CHAPTER 3

REVIEW OF THE LITERATURE

3.1 Introduction

The 1990s saw an unprecedented increase in private foreign investment in infrastructure projects in developing countries. For the private sector, infrastructure investment is associated with a sizeable investor risk linked to the long-term sunk cost characteristics of infrastructure projects. For the government, the involvement of the private sector in “natural monopolies” raises new challenges in designing regulatory structures that can control anti-competitive or monopolistic behavior, while at the same time maintaining the attractiveness of the domestic economy to potential foreign investors in the infrastructure industries. It is therefore logical that there is long established and extensive literature on the determinants of FDI flows to developing countries (Dunning, 1993; Moran, 1999). The focus of many of the early contributions to this literature was on the determinants of FDI inflows and they showed that TNCs were attracted to invest in locations that allow the enterprise to exploit its ownership specific advantages. More recent contributions have examined the influence of institutional factors in explaining cross-country differences in foreign investment flows. Building on the insights of the new institutional economics, it is increasingly recognized that differences across countries in economic conditions provide only a partial explanation of the location choices of TNCs and that the quality of a country’s institutional framework can have a significant impact on the perceived investment environment.
The logical first step in every research project is to investigate existing research regarding the topic under study. The first section discusses the “Meaning of FDI”. Next four sections discuss about “Theories of FDI: Determinants and Variables Selection”, “FDI in Power Sector: Issues & Opportunities”, “FDI and its Impact”, and “Private Participation and Power Sector”, followed by “Major Contribution of the existing literature and the Research Gaps”.

3.2 Meaning of FDI

Foreign Direct Investments (FDI) refers to the transfer of capital, managerial and technical assets from (home) one country to another (host) country. In other words, FDI or foreign investment also refers to the net inflows of investment to gain a lasting management interest or/and influence in a company operating in an economy other than that of the investor. An agreed framework definition of FDI exists in the literature. That is, FDI is an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise operating in a country other than that of the investor defined according to residency (World Bank, 1996). In corporate governance, ownership of at least 10% of the ordinary shares or voting stock is the criterion for the existence of a direct investment relationship. Ownership of less than 10% is recorded as portfolio investment. Portfolio investments are also made by foreign investors but their main concern is the appreciation of the value of their capital and the return that it can generate regardless of any long-term relationship consideration or control of the enterprise. Conceptually, the main difference between the FDI and the portfolio investment is in the lasting interest expressed by the non-resident direct investor in the resident enterprise of the domestic economy. The lasting interest underlines a firm desire on the part of the
non-resident investor to be associated with the long-term business activities of the resident enterprise by exerting significant influence on the management of the enterprise. With FDI, a foreign investor has greater risk compared to exporting or licensing, but has considerably more managerial control over the operation. FDI comprises not only merger and acquisition and new investment, but also reinvested earnings and loans and similar capital transfer between parent companies and their affiliates.

There is no one or single standard definition for FDI. Different countries and institutions may have and use different one.

The IMF (1993) refers to FDI as an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. The IMF suggests a threshold of 10% of equity ownership to qualify an investor as a foreign direct investor.

According to WTO (1996), “FDI occurs when an investor based in one country (the home country) acquires an asset in country (the host country) with the intent to manage the asset”.

According to the Fourth Edition of the Benchmark Definition of OECD published in 2008, the most referred to and relied upon definition of FDI: “Foreign direct investment reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of
influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship”.

Scholars such as Krugman & Obstfeld (2000) define foreign direct investment as international capital flow from a firm in one country which creates a subsidiary of the parent company in another country, or which allows the firm to obtain a controlling interest in a foreign firm. FDI is distinguished from other forms of international capital flows in that it goes beyond a transfer of resources; it involves also the acquisition of control of assets in another country.

Generally speaking FDI refers to capital inflows from abroad that invest in the production capacity of the economy and are “usually preferred over other forms of external finance because they are non-debt creating, non-volatile and their returns depend on the performance of the projects financed by the investors. FDI also facilitates international trade and transfer of knowledge, skills and technology (Planning Commission, 2002).

In the Indian context till the end of March 1991, FDI was defined to include investment in i) Indian companies which were subsidies of foreign companies, ii) Indian companies in which 40 percent or more of the equity capital was held outside India in one country, and iii) Indian companies in which 25 percent or more of the equity capital was held by a single investor abroad.
As a part of its efforts to bring about uniformity in the reporting of international transactions by various member countries, the IMF has provided certain guidelines which enable inter-country comparisons. Reflecting this with effect from March 31, 1942 the objective criterion for identifying FDI has been modified and is fixed 10 percent ownership of ordinary share or voting rights. FDI also includes net foreign liabilities of the branches of the foreign companies operating in India.

A committee was constituted by the Department of Industrial Policy and Promotion in May 2002 to bring the reporting system of FDI data in India into alignment with international best practices. Accordingly, the Reserve Bank of India (RBI) has recently revised data on FDI flows from the year 2001 onwards by adopting a new definition of FDI. The revised definition includes three categories of capital flows under FDI; equity capital, reinvested earnings, and other direct capital. Previously the data on FDI reported in the BOP (balance of payments) statistics used only equity capital.

3.3 Theories of FDI: Determinants and Variables Selection

The emergence of FDI has been extensively explained in the literature by corresponding streams of thoughts. The first theoretical attempt to explain FDI was based on the Heckscher–Ohlin model of the neoclassical trade theory where FDI was seen as part of international capital trade. Nonetheless, the work of Hymer (1976) was considered to be a landmark in the study of FDI. The reason given by Hymer for internationalization of companies are of two kinds: variables related to the company’s dimension and ownership of specific assets (scale of economics, diversification and knowledge accumulation) and variables derived from the existence of market failures.
From this classification of variables, two groups of theories and works can be distinguished in the literature; those framed within industrial organization (Kindleberger, 1969; Caves, 1971; Hirsch, 1980) and those of focusing on the internalization process (Buckley and Casson, 1976; Hennart, 1982, 1989; Teece, 1986; Rugman, 1981, 1986). In spite of analyzing FDI from different perspectives, both approaches are complementary (Chang, 1995; Madhok, 1997). The authors within the industrial organization school set out from the hypothesis that multinational companies undertake FDI to benefit from the specific capabilities that they own, which give them certain monopolistic power (Kindleberger, 1969). Such power can become apparent in the form of innovative technological processes, patents, trademarks, financial resources, management abilities or exclusive distribution channels.

Caves (1971) consider the diversification of products as the main influencing factor and Hirsch (1980) emphasizes the importance of knowledge and capabilities generated from R&D activities. On the other hand, the internalization theory is founded on transaction cost economics (Williamson, 1975, 1985) and considers that the greater the presence of factors facilitating opportunistic behavior on the part of trade partners, the higher transaction costs incurred to protect against such opportunism. Thus, the company would incline towards internationalization forms which involve a higher degree of control, that is, it would prefer internalizing international activities through FDI rather than exporting or licensing.

Knickerbocker (1973) in his Oligopolistic reaction theory postulated that enterprises imitate each other such as to reduce the risk of being different. He analysed the behaviour
of 187 US firms that had invested in 23 countries and found evidence for ‘follow-the-leader’ FDI. The objective of Knickerbocker's exposition was to make a case for a relationship between the clustering together of foreign investments and the desire of oligopolies to imitate the moves of rivals.

Some other early attempt to explain FDI from different perspectives was Vernon’s product life cycle (Vernon, 1966, 1979). Vernon related investment theory with trade theory, arguing that the investment decision was a decision between exporting and investing, as products move through a life cycle divided into three stages (new, mature and standardized products), giving a cost-based rationale for the switch from exporting to foreign-based production.

Buckley and Casson (1976) in their Internalization Theory suggested that multinationals came into existence because market imperfections created the opportunity to internalize transactions within a firm. Rather than conduct business externally - between two firms - in separate countries, it made sense to instead maximize profits by doing business internally across national boundaries. Two maxims were important here: (i) firms would choose the least cost location; and (ii) firms would internalize until the costs outweighed the benefits.

John Dunning combined many of these contributions in his eclectic paradigm, or OLI model for analysing internationalisation patterns and the strategic behaviour of TNCs. Dunning’s (1977) eclectic paradigm became a prime framework for academic research on TNCs. According to the eclectic paradigm, a firm must possess three advantages in order to internationalise: (1) Ownership Advantage: a firm must own or control unique mobile
asset it wishes to exploit, (2) **Location Advantage**: a firm must be cost efficient to exploit its unique asset overseas in addition or instead of its home country, (3) **Internalisation Advantage**: it must be in firm’s interest to control the asset itself rather than contracting out the use of the asset to an independent firm.

In 1993, Dunning expanded the application of the eclectic paradigm to classify four types of FDI according to a TNCs motivations to invest abroad. They are: (1) resource-seeking (seeking natural resources); (2) market-seeking (horizontal FDI, seeking new markets); (3) efficiency-seeking (vertical FDI, seeking to restructure existing production through rationalisation and places some parts of the value chain overseas); and (4) strategic assets seeking (seeking created assets).

The another model, focusing on competition, is that of Michael Porter’s Five Force Model who showed how five key forces governed competition in an industry: the threat of substitute products and/or services, the jockeying for position among current contestants, the bargaining power of buyers and that of suppliers, and the threat of new entrants. Clearly, these contending forces are instrumental in shaping the profitability of a given industry.

More recently, Markusen and Strand (2009) used the knowledge-capital model (Markusen, 2002) to explain the motivations behind trade and investments in business services.

Agarwal (1980) distinguished 13 different models in four categories (hypothesis of perfect markets, hypothesis based on market imperfections, hypothesis on the propensity
to invest and determinants of the inflow of FDI). The selection of theoretical models and empirical studies is not intended to be complete because a considerably larger literature exists. Faeth (2009) presents a review of nine theoretical models of FDI. Discussed are early studies of determinants of FDI (1) as well as determinants of FDI based on the neoclassical trade theory (2), ownership advantages (3), aggregate variables (4), the ownership, location and internalization advantage framework (5), horizontal and vertical FDI models (6), the knowledge-capital model (7), diversified FDI and risk diversification models (8) and policy variables (9). From each of the nine theories, the relevant determinants of FDI are derived. The various theoretical models and their relevant determinants are given in the Table 3.1. However, the models and studies referred to are indicative of the wider range of results available.

<table>
<thead>
<tr>
<th>Theoretical Models of FDI</th>
<th>Relevant determinants of FDI</th>
<th>Major contributors analysing FDI</th>
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<tr>
<td>1. Early Studies of</td>
<td>Marketing factors, in particular market size, market growth and maintaining market share, but also dissatisfaction with existing market arrangements, were the main determinants of FDI</td>
<td>Robinson (1961), Behrman (1962), Basi (1966), Wilkins (1970), Brash (1966), Deane (1970)</td>
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<td>Determinants of FDI</td>
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<td>2. Determinants of FDI</td>
<td>International capital trade due to differences in returns on capital (heavily criticized because of its assumption of perfect competition)</td>
<td>Hobson (1914), Jasay (1960), MacDougall (1960), Kemp (1964), Aliber (1970)</td>
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<td>according to the</td>
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<td>Neoclassical Trade Theory</td>
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<td>3. Ownership Advantages</td>
<td>Ownership advantages are significant determinants of FDI, showing that factors such as R&amp;D and advertising expenditure, managerial resources, technology, capital intensity, labour skills, firm size, scale economies and experience had an effect on FDI or MNE activity.</td>
<td>Hymer (1976), Graham (1978), Horst (1972), Wolf (1977), Dunning &amp; Buckley (1977), Lall (1980), Blomström and Lipsey (1986), Casson (1987)</td>
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<td>as Determinants of FDI</td>
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6. Determinants of Horizontal FDI according to the Proximity–Concentration Hypothesis and Vertical FDI according to the Factor-Proportions Hypothesis

Market size, transport costs and trade barriers increased FDI, while factor endowments were only relevant in some cases. The results substantiated the idea that MNEs were firms with ownership advantages.


7. Determinants of FDI according to the Horizontal FDI, Vertical FDI and Knowledge-Capital Model

Empirical evidence has been divided into whether to support the horizontal FDI model, vertical FDI model or knowledge-capital model. While there was strong support for the idea that market size and transport costs determined FDI, the idea that factor endowments were significant determinants (which would substantiate the vertical FDI model) remained disputed.


8. Determinants of FDI according to the Diversified FDI and Risk Diversification Models

Risk factors including market-based risk, exchange rate and interest rate, could determine FDI and should thus be incorporated into the theoretical models explaining FDI.


9. Policy Variables as Determinants of FDI

Policy variables such as corporate tax rates, tax concessions, tariffs and other fiscal and financial investment incentives had a significant effect on FDI in a number of studies.

Bond & Samuelson (1986), Barros & Cabral (2001), Haaparanta (1996), B’enassy-Qu’er’e et al. (2001a, b)

Apart from these classical theories, many other works focusing on the study of particular variables and factors influencing FDI can be found in the literature. They adopted different conceptual frameworks to study the determinant factor of FDI. Wash & Yu (2010) analyze various macroeconomic, developmental, and institutional/qualitative determinants of FDI in a sample of emerging market and developed economies. They observe that primary sector FDI has no strong linkages to either macroeconomic stability, level of development, or institutional quality, though like other forms of FDI, clustering effects appear important, with larger stocks attracting greater additional inflows. Secondary and tertiary sector investments are affected in different ways by countries’ income levels and exchange rate valuation, as well as development indicators such as financial depth and school enrollment, and institutional factors such as judicial independence and labor market flexibility. They also find that the effect of these factors
often differs between advanced and emerging economies. Bénassy-Quéré at al. (2007) find that institutions matter independently of GDP per capita by using a new database constructed by the French Ministry of Finance network in 52 foreign countries. In particular, their findings point out bureaucracy, corruption, but also information, banking sector and legal institutions as important determinants of inward FDI. Interestingly, weak capital concentration and employment protection tend to reduce inward FDI. The study of Nonnenberg and Mendonca (2004) finds that the factors such as the market size measured by GNP, growth rate of the product, the availability of skilled labour, the receptivity of foreign capital, the country risk rating and stock market behaviour seem to be the important determinants of FDI flows for developing countries comprising of 33 countries from 1975 through 2000. In the context of Latin American countries, Nunes et al (2006) find the variables such as market size, openness of the economy, infrastructure, macroeconomic stability (inflation), wages, human capital and natural resources as the determinants of FDI flows during the period 1991 to 1998. The study observes that the market size, infrastructure and inflation are positively influencing and wage rate is negatively influencing the FDI flows. Similarly, by estimating the panel co-integration test, Sahoo (2006) finds that the market size, labour force growth, infrastructure index, and trade openness are the important determinants of the FDI flows in South Asian countries. Basu at al. (2007) find out that R&D as a significant determining factor for FDI inflows for most of the industries in India. Vijayakumar at al. (2010) examine the factors determining FDI inflows of BRICS countries and find that the variables Market size, Labour cost, Infrastructure, Currency value and Gross Capital formation as the potential determinants of FDI inflows of BRICS countries. Wheeler & Mody (1992) in

A lot of research has already been done across the globe analyzing the various aspects of FDI. Most of the currently held perceptions of foreign investments role take a macro view. Previous work has looked at the relationship of FDI with several macroeconomic variables. A large number of variables have been considered in the macro economic studies as possible determinants of inward FDI.

3.4 FDI in Power Sector: Issues & Opportunities

Designing an effective policy framework and setting up independent regulatory institutions is crucial for attracting not only private domestic but also foreign investment in the power sector (Sader, 1999; Kirkpatrick et al., 2006). The design of regulatory framework and market institutions influence competition and adequacy of investment in the power sector. Woodhouse (2005), from a study of nine countries including India, identifies five key factors that constitute the investment climate for private investment in the power sector: (i) strong public finances, (ii) viability of the sector, (iii) efficiency of fuel markets, (iv) political climate including the role of civil society, and (v) the legal framework. In a survey conducted by FICCI (2003), the investors rated the following four factors to be the critical in determining future FDI growth in the Indian economy: (i) Stability in policy guidelines; (ii) Reduction in ground level obstacles; (iii) Political
stability and (iv) Rate of return. Sharma & Vohra (2008) identify seven major factors affecting FDI decision making in the services sector, specifically electricity: (i) the host country’s market size, (ii) growth opportunities, (iii) regulatory system, (iv) institutional support, (v) policy incentives, (vi) macroeconomic & political environment, and (vii) stage of reform. The cross-sectoral issues like liberalisation of fuel markets also effect investment in power generation projects (Singh, 2007). Proper consultation and coordination mechanisms between central and state governments need to be strengthened at both the approval and project implementation stages for proper and efficient investment attraction (ESCAP, 2002; FICCI, 2001). Otherwise this leads to time and cost overruns. It is, therefore, important that a transparent, predictable and consistent investment framework be put in place. Another priority should be to reduce start-up hurdles, such as delays in acquiring land, environmental clearances, and construction permits (IEA, 2007). The recent Ministry of Power’s “Ultra-Mega Power Project” scheme is intended to reduce the initial hurdles by creating shell companies that obtain all the required clearances before awarding the project to a bidder (CEA, 2007). Recent surveys have shown that India’s poor infrastructure is a cause for concern and a major barrier to investment (ADB, 2006; Bajpai & Sachs, 2006). Private investment in the power sector, both domestic and FDI, depends on power sector reform. Policy and regulatory reform, relating to user charges, reduction of theft and private entry into distribution are a pre-requisite for increased private investment. Without such reforms FDI and domestic investment in the power sector will remain a trickle (Planning Commission, 2002). The literature reviewed in the above, point out the importance of a transparent policy environment, independent regulatory framework, coordination
mechanisms between central and state governments, legal framework, fuel linkages, availability of good quality infrastructure, competitive electricity market, macroeconomic & political environment and private entry into distribution in attracting FDI in the Indian power sector.

Since the early 1990s, there has been a greater push for the private sector to become more involved in the buildup of generation capacity in Indian power sector. Initially, the Indian government focused on increasing FDI for the IPPs, and the IPPs were given lucrative incentives. The IPP experience suggests that the relationship between reform and private investment may be more antagonistic than originally assumed (Woodhouse, Erik J., 2005). The problems with Enron’s Dabhol Power Company represent a significant setback for attempts to attract private, particularly foreign investment in power projects. One of the first foreign direct investor Enron was rewriting the rules of power plant development for both the Indian government and the international investment community. Compared to other developing countries (China, Malaysia, South Korea, Mexico, Brazil), India’s FDI inflow is small both in absolute terms and as a percentage of its GDP (Investment Commission, 2006) as well. Policy reforms in the Indian power sector have been marked with uncertainty about the reform path and these seem to have influenced FDI in the sector. Given its market opportunity and competitive positioning, India today is an attractive destination for foreign investment. Projects for power generation, T&D and power trading are permitted, FDI participation up to 100% on the automatic approval route. Despite incentives, FDI in the sector for 2008-09 stood at around Rs.57.96 billion ($1.272 billion) — 6.5% of the nation’s total FDI.
3.5 FDI and its Impact

A good number of studies suggest that the significant positive effects while some studies find no independent effect of FDI on host country economic growth. However, Bende-Nabende & Ford (1998) submit that the wide externalities in respect of technology transfer, the development of human capital. Caves (1996) and Zeqiri at al. (2011) observes that the rationale for increased efforts to attract more FDI stems from the belief that FDI has several positive effects. Among these are productivity gains, technology transfers, introduction of new processes, managerial skills and know-how in the domestic market, employee training, international production networks, and access to markets (Banga, 2003). Borensztein et al. (1998) see FDI as an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. Findlay (1978) postulates that FDI increases the rate of technical progress in the host country through a “contagion” effect from the more advanced technology, management practices, etc., used by foreign firms.

On the basis of these assertions governments have often provided special incentives to foreign firms to set up companies in their countries. Carkovic & Levine (2002) note that the economic rationale for offering special incentives to attract FDI frequently derives from the belief that foreign investment produces externalities in the form of technology transfers and spillovers.

Curiously, the empirical evidence of these benefits both at the firm level and at the national level remains ambiguous. De Gregorio (2003), while contributing to the debate on the importance of FDI, notes that FDI may allow a country to bring in technologies
and knowledge that are not readily available to domestic investors, and in this way
increases productivity growth throughout the economy. FDI may also bring in expertise
that the country does not possess, and foreign investors may have access to global
markets. In fact, he found that increasing aggregate investment by 1 percentage point of
GDP increased economic growth of Latin American countries by 0.1% to 0.2% a year,
but increasing FDI by the same amount increased growth by approximately 0.6% a year
during the period 1950–1985, thus indicating that FDI is three times more efficient than
domestic investment.

Keller (2004) summarizes the literature on FDI spillovers as follows. “In contrast to
earlier literature, recent micro productivity studies tend to estimate positive, and in some
cases also economically large spillovers associated with FDI.”

A lot of research interest has been shown on the relationship between FDI and economic
growth. The focus of the research work on FDI and economic growth can be broadly
classified into two. First, FDI is considered to have direct impact on trade through which
the growth process is assured (Markussen & Vernables, 1998; Kakwani, 2000). Second,
FDI is assumed to augment domestic capital thereby stimulating the productivity of
domestic investments (Borensztein et al., 1998; Driffield, 2001; Ramirez, 2006). These
two arguments are in conformity with endogenous growth theories (Romer, 1990) and
cross country models on industrialization (Chenery et al., 1986) in which both the
quantity and quality of factors of production as well as the transformation of the
production processes are ingredients in developing a competitive advantage. FDI has
empirically been found to stimulate economic growth by a number of researchers
(Borensztein et al., 1998; Glass & Saggi, 1999; Zeqiri et al. 2011). Dees (1998) submits that FDI has been important in explaining China’s economic growth, while De Mello (1997) presents a positive correlation for selected Latin American countries. Inflows of foreign capital are assumed to boost investment levels.

Blomstrom et al. (1994) report that FDI exerts a positive effect on economic growth, but that there seems to be a threshold level of income above which FDI has positive effect on economic growth and below which it does not. The explanation was that only those countries that have reached a certain income level can absorb new technologies and benefit from technology diffusion, and thus reap the extra advantages that FDI can offer. Previous works suggest human capital as one of the reasons for the differential response to FDI at different levels of income. This is because it takes a well-educated population to understand and spread the benefits of new innovations to the whole economy. Borensztein et al. (1998) also found that the interaction of FDI and human capital had important effect on economic growth, and suggest that the differences in the technological absorptive ability may explain the variation in growth effects of FDI across countries. They suggest further that countries may need a minimum threshold stock of human capital in order to experience positive effects of FDI.

Balasubramanyan et al. (1996) and Siddharthan & Nollen (2004) report positive interaction between human capital and FDI. They had earlier found significant results supporting the assumption that FDI is more important for economic growth in export-promoting than import-substituting countries. This implies that the impact of FDI varies across countries and that trade policy can affect the role of FDI in economic growth. In
summary, UNCTAD (1999) submits that FDI has either a positive or negative impact on output depending on the variables that are entered alongside it in the test equation. These variables include the initial per capita GDP, education attainment, domestic investment ratio, political instability, terms of trade, black market exchange rate premiums, and the state of financial development. Examining other variables that could explain the interaction between FDI and growth, Olofsdotter (1998) submits that the beneficiary effects of FDI are stronger in those countries with a higher level of institutional capability. He therefore emphasized the importance of bureaucratic efficiency in enabling FDI effects.

The consensus in the literature seems to be that FDI increases growth through productivity and efficiency gains by local firms. The empirical evidence is not unanimous, however. Available evidence for developed countries seems to support the idea that the productivity of domestic firms is positively related to the presence of foreign firms (Globeram, 1979; Imbriani & Reganeti, 1997). The results for developing countries are not so clear, with some finding positive spillovers (Nuno at al., 2007; Blomstrom, 1986; Kokko, 1994; Blomstrom & Sjoholm, 1999) and others such as Aitken et. al. (1997) reporting limited evidence. Still others find no evidence of positive short-run spillover from foreign firms. Some of the reasons adduced for these mixed results are that the envisaged forward and backward linkages may not necessarily be there (Aitken et al., 1997) and that arguments of TNCs encouraging increased productivity due to competition may not be true in practice (Aitken et al., 1999). Other reasons include the fact that TNCs tend to locate in high productivity industries and, therefore, could force less productive firms to exit (Smarzynska, 2002). Cobham (2001) and Jenkins (2006) also
postulates the crowding out of domestic firms and possible contraction in total industry size and/or employment. However, crowding out is a more rare event and the benefit of FDI tends to be prevalent (Cotton & Ramachandran, 2001). Further, the role of FDI in export promotion remains controversial and depends crucially on the motive for such investment. The consensus in the literature appears to be that FDI spillovers depend on the host country’s capacity to absorb the foreign technology and the type of investment climate (Obwona, 2004; Nuno at al., 2007).

3.5.1 Impact of FDI on Economic Growth in India

The studies on FDI and economic growth in India are very limited. According to the study done by Agrawal (2000) on economic impact of FDI in south Asia by undertaking time-series, cross-section analysis of panel data from five South Asian countries; India, Pakistan, Bangladesh, Sri Lanka and Nepal, that there exist complementarily and linkage effects between foreign and national investment. Further he argues that, the impact of FDI inflows on GDP growth rate is negative prior to 1980, mildly positive for early eighties and strongly positive over the late eighties and early nineties. A recent study by Banga (2005) demonstrates that FDI, trade and technological progress have differential impact on wages and employment. While higher extent of FDI in an industry leads to higher wage rate in the industry, it has no impact on its employment. On the other hand, higher export intensity of an industry increases employment in the industry but has no effect on its wage rate. Technological progress is found to be labor saving but does not influence the wage rate. Further, the results show that domestic innovation in terms of research and development intensity has been labor utilizing in nature but import of technology has unfavorably affected employment in India.
The study by Dua & Rashid (1998) for the Indian economy does not support the unidirectional causality from FDI to Index of Industrial Production (IIP), where IIP is taken as the proxy for GDP. In fact, this study used the monthly data for IIP and GDP, which may include seasonal component in its variation and hence it is required to de-seasonalise the data. Alam (2000) in his comparative study of FDI and economic growth for Indian and Bangladesh economy stressed that though the impact of FDI on growth is more in case of Indian economy yet it is not satisfactory. Sharma (2000) used a multiple regression technique to evaluate the role of FDI on the export performance in the Indian economy. The study concluded that FDI does not have a statistically significant role in the export promotion in Indian Economy. This result is also confirmed by the study of Pailwar (2001) and the study also argues that the foreign firms are more interested in the large Indian market rather than aiming for the global market. By using a vector error correction model (VECM), Chakraborty & Basu (2002) tried to find the short run dynamics of FDI and growth. The study reveals that GDP in India is not Granger caused by FDI; the causality runs more from GDP to FDI and the trade liberalization policy of the Indian government had some positive short run impact on the FDI flow. The study by Sahoo & Mathiyazhagan (2003) also supports the view that FDI in India is not able to enhance the growth of the economy. FDI cannot reasonably be considered an important driver of economic growth in India because its contribution to gross fixed capital formation has remained small (Kamalakanthan & Laurenceson, 2005).

The review shows that the debate on the impact of FDI on economic growth is far from being conclusive. The role of FDI seems to be country specific, and can be positive,
negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries.

3.5.2 FDI & Clean Energy

Climate change is one of the key challenges of this century. Specifically, balancing climate change mitigation and increased energy needs in developing countries poses a serious dilemma that can only be reconciled with new and improved clean energy technologies. Clean Energy Technology is essential to limiting global warming and protecting ecosystems by reducing CO₂ emissions through renewable energy and energy efficiency.

Clean energy technologies have moved to the forefront of India’s energy infrastructure and investments opportunities. This is driven by the need to enhance energy security and fuel diversity, meet increasing energy needs in an environmentally sustainable manner, and advance economic and social development, all while reducing poverty and sustaining economic growth. Though barriers exist from a technology, policy, and investment perspective, India promises to be one of the largest markets for clean energy. In this section, the FDI & Clean Energy will be discussed in three aspects as follows: (1) Clean Development Mechanism - CDM, (2) Renewable Energy and (3) Energy Efficiency.

Clean Development Mechanism (CDM)

A special kind of FDI that is relevant for GHG emissions takes place within CDM and Joint Implementation (JI) projects. These so-called project-based mechanisms have been developed in the framework of the Kyoto Protocol to help the countries to meet their Kyoto targets in an economically efficient and environmentally effective way. The Kyoto
mechanisms provide opportunities to technology providers to expand their market for state-of-the-art, energy-efficient and climate-friendly technologies to developing countries, which, without CDM financing, may not be commercially viable in a developing country context (Sinha & Kumar, 2008). For CDM transactions that do involve private equity investment, FDI might serve as a useful, albeit incomplete, indicator of potential CDM flows (Fankhauser & Lavric, 2003). The projects have mostly been small-scale renewable projects, with the exception of some large, non-CO₂ projects.

The CDM projects appear to be of particular interest to the developing countries as they represent an opportunity for foreign investments while aiming at local sustainable development, a particular focus that does not always represent the ultimate goal of other forms of FDI. CDMs have, beside their climate change related benefits, the potential of contributing to technological evolution, economic growth through foreign investment and poverty alleviation as well as environmental and human health improvements in the host-country (Cosbey et al., 2005). Altogether, even though the CDM and JI have the potential to stimulate or augment the ongoing FDI flows in a country and to contribute not only to a reduction in the overall cost of meeting GHG objectives but also to a lasting change in technology (Ellis et al. 2004), many authors see only a limited potential for CDM and JI projects. Not only are there problems in the crediting process and large uncertainties about rules and practices. Capacity and institutional barriers are also a significant barrier to a more widespread use of the CDM. The CDM focuses on a relatively small group of developing countries in Asia and Latin America, while Africa and parts of Southeast Asia are clearly out of the picture. Finally, it should be noted that only some types of projects will lead to technology transfer. For India, Sirohi (2005) stresses that these are mainly the
hydrofluorcarbon (HFC) destruction projects and thermal efficiency projects in industry. Many renewable energy projects use locally available technologies and several of the proposed projects in energy efficiency and industrial processes are not based on any advanced technologies from developing countries.

According to Gallagher & Zarsky (2007), FDI has the potential to deliver three types of greening effects:

i) Transfer of clean technologies which are less polluting to affiliates (e.g. end-of-pipe abatement) and more input-efficient compared to domestic production (“cleaner technology”),

ii) Technology leapfrogging, whereby FDI transfers state-of-the-art production and pollution-control technologies to affiliates (“cleanest” technology),

iii) Spillovers to domestic firms, whereby best practices in environmental management are transferred to affiliates and diffused to domestic competitors and suppliers.

**Renewable Energy**

The principles of economics teaches us that resources of all kinds are allocated most efficiently when their full costs are included in prices and distributed in a competitive market. This is as true for electricity as it is for other products and services. To avoid unnecessary damage to the environment, to health and to the productivity of a nation’s economy, the actual cost of environmental harm for each potential electricity resource should be factored as completely as possible into the resource selection process. Where competitive markets are used, the best option is to reflect environmental damages in the
competitive price. Where government regulators have the responsibility of selecting electricity resources, they should take environmental costs directly and fully into account when comparing the cost of one resource with another. However, market mechanisms are more efficient than social regulation or planning, proponents of electricity restructuring also argue that important public policy goals such as the promotion of renewable energy can be realised by expanding consumer choice. For example, ‘green pricing,’ which allows electricity companies to sell renewable energy at a higher price than other power (Rabago et al., 1998; Wiser, 1998), has been proposed as a key mechanism to make the electricity sector sustainable.

While renewable energy technologies are being introduced in many large-scale energy projects throughout Europe and the United States and China, renewable energy technologies are also suited to small off-grid applications, sometimes in rural and remote areas, where energy is crucial to human development. Investment capital flowing into renewable energy climbed from $80 billion in 2005 to a record $148 billion in 2007, with total financial transactions reaching $204.9 billion for the sector. This level of investment combined with continuing double digit percentage increases each year has moved what once was considered as alternative energy source to the mainstream. Renewable energy is widely available in all parts of the world and is flexible in its application and size (from several hundred Watts to several MWs), potentially provides an important opportunity in realising the distributed utility concept (TERI, 2003; Zhou & Byrne 2002; Byrne et al., 1998; Letendre et al., 1996). Although some renewable energy technologies (such as wind, smallhydro, and geothermal) are competitive in bulk power markets (Flavin & Dun, 1997), others (e.g., photovoltaics and certain biomass applications) are
not. When lifecycle costs are compared, small wind, photovoltaic and biomass systems can be a much less expensive means of rural electricity supply (Byrne et al., 1998). There is an additional factor to consider with regard to the rural potential of renewables for electrification. Renewable technologies often have rural roots and offer the opportunity for development of energy infrastructure that is endogenous to rural economies (in contrast to the ‘input’ of electricity from conventional power plants and transmission-distribution systems that are possible only where urban manufacturing platforms are present). In the case of urban markets, renewables may be lower in cost than conventional grid power options when social costs are considered and when grid congestion is present (Letendre et al., 1996; Hohmeyer, 1992). With the advent of mature renewable energy technologies, the supply of power to remote rural areas from the centralised grid is becoming less competitive, as well as being more harmful to the environment and requiring more extensive infrastructure. For instance, the price of generating electricity through solar photovoltaic (SPV) has fallen 60 percent between 1990 and 2007. The efficiency of SPV cells has also gone up many times – from five percent in 1954 when the first cell was developed to 24 percent now. The cost of generating electricity through SPV had fallen from US$300 per watt in 1954 to US$4.5 per watt now (Haung, 2008).

The development of clean energy industries has initially been limited to individual countries with strong supportive policy frameworks for selected sectors. However, as more and more countries join the global effort to tackle the climate change challenge and new multibillion-dollar markets emerge, renewable energy sectors are rapidly expanding beyond national boundaries. Pioneer firms are growing into TNCs with globally integrated value chains and new entrants from emerging economies are fostering global
competition. This ongoing process of global integration offers the opportunity to increase the worldwide deployment of clean energy technologies and find low-cost solutions to the climate change challenge.

Clean energy has received a central role in policies of advanced economies. Similarly, emerging economies (such as China and India) have shown remarkable progress in the development of wind and solar energy technologies too. In 2008, the global new wind energy capacity stood at 27GW, and of which India contributed 6.7% while China contributed 23.3% (GWEC, 2008). In terms of installed capacity, China doubled its capacity over 2007 by adding about 6.3 GW to reach a new total of 12.2 GW in 2008. Researchers with the pew charitable trusts calculate that China invested $34.6bn in clean energy over the year 2009, almost double the US figure.

Government policies to promote renewable and clean energy were partly directed by international framework conditions like the Kyoto Protocol that made it mandatory for developed countries to reduce their GHG emissions. One such mechanism is the CDM, which encourages firms in developed countries to initiate GHG reduction projects in developing countries, while allowing them to gain emission reduction credits in their home country. Such projects are supposed to transfer low carbon and emission reduction technologies like wind and solar technologies to developing countries. CDM is commonly seen as a promising channel for sourcing and diffusion of modern clean technologies in developing countries and in this way putting them in a carbon friendly growth trajectory (Grubb et al., 1999; Aslam, 2001).
UNCTAD estimates that in 2009 low-carbon FDI flows into three key low-carbon business areas (renewables, recycling and low-carbon technology manufacturing) alone amounted to $90 billion. In its totality such investment is much larger, taking into account embedded low-carbon investments in other industries and TNCs participation through non-equity forms. Already large, the potential for cross-border low-carbon investment is enormous as the world transitions to a low-carbon economy.

Foreign investors can enter joint ventures with an Indian partner for financial and/or technical collaboration and also for the establishment of renewable energy projects. There is a liberalized foreign investment approval regime to facilitate foreign investment and transfer technology through joint ventures. Proposals with up to 74 percent foreign equity participation qualify for automatic approval and full foreign investment as equity is permissible with the approval of the Foreign Investment Promotion Board but the GoI encourages foreign investors to create renewable energy-based power generation projects on a public-private partnership (PPP) basis.

While there are good renewables opportunities in many developing countries, one should be very careful of the fact that many renewable technologies still are relatively expensive. Costs have to come down and here development grants and soft loans could contribute substantially. In addition, as shown by the fuel versus food debate and the links between biofuels development and deforestation, some renewable energy sources may even contradict the attainment of other development goals. Sustainability criteria are badly needed, not least when it comes to biofuel production. It is also necessary to realise that fossil fuels will continue to be used quite extensively in the future, and that huge efforts
to make these cleaner and more efficient are part of any successful attempt to combat climate change.

**Energy Efficiency**

Efficiency improvement also has the potential to boost economic growth that can result in higher tax revenue for the government. An analysis of the electricity efficiency potential for India shows that efficiency improvement in combination with new supply can eliminate electricity shortages at the same investment level as for a business-as-usual electricity supply scenario (Sathaye et al., 2005). A similar analysis of macroeconomic benefits for India’s state of Maharashtra illustrates that redirecting electricity saved through efficiency improvements to electricity-short businesses has the potential to increase economic output and tax revenue, which could reduce the state government’s fiscal deficit by 15-30% depending on the size of backup power generation (Phadke et al., 2005). It has been estimated that nearly 25,000 MW of capacity creation has occurred through improved energy efficiency in the electricity sector alone. Energy conservation potential for the economy as a whole has been assessed at 23%, with maximum potential in industrial and agricultural sectors (Sinha & Kumar, 2009). Potential for energy efficiency improvements exists on both the supply side and the demand side. The former would be undertaken by the power utilities themselves, but the latter can be undertaken by both the public and the private sector.

Energy efficiency covers both demand-side and supply-side efficiency. Demand-side efficiency includes load management, demand response programs, and direct load control in the electricity supply system; improvements in end-use energy efficiency in the residential, commercial, industrial, public, municipal, agricultural, and transport sectors;
and energy conservation. Also included are energy efficiency improvements through institutional development, regulatory reforms, and improvements in utility management performance, introduction of more stringent building codes and appliance energy efficiency standards and labeling systems, retrofits to meet new standards, energy audits, waste heat recovery, tighter fuel-efficiency standards for automobiles, use of drip irrigation or irrigation pumping in agricultural systems, municipal water pumping, energy efficiency financing through financial intermediaries, and implementation of consumer awareness programs. Supply-side energy efficiency encompasses transport systems (including modal shifts from private cars to high-occupancy public passenger transport); more efficient district heating; reducing losses in electricity transmission and distribution including enhanced metering systems, capacitors, and substation rehabilitation; power system optimization; and higher efficiency power generation, such as through the installation of supercritical boilers plants, Integrated Gasification Combined Cycle (IGCC) plants, better operation and maintenance, R&M works, and combined heat and power plants.

Foreign direct investment has long been considered as an important channel for international technology diffusion. Since TNCs are the most important source of corporate R&D activity in the industrialized countries and since they generally possess a higher level of technology than the developing countries, TNCs have the potential to generate considerable technology spillovers. Empirical analysis of carbon emission dynamics in developing and transition countries demonstrated a positive correlation between cumulative FDI and improvements of energy efficiency (Golub & Strukova, 2006).
Even though there is no in-depth study on how FDI affects specific energy use in developing countries, there are a number of studies that provide a first picture. Mielnik & Goldemberg (2002) analyze the relationship between the decline in the energy intensity of GDP and FDI flows in 20 developing countries. They find that there is a clear correlation between the two variables and that 87% of the variations in energy intensity are explained by the FDI–GDP ratio. Eskeland & Harrison (2003) look, among others, at the influence of ownership on energy intensity in production and on the use of cleaner energy defined as the share of electricity in a plant’s total energy use. They use plant level data in the chemical, petroleum refining, wood and lumber and non-electrical machinery sector for Mexico and Venezuela. Their main result is that foreign ownership is associated both with less energy use as well as with the ‘‘cleaner end’’ of the range of energy types in all three countries. Blackman & Wu (1999) analyze the role of FDI in the Chinese power sector based mainly on a survey on American Investment in the Chinese power sector. One of their main findings is that FDI is likely to have a positive impact on energy efficiency. Almost a third of the 20 FDI plants in their survey sample use advanced energy-efficiency-enhancing generating technologies, and a fifth are clean cogeneration plants. Fisher-Vanden et al. (2004), finally, also find a negative impact of foreign ownership on the energy intensity of Chinese companies. Country or case studies also show that technology transfer via private investment in developing countries is in fact taking place. A study on the transfer of clean coal technologies to China (Watson et al., 2000), for example, concludes that ‘‘international companies are already engaged in the transfer of cleaner coal technologies and skills to Chinese enterprises through a variety of collaborative arrangements’’. 
To draw a preliminary conclusion from the available evidence, FDI seems indeed to play a role in the diffusion of energy-saving technologies to developing countries. Whether this leads to measurable GHG emission reductions, or whether other effects of FDI, such as scale effects, more than offset any emission reductions on a larger level, is a question that has not yet been addressed sufficiently. Due to high transaction costs and other barriers, Heller & Shukla (2003) conclude that it is too early to discern the significance of the recent development of private markets as the primary mode for technology and resource flows. They remain critical in light of different recent developments such as the standstill in Greenfield investment in the Indian and Chinese power sector in 2003.

The market penetration of energy-efficient technologies is often hampered by barriers that are influenced by prices, financing, international trade, market structure, institutions, the provision of information and social, cultural and behavioral factors. Many papers and reports have documented the pervasiveness of barriers to energy efficiency improvements. **India is moving toward the adoption of policies and regulations that promote competition and more open markets, and is thus positively influencing the adoption of energy efficiency technologies.**

The Government of India proposed the creation of the National Clean Energy Fund (NCEF) in the Union Budget 2010-2011 by imposing a clean energy cess of Rs. 50 ($1.10) per tonne on all coal produced in India as well as on coal imports. From initial estimates, the cess could generate an annual revenue of approximately $550 million (Rs.2500 Crore) in the year 2010-2011. The fund is expected to be used for research, development and deployment of cleaner and renewable energy technologies.
The GHG-mitigation challenge comes at a time when India already faces extremely pressing challenges, such as the urgent need to expand its energy sector to fuel economic and social development and enhance energy access for all citizens. Nonetheless, India, like all other major economies, will also have to alter its GHG-emissions trajectory, despite the fact that India’s energy economy will be strained by these efforts. India is already starting to do so through the various National Missions under the National Action Plan on Climate Change.

In its recent draft report on an integrated energy policy, the Indian Planning Commission laid out a vision of providing energy security to all citizens of India (Planning Commission, 2005). Energy security broadly defined includes not only reducing vulnerability to supply disruptions but also ensuring that minimum energy needs of vulnerable households are met and that energy is used and supplied in an environmentally sustainable way. The three pillars of sustainable development—economic, social and environmental, all need to be addressed in the provision of adequate energy supplies. The vision also recognizes that fuel flexibility is important since energy carriers can substitute one another and, hence, an integrated policy can pay rich dividends. Articulating such a vision and making it implementable in the field of energy efficiency is a challenge faced not only by India but also by other major countries.

The review shows that the debate on the impact of FDI on economic growth is far from being conclusive. The role of FDI seems to be country specific, and can be positive, negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries.
3.6 Private Participation and Power Sector

The electricity sector is at the forefront of the worldwide trend of growing private participation in infrastructure. Although developing countries have made at least some progress in introducing private participation in electricity, the breadth and depth of the private participation remain uneven. The most successful countries have been those that have found the political will to abandon a long history of subsidized tariffs and to establish regulatory frameworks that offer credible commitments to investors. Selected studies of private participation in power sector in developing countries are given in the Table 3.2.

<table>
<thead>
<tr>
<th>Country</th>
<th>Summary</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>Overall welfare gain, but the government and previously nonpaying customers are worse off. Large gains for both domestic and foreign shareholders as well as employees in their capacity as shareholders.</td>
<td>Galal, Jones, at al. (1994)</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>The increase in the price of electricity reduced welfare at all expenditure deciles, with larger losses at the top of the distribution. Households that obtained access during the reform period experienced substantial gains in welfare, with larger gains among poorer households.</td>
<td>Freije &amp; Rivas (2002)</td>
</tr>
<tr>
<td>Latin America</td>
<td>Private firms use significantly less labor force to produce a given bundle of output than public firms.</td>
<td>Estache &amp; Rossi (2004)</td>
</tr>
<tr>
<td>Latin America</td>
<td>Firms’ operating and maintenance expenses did not change significantly after the reform. Outsourcing, in part, may be biasing the results in the decrease in labor usage and the firms’ productivity.</td>
<td>Rossi (2004)</td>
</tr>
<tr>
<td>51 developing Countries</td>
<td>Competition associated with higher service penetration and lower prices for industrial users (no significant effect on residential users), among others. On their own, privatization and regulation have insignificant effects. Together, they lead to greater electricity availability, generation capacity, and labor productivity.</td>
<td>Zhang, at al. (2002)</td>
</tr>
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</table>

Katharina at al. (2009), analyze the performance effect of private participation in the context of electricity distribution using longer time series during the period 1990s to 2005, covering all developing countries and their findings are given below.

- an increase in output in the electricity sector;
• an improvement in operational performance in the electricity;
• a reduction of distribution losses in electricity;
• a decrease in employment in both electricity, leading to improved labor productivity indicators.

The increase in private participation in the electricity sector was accompanied by a change in thinking on how utilities should be organised and regulated (Newbery, 1999; Gomez-Ibanez, 2003). A number of studies have examined the effects of power sector privatisation on economic performance in developing countries (Megginson & Netter, 2001; Parker & Kirkpatrick, 2005). The conclusions of these studies are broadly consistent in showing that ownership alone does not generate economic gains. This conclusion is supported by studies that have found that competition is associated with lower costs, lower prices and higher productive efficiency (Bouin & Michalet, 1991) and that the success or failure of the privatisation of monopolies depends on the post-privatisation regulatory framework, which in turn is affected by political and social norms (Levy & Spiller, 1996; Villalonga, 2000).

The focus on electricity generation has proved attractive, however, both for governments and private investors. From the government’s perspective, private participation in generation has made it possible to meet growing demand for power without necessitating a wholesale reform of the electricity sector and an immediate adjustment of end-consumer tariffs. From the private sector’s perspective, involvement in the generation sector makes it possible to avoid the commercial and operational risks associated with managing a large distribution network.
The East Asian financial crisis in 1997 put a number of IPPs at risk, primarily in Indonesia. In the aftermath of the crisis, the governments of Thailand and the Philippines came to the rescue of troubled greenfield power projects (Woo, 2005). Crow (2001) also notes that following the East Asian crisis in the late 1990s, non-insurable economic force majeure conditions have significantly influenced FDI in the power sector in developing countries, and remain a key concern for investors. The financial crisis in Argentina, an erstwhile abode for private investors, further dampened investors’ interest in the sector. The number of projects also witnessed a similar trend. Spectacular controversies, such as the Dabhol project in India, the Hub project in Pakistan, and the entire IPP sector in Indonesia, dominated the industry headlines. The docket of international commercial arbitration bodies was crowded with a growing list of claims by disgruntled investors. In the shadow of Dabhol, several IPPs in the Indian state of Andhra Pradesh have been generating electricity and receiving timely payments even in the face of controversy.

Latin American and East Asian countries were prime destinations for the investment. The reforms of the power sector in India and other countries in the South Asian region emphasised private investment in generation, and created little space for private investors in the politically sensitive distribution segment, which is owned by respective state governments. The reform strategy followed by some of Latin American countries realised the benefit of distribution reforms coupled with privatisation. The strategy seems to have paid off well in attracting private investment in the sector (Singh, 2007).
3.7 Major contribution of the existing literature and the Research Gaps

This chapter has presented a review of relevant literature on (1) Determinants of FDI in Indian Power Sector and (2) Impacts of FDI on Indian Power Sector. National policies matter for attracting FDI to a larger number of developing countries and for reaping the full benefits of FDI for development. Countries have liberalised their FDI regimes and pursued policies to attract investment. They have addressed the issue of how best to pursue domestic policies to maximise the benefits of foreign presence in the domestic economy.

The empirical findings reviewed in this chapter provide some intriguing evidence of why India has failed to attract a significant amount of FDI in this important sector even after opening the sector for private investment in 1991. Based on the literature review, a set of potential determinant variables that influence the FDI in Indian Power Sector are identified for econometric study and they fall under seven broad categories, viz., Market size, Economic stability and Growth prospects, Labour Cost, Infrastructure facilities, Trade openness, Currency valuation and Regulatory framework.

**Market Size:** Market size is one of the most important considerations in making investment *Locational* decisions. Larger market size should receive more inflows than that of smaller countries having lesser market size. Market size is generally measured by Gross Domestic Product (GDP), GDP per capita income and size of the middle class population. It is expected to be a positive and significant determinant of FDI flows (Duran, 1999; Nunes et al., 2006; Sahoo, 2006; Vijayakumar at al., 2010),
Economic stability: Monetary and fiscal policies which determine the parameters of economic stability. A country which has a stable macroeconomic condition with high and sustained growth rates will receive more FDI inflows than a more volatile economy. The proxies measuring growth rate are: GDP growth rates, Industrial production index, Interest rates, and Inflation rates. It is expected that GDP growth rate, Industrial production index, Interest rates would influence FDI flows positively and the Inflation rate would influence positively or negatively (Duran, 1999; Dassgupta & Ratha, 2000).

Labour cost: The continued expansion of MNCs was in the past, a response to differential availability of factor endowments in various countries. Cheap and productive labour reduces the cost of production and yields high profitability. Low wage rates and higher labour productivity thus is expected to have a positive influence on FDI flows. Higher labour cost would result in higher cost of production and is expected to limit the FDI inflows. Labour cost can be proxied by wage rate (Sahoo, 2006; Vijayakumar at al., 2010).

Infrastructure facilities: The establishment of industry requires a highly developed infrastructure. The development of roads, railways, electricity, ports, airports, communication system etc. are important infrastructure facilities which are vital for the industry. The well established and quality infrastructure is an important determinant of FDI flows. On the other hand, a country which has opportunity to attract FDI flows will stimulate a country to equip with good Infrastructure facilities. It is expected positively significant relationship between FDI and Infrastructure (Vijayakumar at al., 2010; Asiedu, 2002).
**Trade openness:** Trade openness is considered to be a key determinant of FDI as represented in the literature; much of FDI is export oriented and may also require the import of complementary, intermediate and capital goods. In either case, volume of trade is enhanced and thus trade openness is generally expected to be a positive and significant determinant of FDI (Asiedu, 2002; Sahoo, 2006; Nunes et al. 2006). Trade openness is proxied as the ratio of the Export plus Import divided by GDP.

**Currency valuation:** Exchange rate represents the investment climate in the country. High exchange rate will erode the profitability of foreign investment, increase the cost of production and introduce distortions in the host country’s economy. As a sequence, a negative relationship can be hypothesized between the exchange rate and flow of the foreign capital. The currency value can be proxied by the Real Exchange Rate, Real Effective Exchange Rate (REER) or Nominal Effective Exchange Rate (NEER).

**Regulatory Framework:** Where regulatory institutions are weak and vulnerable to “capture” by the government (or the private sector), foreign investors may be more reluctant to make a major commitment to Power projects in developing countries. Setting up independent regulatory institutions is crucial for attracting not only private domestic but also foreign investment in the power sector (Sader, 1999; Kirkpatrick et al., 2006). It is expected positively significant relationship between FDI and Regulatory Framework. The Regulatory Framework can be proxied by Regulatory Quality Index (Kaufmann et al. 2003).

The summary of the potential determinant variables considered for the econometric study to know the determinants of FDI in Indian Power Sector is shown in the Table 3.3.
### Table 3.3: Potential Variables Determining FDI inflows

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Possible Proxy Variable</th>
<th>Effect</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market size</td>
<td>GDP, GDP per capita income, size of middle class family</td>
<td>+, +, +</td>
<td>Duran (1999), Nunes et al. (2006); Sahoo (2006)</td>
</tr>
<tr>
<td>Labour Cost</td>
<td>Wage rate</td>
<td>-/+</td>
<td>Vijayakumar at al., 2010; Sahoo (2006)</td>
</tr>
<tr>
<td>Infrastructure facilities</td>
<td>Electricity, Energy, water, Transportation, Telecommunications</td>
<td>+</td>
<td>Vijayakumar at al. (2010), Asiedu (2002)</td>
</tr>
<tr>
<td>Trade openness</td>
<td>Ratio of the Export plus Import divided by GDP</td>
<td>+</td>
<td>Nunes et al. (2006); Sahoo (2006); Asiedu (2002)</td>
</tr>
<tr>
<td>Currency valuation</td>
<td>Real Effective Exchange Rate (REER)</td>
<td>+</td>
<td>Vijayakumar at al. (2010)</td>
</tr>
<tr>
<td>Regulatory Framework</td>
<td>Regulatory quality Index</td>
<td>+</td>
<td>Kaufmann et al. (2003); Parker &amp; Kirkpatrick (2005)</td>
</tr>
</tbody>
</table>

These findings provide a basis for the econometric study on “determinants of FDI in Indian Power Sector”.

The findings from the power sector-specific studies conducted in developing countries, point out the importance of Effective policy and regulatory environment, Country performance, Pace and sequencing of power sector reforms, Government guarantees, and Project management process affect the FDI flows in Indian Power Sector. These findings provide a basis for the questionnaire survey on “determinants of FDI in Indian Power Sector”.

The overall benefits of FDI for developing country economies are well documented. Given the appropriate host-country policies and a basic level of development, a preponderance of studies shows that FDI triggers energy efficiency, best practices, assists human capital formation, contributes to international trade integration, helps create a
more competitive business environment and enhances enterprise development. All of these contribute to higher economic growth, which is the most potent tool for alleviating poverty in developing countries. Moreover, beyond the strictly economic benefits, FDI also helps to improve environmental and social conditions in the host country by, for example, transferring “cleaner” technologies and leading to more socially responsible corporate policies. The empirical findings reviewed in this chapter indicated that Greater energy efficiency, Adoption of global best practices, Renewable sources of energy, Reduction in demand-supply gap, and Socio-economic development are probable benefits of FDI in Indian power Sector. These findings provide a basis for the questionnaire survey on “impact of FDI on Indian Power Sector”.

**Research Gap**

It is significant to note that there are many studies that unearth the determinants of FDI at sectoral as well as country level. What considerations drive FDI flow in this sector has to be further investigated. Despite lucrative incentives, FDI in the Indian power sector for 2010–2011 stood at around Rs.57.96 billion ($1.272 billion) - 6.5% of the nation’s total FDI. It is evident that India has failed to attract a significant amount of FDI in this important sector. It is in this context that the need to focus on the determinants of foreign direct investment in energy sector was perceived by the researcher. Yet another development that hallmarks the power sector performance is its effort to move toward an energy efficiency regime. While power sector’s role in shaping the socio-economic developmental profile of the country has been covered extensively, in the wake of the emerging significance of cleaner energy technologies, a relook at the overall socio-economic development along with its role in promoting renewable sources of energy is
another area of investigation to be taken up. Does FDI, in power sector, in particular, affect the competitive business landscape in terms of absorption of global best practices is yet another question to be answered. These considerations in fact guided in formulating a series of research objectives. The review also shows that the debate on the impact of FDI on economic growth is far from being conclusive. The role of FDI seems to be country specific, and can be positive, negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries. This study attempts to examine the determinants and the potential impacts of FDI in Indian power sector. Moreover, key policy areas are indicated in order to enable Indian power sector both to attract more FDI and to benefit more from these capital inflows.

The next chapter outlines the process of carrying out the research, that is, research design and methodology. The data collected will then be evaluated and used to falsify or accept the hypotheses.