impose regulation of prices of essential drugs to protect the poor masses from the price increases and provides increased technical assistance and R&D funding to local enterprises to help them in building up their local capabilities.

Kumar (2001) in his study entitled “Infrastructure Availability, FDI Inflows and their Export Orientation: A Cross Country Exploitation” analyses the role of infrastructure availability in determining the attractiveness of countries for FDI inflows for export orientation of MNCs production. He posits that the investment by the governments in providing efficient physical infrastructure facilities to improve the investment climate for FDI. The estimates corroborate the fact that infrastructure availability does contribute to the relative attractiveness of a country towards FDI by MNCs, holding other factors constant. He suggested that infrastructure development should be an integral part of the strategy to attract FDI inflows in general and export-oriented production from MNCs in particular.

In an important article “Do stronger patents induce more innovation? Evidence from the 1988 Japanese Patent law reforms” Sakakibara and Branstetter (2001) examine the impact of patent right expansion on the inducement of innovative effort by firms. They find no evidence of a statistically or economically significant increase in either R&D spending or innovative output that could plausibly be attributed to these reforms. They conclude that Japanese firms changed the structure of their patent applications to exploit the new law, but it failed to induce discernible increases in R&D or innovative output.

Aitken and Harrison (1999) in their article “Do Domestic firms Benefits from FDI?” estimated the impact of FDI on productivity growth and spillovers using panel data for Venezuelan Manufacturing firms during 1975-1989. The study found foreign
firms exhibited higher labour productivity. After controlling for size and capital intensity, the foreign firms are found to be higher in import and export intensity and paid higher wages than their domestic counterparts, and also that the foreign firms are found to be a higher contributor to the foreign exchange earnings compared to their domestic counterparts. The most important conclusion of the study is that although results strongly support the relation between increased foreign equity participation and individual firms' performance, but this increase in foreign ownership variable has a significant negative impact on domestically owned firms, suggesting that an increase in foreign investment decreases the productivity amongst domestic firms. Thus, productivity improvement as a result of technology gains is only limited to the firms that are directly linked to the foreign firms (Joint Venture firms).

De Mello (1999) in his article “Foreign direct investment-led growth: evidence from time series and panel data” has conducted time series as well as panel data estimation for a sample covering 15 developed and 17 developing countries for the period 1970-90 of the relationships between FDI, capital accumulation, output and productivity growth. The study suggests that effect of FDI on growth or on capital accumulation and total factor productivity (TFP) varies greatly across countries. The panel data estimation suggests a positive impact of FDI on output growth for developed and developing country sub-samples. However, the effect of FDI on capital accumulation and TFP growth varies across developed (technological leaders) and developing countries (technological followers). FDI has a positive effect on TFP growth in developed countries but a negative effect in developing countries but the pattern is reversed in case of effect on capital accumulation. He infers from these findings that the extent to which FDI is growth-enhancing depends on the degree of complementarity between FDI and domestic investment. The degree of substitutability between foreign and domestic capital stocks appears to be greater in technologically advanced countries than in developing countries. Developing countries may have difficulty in using and diffusing new technologies of MNEs.

Mansfield (1994) in his study of “Intellectual Property Protection FDI and Technology Transfer” provided a new insight into the IPR-FDI linkage. His analysis based on survey data indicates that IPR regimes are relevant for some but not all types of FDI decisions. He found that IPR protection is much more relevant about investment in R&D facilities than for FDI in sales and distribution outlets. Furthermore, he found sharp differences in the perceptions of industries about the
importance of IPR regimes in their decisions about FDI. The pharmaceutical industry reported that IPRs played a major role in their decisions about investment in joint ventures abroad.

Analyzing the influence of IPRs in encouraging FDI Maskus (1998) in his study “The Role of IPRs in Encouraging FDI and Technology Transfer In strengthening IPRs in Asia: Implications for Australia”, finds that while there is evidence that strengthening IPRs can be an effective means of inducing additional FDI inflow, it is only one component among a broad set of factors. Emerging economies must recognize the complementary relationship amongst IPRs, market liberalization and deregulation, technological development policies and competition regimes. He suggests that given the complexity and trade offs for market participants, governments and emerging economies should devote considerable attention and analysis of the strategies to achieve net gains from stronger IPRs.

Kirim (1985) in his study “Reconsidering Patent and Economic Development: A case study of the Turkish Pharmaceutical Industry” presents a weak interrelation in between patent protection and FDI. The study argued that the rate of new drug introduction in the Turkish market did not decline after abolishing patent protection i.e. after 1961. He concluded that inspite of the elimination of patents, investments continued to flow into Turkey’s Pharmaceutical Industry. Hence no simple causal link can be made between patents and FDI.

Another interesting article “Regulation of Pharmaceuticals in Developing Countries Legal Issues and Approaches” conducted by Jayasuriya (1985), provides a much needed introduction to some of the important legal issues concerned with the regulation of pharmaceuticals in developing countries and describes some possible approaches to establishing a manageable regulatory framework. He argues that consideration ought to be given to the administrative and operation mechanism needed to translate the laws into action. The study traces the laws and experience of a number of the developing countries to assist the policy makers and to show what can be done with limited resources in the context of conditions prevailing in the developing countries.

Lall (1974) in his thought provoking article “International Pharmaceuticals Industry and LDCs: Il-Costs and alternatives” analyses the characteristics of the international pharmaceutical industry. The study highlighted that LDCs gain little or nothing and may even lose from granting patents on inventions developed, published and worked
abroad and it increases the monopoly power of foreign investors. He pointed out that LDCs would face the problem of internally processing and marketing of drugs, but it is the sensible distribution system that would be able to deliver the pharmaceutical goods at prices far below. Thus this study suggests the best ways to deal with the various long-run problems. Like LDC to move towards a socially owned indigenous pharmaceutical industry and copy foreign technology brand names and market the product through official agencies.

The Indian Perspective:
Duperon and Cinar (2010) in their recent article “Global Competition Versus Regional Interest: FDI and Pharmaceuticals in India” has shown that there is trade-off between the ability of nations to attract FDI and moderate the price of drugs to levels conducive for widespread distribution. Furthermore, there are additional concerns for the impact of FDI on domestic industries relative to the displacement of domestically held equity as foreign firms entered the marketplace. They predicted that emerging markets will account for sales equal to those in US and the top five European Union markets combined by 2017. The study highlighted that India provides one of the most conducive environments for firms looking to establish Knowledge Process Outsourcing (KPO) operations. Infrastructural developments and policy revisions have spurred substantial economic growth in India over the last decades, and it’s uniquely desirable labour force enhances the viability of profits for foreign knowledge-based firms. India holds roughly three percent of the global market for outsourcing. According to them corruption is one of the major barrier that could potentially disrupt the inflow of FDI via the inherent risk of illegitimacies. The study suggested that transparent policies are essential to attract long term investments.

Rai (2009) in his study on effect of TRIPs on inflows of FDI particularly in pharmaceutical sector titled “Effect of the TRIPs – Mandated Intellectual Property Rights on FDI in developing countries: A case study of Indian Pharmaceutical Industry” tried to find out impact of strong patent regime on the technology transfer in the developing countries. The study found that simply enhancing patent protection may not necessarily result in a corresponding increase in FDI in the Indian pharmaceutical sector. It indicates that the “gravity” type variables, “agglomeration benefits” like rapid growth in GDP, huge market size, accelerating economic reforms and opening up of the economy and a well developed pharmaceutical sector were the dominant determinants of FDI in the pharmaceutical sector. He suggested that India
needs to provide incentives for foreign investors and remove the barriers to foreign investment and technology transfer into India and to further improve its investment environment condition such as political and legal factors to absorb foreign capital and advanced technology.

Mathiyazhagan and Sahoo (2008) in their study “Do FDI Inflows Benefits the Major Sectors in India?” analyses the impact of FDI at the sectoral level on the Indian economy. The study used panel co-integration model test of the nine core-sectors namely, power & fuel, electrical equipment, transport, chemicals, food processing industries, metallurgical, drugs pharmaceuticals, textiles and industrial machineries with four variables i.e. FDI, export, gross output and labour productivity from 1991-92 to 2004-05. The study revealed that the only sector in India that has enjoyed a positive relation between export and FDI is drugs and pharmaceutical. It may be due to the attraction of many global drug majors to source their production from India. Also due to more numbers of Greenfield investment projects which have expanded their exports through overseas affiliates by the parent companies. They conclude that the advent of FDI has not helped to yield a positive impact on the Indian economy at the sectoral level. Further, they suggested the opening up of its export oriented sectors so that a higher growth of the economy can be achieved through the growth of these sectors.

Aditya and Nigam (2007) in his work “Globalization in the Indian Pharmaceutical Industry – FDI spillovers and implications on Domestic Productivity: 1991-2007”, made an attempt to analyze and study the impact of globalization in the pharmaceutical industry and FDI spillovers in various forms to the domestic pharmaceutical industry in terms of domestic productivity and competitiveness etc. The study reveals that the spillover effects have had a manifold impact on the Indian pharmaceutical industry, with the new WTO patent regime introduced in 2005, the foreign players have found greater security in operating in India and due to the spillover effects of a competitive environment, the domestic players have substantially increased their productivity, probability and hence compete on stronger footing with the incoming pharmaceutical firms.

Another important article presented by Bergman (2006) entitled “FDI and Spillover Effects in the Indian Pharmaceuticals Industry” analyses the impact of FDI on Indian domestic pharmaceutical industry. The study shows that there has been positive impact from FDI in the pharmaceutical industry and the MNCs in India have
positively contributed to the growth and development of the industry. Spillover effects through imitation, industrial management skills and competition were explicitly observed in the industry. Such effects were generated not only in product development, but also in marketing and documentation techniques. The foreign firm's presence has indirectly encouraged domestic firms to increase their managerial efforts and to adopt some of the marketing techniques used by MNCs. Further the presence of foreign firms has intensified competitive pressure in the industry and stimulated domestic firms to use accessible resources more efficiently. The study emphasized that the presence of FDI in the pharmaceutical industry does not mean automatic spillover effects. It depends on the development of the domestic firms and the efforts of domestic firms to invest in learning and imitation. The study suggested that in order to promote FDI and maximize future spillover effects, policies should be investor friendly with a clear developing strategy. The policies that India should encourage are for the domestic firms to invest more in R&D and technology upgradation, especially the small firms. Public investment in higher education, preferably sciences based are necessary for future progress in innovative research and also in order to attract more FDI.

Kumari (2007) in her study “Liberalization, TRIPs and Technological Behaviour of Firms in Indian Pharmaceutical Industry” tried to identify the factors determining technology imports for firms in the Indian Pharmaceutical sector. The study is based on firm level data for the period 1995-2004 with variable firm’s growth, export intensity, size of firms, profitability of firms, foreign equity participation, research & development intensity and age of the firms. It is found that firms’ capability has been very important for motivating technology imports to take advantage of liberalization policies and free challenges under TRIPs. The study revealed that larger, older and firms with foreign equity participation have been importing more technology. Profit is not a significant determinant of technology imports. Due to lack of product patent and risk of copycat by domestic firms, foreign firms usually preferred intra-firm technology transfer. A complementary relationship has been found between foreign technology acquisition and R&D intensity. Further, she suggested that smaller firms should also take advantage of new technology by growing larger through mergers, acquisitions or partnership with either large domestic or foreign firms.

Pradhan et al. (2006) in their study “Export-orientation of foreign manufacturing affiliates in India: Factors, tendencies and implications” tried to estimate the export
contribution of foreign affiliates in Indian industries and analyzed the factors that determine the propensity of foreign affiliates to undertake export activities. The studies found that volume of exports by foreign affiliates have grown significantly across industries with rising export intensities. Their export’s propensities are more sensitive to the size of the domestic market. In a liberalizing, host country like India foreign firms export intensity is strongly dependent on the domestic firms because, domestic firms’ exports activity has a strong positive impact on foreign firms. They also found that foreign affiliates in India have significantly lower export intensities in R&D and advertising – intensive industries and local competition seems to have played a negative role in the export orientation of foreign affiliates. Foreign firms are likely to focus more on domestic market when they are faced with rising local competition.

Jha (2007) in his interesting article “Options for Indian Pharmaceutical Industry in the Changing Environment” has focused on the factors that are influencing the structure and growth of the Indian Pharmaceutical industry in the new scenario. The study used sample of 15 companies (9 domestic and 6 MNCs) since 1995 with respect to their export orientation, import dependence, investment, option of bulk drugs versus formulations and stimulus to R&D. The study showed that although India has become a net exporter of pharmaceuticals, import dependence of bulk drugs has steadily increased over the last decades. As far as the Indian affiliations of the multinational pharmaceutical companies are concerned, their shares of both the bulk drugs and formulation are declining and their investment preferences have shifted towards financial securities. In the field of R&D no Indian pharmaceutical company has been capable of taking a potential drug from the investigation stage to the stage of final market launch and collaboration with MNCs is the norm. It results in biases in the choice of therapeutically areas towards lifestyle-related diseases. Further, he suggests that in India the role of government is of utmost importance. The break-through drugs typically come out of government funded laboratories. Therefore, government funded research organizations have to expand their role by partnering with private sector.

A recent study entitled “FDI and Growth of Manufacturing sector: An Empirical study in Post-reform India” conducted by Sahoo (2005) presents an analytical view for the impact of FDI on total factor productivity of six core manufacturing industries namely, food products, chemicals, drugs and pharmaceuticals, general engineering, electrical and electronics in India with a number of variables such as output, labour,
capital, net sales etc. the study argued that FDI would help in augmenting the domestic production via various spillover effects to the domestic firms. FDI is one of the effective routes of technology diffusion in the host country especially for the developing countries perspective. Besides, economic reforms in terms of releasing various growth inducing forces would have helped the domestic firms more than the foreign firms because reforms unleashed a comparative environment for the domestic firms to move in terms of greater modernization and expansion drive. The study has further emphasized that at manufacturing sector level, domestic firms have registered a marginal positive Total Factor Productivity (TFP) growth as compared to foreign firms. Moreover domestic firms have performed exceedingly well in drugs and pharmaceuticals industry with maximum TFP growth of above 7 percent. It is only in the drugs and pharmaceutical and electronics sector that the presence of foreign firms has been helpful for the domestic firms to experience a reduction in dispersion of productivity. His suggestion is to encourage FDI in these two sectors i.e. drugs and pharmaceutical and electronics which will have more beneficial effects on domestic firms operating in these sectors.

In a different study titled “WTO Regime, Host Country Policies and Global Patterns of MNE Activity: Recent Quantitative Studies and India’s Strategic Response” Kumar (2001) analyzed the role of structural, geopolitical and policy factors in shaping the patterns of MNEs activity and focus on the role of host government policies and on the implications of the emerging WTO regime in their light. He was of the opinion that a more restrictive FDI policy regime affects the investment climate in general but it may improve the quality of inflows that come. On the other hand his findings have stressed that IPR regime does not affect the investment climate in a host country. Strengthening of IPR regime is in tune with TRIPs Agreement’s obligation in India and has the prospect of adversely affecting the domestic R&D activity especially in the chemicals and pharmaceuticals industry by choking the domestic industry’s access to knowledge spillovers from the R&D activity in other countries in the form of product development which formed the basis of process innovative activity of Indian enterprises. The study emphasized that FDI provides only necessary conditions and are effective only in the presence of responsive local entrepreneurship that is willing to complement imported knowledge with extensive in-house technological effort on absorption, adaptation continuous updating and eventually on innovation. Further, he
suggested restricted use of foreign brand names for domestic operative and encourage national enterprises to develop local brand names.

Chaudhuri (2005) in his book “The WTO and India’s Pharmaceutical Industry: Patent Protection, TRIPs and Developing Countries” focuses on an interesting fact that while the technology gap between Indian and foreign firms was non-existent before the therapeutic revolution around 1940, it started increasing later when foreign firms began investing in R&D while the Indian firms concentrated on developing alternate processes for known drugs. He concludes that since the mid 1990s the Indian private sector has started investing in R&D for new drugs. A number of new chemical entities have also been developed which are at different stages of development, but none of the Indian companies is engaged in the entire process of drug development, because they do not yet, have all the skills and the funds required. The model that the Indian companies have adopted is to develop new molecules and license out the molecules to the MNCs at early stages of clinical development. As a result the Indian companies are not targeting neglected disease effectively, but diseases of MNCs interest.

Another important article presented by Lalitha (2002) “Indian Pharmaceutical Industry in WTO Regime: A SWOT analysis”. The study revealed an insignificant relationship between Patent Protection and location of R&D activity emerges. The study emphasized that less focus on tropical diseases, dumping, slow pace of research in the field of biotechnology, delays in processing of the patent application, lack of understanding of various clauses under the TRIPs agreements among the industry members, lack of quality standards, high mergers and acquisitions etc. are the major problems of Indian Pharmaceutical industry. Study further, suggests that Indian Pharmaceutical industry should adopt various strategies such as producing off patented products, new patented products by acquiring compulsory licensing, collaborate with multinationals not only in R&D and manufacturing but also in marketing new patented products and improving the standards of production to widen the export market.

Pradhan (2002) in his paper “FDI spillovers and local productivity growth: evidence from Indian Pharmaceutical industry” has shown that although FDI might generate development process by competitive effects, human capital effect, demonstration effect and linkages effect, but it may also lead to crowding-out of local capabilities and market credit rationing for small size local firms by reducing their access to capital or raising costs of borrowing. Further, the presence of foreign firms per se may
not be important for productivity growth in the domestic sector. It is only when domestic firms have already grown large or have been engaged in innovative activities that the FDI spillover works. The study suggests that the policy efforts should be directed towards encourage R&D and concentration of the size of domestic firms in the industry. This will be more desirable than passively liberalizing the FDI policy. The policy incentives should be towards indigenous technological capability building and ensuring the firms easy access to new technology from overseas which is crucial for enhancing efficiency of domestic enterprises.

Feinberg and Majumdar (2001) in their paper “Technology Spillovers from FDI in Indian Pharmaceutical Industry”, has shown the average size of MNC is more than twice the size of the average Indian firms in terms of total sales. Yet, the average wage bill to total production ratio for MNC is approximately the same as that of Indian firms. Besides MNC were more profitable than Indian firms. However MNCs and Indian firms are equally raw materials intensive. Further, Indian firms are more R&D intensive with 0.34 percent than MNCs with 0.22 percent. Further, it concludes that only MNCs gained from each other’s R&D spillovers while Indian firms gained nothing.

In another article “Manufacturing Drugs without TNCs: Status of the Indigenous Sector in India” Chaudhuri (1984) found that out of the 63 TNCs in the drugs industry only 32 firms produce bulk drugs. As far as quality of drugs concerned the study show that it is not true that TNCs never manufacture and sell sub-standard drugs. Because the fact is that the TNCs do not operate in India as independent entities and depend on the indigenous sector for bulk drugs and formulations. Thus the sale of drugs of proper quality by the TNCs reflects not only the capability of the TNCs but also that of the indigenous sector to produce such drugs. He concluded that, the TNCs may not produce in India at the lowest cost at which they are capable of doing due to over pricing of imports. Technology would not be a bottleneck for undertaking the task of replacing most of the manufacturing activities of the TNCs, but there may be other constraints, financial, entrepreneurial etc.

Singh (1985) in his book “Multinational Corporation and Indian Drug Industry” tried to examine issues arising out of the activities of MNCs in the pharmaceutical industry. The major findings of the study are that pharmaceutical MNCs enjoy tremendous market power in India. This is reflected in their monopolistic and oligopolistic hold on various sub-drug market of the country. Drug MNCs in India have not only raised
funds locally but also exported huge funds by way of remittance and due to the regulated Indian drug market; MNCs have also diversified their activities towards more profitable areas of production.

Johari (1983) in his study “Business Strategies of MNCs in India: A case study of Drugs and Pharmaceutical Industry” tried to analyze the business strategies of drug multinationals in India. The sample of the study includes 24 multinationals based in 7 countries. The study indicated that the majority of the companies have been affected by controls on prices of drugs. Further that the policies pursued by the drug companies are based on certain quantitative indicators which could lead to wrong conclusions being drawn.

Basu et al. (2007) in their paper “Foreign Direct Investment in India: Emerging Horizon”, focused on to study the qualitative shift in the FDI inflows in India as in-depth study of in the last fourteen odd years. It reveals that the country is not only cost effective but also hot destination for R&D activities. The study also finds out R&D as a significant determining factor for FDI inflows for most of the industries in India. But it also reveals strong negative influence of corporate tax on FDI inflows.

Gakhar (2007) in her book “FDI in India 1947 to 2007: Policies Trends and outlook” analyses various determinants and deterrents that influence FDI inflows in India. The study revealed that although India has one of the most transparent and liberal FDI regimes among the developing countries with strong macroeconomic fundamentals, its share in FDI inflows is dismally low. The country still suffers from weakness and constraints in terms of policy and regulatory framework, which restricts the inflows of FDI. The study pointed out that the present policy of FDI is applicable in all the sectors of the economy but there is a need to have a selective approach to the entry of foreign capital in various sectors. The study has listed eleven internal and eight external determinants of FDI amongst which foreign investment policy and procedure ranks first and is the most important determinant in India. This is followed by Industrial Policy environment, financial market, foreign exchange regulation and so on. On the other hand bureaucratic delays and wide spread corruption, poor infrastructure facilities, pro-labour laws, high corporate tax, political rise and weak intellectual property rights etc. are the major deterrents of FDI inflows in India. Further she suggests measures such as empowering the state governments with regard to FDI, developing fast track clearance system for legal disputes, developing basic infrastructure and improving India’s image as an investment destination.
Aggrawal (2007) in the paper “The influence of labour markets on FDI: Some empirical explorations in export oriented and domestic market seeking FDI across Indian states” has shown that there are wide variations in the FDI inflow across the states of India. Only seven states namely Andhra Pradesh, Tamil Nadu, Maharashtra, Gujarat, West Bengal, Uttar Pradesh and Kerala accounted for over 97 percent of the total amount of export-oriented FDI and 83 percent of total FDI approvals during 1991-2001. The presence of EPZs was found to be a relevant pull factor in attracting export-oriented FDI. Further, while explaining the sensitivity of FDI to labour market conditions, the study revealed that labour market rigidities and labour costs are more pronounced for export oriented FDI than for domestic market seeking FDI. Infrastructure and regional development are found to be key factors in attracting higher FDI, both in the export and domestic market seeking sectors.

In order to provide foreign investors a latest picture of investment environment in India, Hu (2006) in his study “India’s suitability for FDI” analyses various determinants that influence FDI inflows to India including economic growth, domestic demand, currency stability, government policy and labour force availability against other countries that are attracting FDI inflows. Analyzing the new finding it is interesting to note that India has some competitive advantage in attracting FDI inflows, like a large pool of high quality labour force which acts as an absolute advantage against other developing countries like China and Mexico. In consequence this study argues that India is an ideal investment destination for foreign investors.

In another study “Liberalization FDI flows and Development: Indian Experience in the 1990s” Kumar (2005) has shown that although the magnitude of FDI inflows has increased but in the absence of policy direction much of the FDI has gone into services and soft technology consumer goods industries bringing down the share of manufacturing and technology intensive industries. This is in sharp contrast to the East Asian countries; in terms of technology and R&D the manufacturing affiliates of MNEs in India seem to be spending a relative small proportion of their turnover on R&D activity after controlling for extraneous influences. The study came out that overall economic performance continues to exercise a major influence on the magnitude of FDI inflows by acting as an indicator device for foreign investors about the growth prospects for the potential host economy. So, paying attention to macroeconomic performance indicators such as growth rates of industry through public investments in socio-economic infrastructure and other supportive policies and
creating a stable and enabling environment is essential. Investments made by governments in building local capabilities for higher education and training in technical disciplines, centers of excellence and in other aspects of national innovation systems would crowd-in FDI inflows.

Johnson (2004) in his work “The Effects of FDI Inflows on Host Country Economic Growth” discusses the potential of FDI inflows to affect host country economic growth. The paper argues that FDI should have a positive effect on economic growth as a result of technology spillovers and physical capital inflows. The empirical part of the paper finds indications that FDI inflows boost economic growth in developing economies but not in developed economies. He has assumed that the direction of causality goes from inflow of FDI to host country economic growth. However, economic growth could itself cause an increase in FDI inflow. Economic growth increases the size of the host country market and strengthens the incentives for market seeking FDI. This could result in a situation where FDI and economic growth are mutually supporting. However, for most of the developing economies growth is unlikely to result in market seeking FDI due to the low income levels. Therefore, causality is primarily expected to run from FDI inflows to economic growth for these economies.

Agarwal (1980) in his interesting paper “Determinants of FDI: A Survey” found that factors such as comparative labour costs, size of the country, the nature of exchange rate regime and political factors including political instability are the general determinants of FDI in less developed countries. Further he also stressed about the capacity of the developing country to absorb investment, which largely depends on the amount of population and skills in the country.

In the light of the above literature reviews we conclude that most of studies conducted so far indicate that the key factor which affects economic growth is technology. FDI is one of the effective routes of technology diffusion in the host country particularly from the developing countries perspective. Economic reforms would have helped the domestic firms more than the foreign firms because reforms unleash a competitive environment for the domestic firms to move in terms of greater modernization and expansion drive. Although foreign firms cannot work in vacuums, domestic firms provide the environment in which they nourish. Therefore, FDI for economic development does not mean automatic spillover effects. It depends on the development of domestic firms and their efforts to invest in learning by watching and
doing. The level of FDI also plays an important role, because whenever it is relatively low, an insignificant result will be the outcomes and vice-versa.

Similarly almost all the reviews have revealed that there has been a positive impact from FDI in the pharmaceutical industry. These MNCs in India have positively contributed to the growth and development of the industry. Huge population, cheap and skilled labour force, large English speaking people, well developed chemical industry; low cost for developing new drugs, liberalized policy regime are the major pull factors for attracting FDI in pharmaceutical industry. While weak IPRs, poor social and economic infrastructure, price control, corruptions, pro labour laws etc are the major hindrance in the smooth inflow of FDI in Indian pharmaceutical industry. However, not much study has been done focusing particularly on the impact of FDI on Indian pharmaceutical industry, investment, foreign exchange earnings (exports) profits and employment.

2.4 Research Gap:

FDI has received considerable attention from academics with respect to its role and implications in India. Studies are also available on the FDI inflows for different sectors, such as telecommunication, fast moving consumer goods and capital goods, information technology, infrastructure and services. Comparative studies for different regions are also available. However, it is found that there is limited organized study on the FDI inflows in pharmaceutical industry in India. The industry has experienced considerable changes over last few decades. Initially, the sector was based on endogenous technology, but now the era of technological development has emerged and our economy has been opened to new areas and challenges and totally new global scenario.

During the last few decades, the pharmaceutical sector has been experiencing a remarkable growth pattern. Changes have also taken place in respect of technology. Such changes are largely attributed to the inflows of FDI in India. The present study deals with pharmaceutical sector in relation to the FDI inflows in this sector. The study aims to emphasis the linkages between the inflow of FDI in pharmaceutical industry and its growth and development after the initiation of economic reform.
2.5 **Scope of the Study:**

FDI has grown considerably in its importance in Indian economy. After liberalization its role has changed significantly. Earlier the amount of FDI was low conforming to some selected sectors, but now the inflow of FDI has grown tremendously and almost in all the sectors of the economy. The proposed study is therefore directed towards examining the varied aspects of the inflow of the FDI in the Indian economy general and pharmaceutical industry particular since 1991. It also tries to highlight the problems hindering the smooth inflow of FDI in India. The study has also dealt with the problems and the future prospects of the growth of pharmaceutical industry.

2.6 **Objectives of the Study:**

The study aims to assess the nature of FDI inflows in India’s pharmaceutical industry since the initiation of economic reforms in 1991 and attempts to seek its effects on certain aspects of development. In the light of the research gap, this proposed study is designed to cover the following objectives:

1) To examine the significance and assess the various aspects pertaining to performance of the FDI in India viz-a-viz sector-wise, country-wise, state-wise and year-wise during pre and post reform period.

2) To analyze the growth and development trend of Indian pharmaceutical industry and its contribution to Indian economy.

3) The study will further focus on the inflow of FDI in Indian pharmaceutical industry since economic reforms.

4) To highlight the dynamic potential and future prospects of FDI inflow in the Indian pharmaceutical industry.

5) To analyze the future dynamic potential of the pharmaceutical sector with further FDI inflow in India in the era of new WTO regime.

6) Finally, to come out with the findings and conclusion of the study and to offer some pragmatic suggestions for increasing FDI inflows in India to benefit the whole economy in general and pharmaceutical sector in particular.
2.7 Hypotheses of the Study:

With the advent of the economic liberalization in India the FDI has undoubtedly increased manifold as compared to the pre-liberalization period. Under the liberalized regime pharmaceutical industry has been accorded special attention by the government of India to attract FDI. Accordingly various incentives and plans have been launched. Against this background the following hypotheses have been set:

1) The changes in the policy and development strategy may not maximize the gains from FDI after the initiation of new economic reforms.

2) It is hypothesized that the opening of the economy and liberalization of investment policies has non-beneficial influence on the pharmaceutical sector.

3) There is no significant relationship between the inflows of FDI in pharmaceutical industry in India and growth and development of pharmaceutical sector in India.

4) It is further hypothesized that, there is no significant evidence of increase in production, employment, profit, investment and exports of drugs with an increase in the inflow of FDI in pharmaceutical industry.

2.8 Source of Data:

The present study relies mainly on secondary data (Published and unpublished). The sources include World Investment Report, World Development Report, World Health Report published by World Health Organization. International Trade Statistics published by World Trade Organization (WTO), FDI Data Cell, Department of industrial policy & promotion (DIPP), New Delhi, Reserve Bank of India Bulletin and annual reports, Handbook of Statistics on the Indian Economy, Statistical Abstract in India, Secretarial of Industrial Approval newsletter (SIA), CDSCO (Central Drugs Standards Control Organization), CMIE (Centre for Monitoring Indian Economy), BDMA (Bulk Drug Manufacturers Association), OPPI (Organization of Pharmaceutical Producers of India), IDMA (Indian Drug Manufacturers Association), DGCIS (Directorate General of Commercial Intelligence and Statistics), CDRI (Central Drug Research Institute), Department of Pharmaceuticals etc. and different publications of different ministries such as ministry of chemicals and fertilizers, ministry of commerce. Articles published in the Journals and Periodicals of national
and international repute will be made good use of in order to study the different aspects of the FDI in pharmaceutical industry Annual Report of the selected pharmaceutical companies is also utilized.

2.9 Span of Time of the Study:

The period of the study under consideration is from 1991 to 2008. The rationale behind the choice of the period is that FDI has played an important role in Indian economy since the economic liberalization.

2.10 Research Methodology:

In the light of the above objectives and the hypotheses formulated, an attempt has been made to analyses the impact of FDI inflows in pharmaceutical industry with respect to production, exports, employment, sales, investment and profitability during the period from 1991 to 2008.

Methodology is a way of systematically solving the research problems. It may be understood as a science of studying how research is done scientifically. The study frequently makes use of to the statistical tool like CAGR, Mean, Standard Deviation (SD), Coefficient of Variance (CV), Minimum & Maximum values of variables. Both correlation and regression techniques are used as well developing on the nature of relation between and among variables. The classical Regression technique of Ordinary Least Square (OLS) method is used for the linear approximation of the relation. The time series analysis of regression equation takes the following forms:

\[ Y = a + bt \]

Where, ‘Y’, is the estimated value of the concerned variable.

‘a’ is the constant part of the variable.

‘b’ is the annual change of the least square method and

‘t’ is the year varying from 1991 to 2008.

The study will evoke a multivariate regression comprising the lagged and time variables in consideration as well. For the test of hypotheses the standard t-test is done to find out whether the coefficients and intercepts are statistically significant or not at 5% level. The regression estimators are tested by F-test at 5% level.
The goodness of fit has been hypothetical by above 50%, as the rule in general \( R^2 \) with higher values will indicate stronger dependence of dependent variables on the FDI flows in pharmaceutical sector in India.

Durbin-Watson (d) test is used for finding auto correlation amongst the variables:

\[
d = \frac{\sum_{t=2}^{n} (\hat{u}_t - \hat{u}_{t-1})^2}{\sum_{t=1}^{n} \hat{u}_t^2}
\]

It is simply the ratio of the sum of squared differences in successive residuals to the residual sum of squares its value must lies in between \( 0 \leq d \leq 4 \). When \( d=0 \geq 2 \) it indicates positive first order autocorrelation. When \( d=0 \) it indicates no auto correlation and when \( d=2 \leq 4 \) it indicates negative correlation.

### 2.11 Design of the Study:

The study is divided into six chapters. The first chapter deals with the introductory background and theoretical approach of the study. The second chapter is concerned with the review of literature and methodological issues. Chapter third is devoted to the overall scenario of the economic policy changes of the Indian economy in the pre- and post reform period. An overview of pharmaceutical industry in India since economic liberalization will be the focuses in chapter four. Chapter five will be a statistical analysis (of test of hypothesis) with regard to the role of FDI inflows in pharmaceutical sector in India. Finally chapter six is by way of conclusions and suggestions.

### 2.12 Limitations of the Study:

Since all the economic or scientific studies are faced with various types of limitations and this study is also no exception. During the compilation of the present thesis work, researcher found and faced a number of difficulties. Some of them are as follows:

1. Although enough data on FDI was available with RBI, DIPP, Ministry of Commerce & Industry, UNCTAD, but there was no consistency and similarity in the data which effected comparability.

2. FDI in the post liberalization period was easily and up-to date available but consistent and continuous FDI data on pre-liberalization period was difficult to find as no organization has made efforts to compile it till date.
3. Due to inadequacy of time series data from related agencies, and insufficient homogenous data from different sources, the time series data is used for certain variables and the averages are used at certain other occasions. Therefore, the trends, growth rates and estimated regression coefficients may deviate from the true ones.

4. Department of pharmaceutical under ministry of chemical & fertilizers separately originated since 2008 therefore; there was dearth of detailed FDI data availability on this sector. The only source of data was FDI data cell, DIPP New Delhi. In addition there was inconsistency in the year-wise data on pharmaceutical sector and the pre-liberalization period of this sector.

5. Since this research relies on secondary sources so it has to be taken with all its limitations.

2.13 Conclusion:

The present chapter provided some reviews of literatures and research design of the study. The methodological issues related to the source of data, rationality of the selection of time period, method of statistical interpretation are given. Hypotheses are also presented. The next chapter deals with the liberalization policies that play a vital role in the inflow of FDI in India and growth trends of FDI in India.
2.14 References:


