

Exploring the Link between Foreign Direct Investment and Multinational Enterprises for Developing Innovative Competitive Strategies in India

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Abstract

Multinational enterprises exist because they hold certain competitive advantages over their local counterparts and affect local economies through their spillover effects. Globalization of economic activities has increased the importance of multinational enterprises in the development process of a country. The inflow of Foreign Direct Investment (FDI) increased rapidly during the late 1980s and the 1990s in almost every region of the world revitalizing a contentious debate about the costs and benefits of FDI inflows. The attraction of foreign direct investment (FDI) constitutes a fundamental element to support strategies that aim to achieve sustained economic growth in developing countries. This is because globalization and the attendant opening of the economies to competition require increased financial resources and technology. The paper also opens a new avenue for the researchers by pointing towards a potential connection between FDI and competitive advantages of MNEs.

Keywords: Multinational Enterprises (MNEs), Developing economies, Competitive advantages, FDI, Financial development, Economic growth, Sustainable Development, Spillover effect.

Introduction

Multinational enterprises (MNEs) play a pivotal role in the development of many emerging economies. The aim of this contribution is to learn more about changes in the innovation strategies of large multinational enterprises, whereby one focus is on internationalization aspects. Foreign direct investment grew rapidly and now easily eclipses official development assistance. J. Dunning defines a MNE as "an enterprise that engages in Foreign Direct Investment (FDI) and owns or controls value adding activities in more than one country (1992). Dicken on the other hand believes "a Trans-national corporation is a firm that has the power to co-ordinate and control operations in more than one country, even if it does not own them." This illustrates the problems of defining a multinational although we can see that there are common themes. We can therefore assume for the purpose of this text that a multinational is "a firm that has headquarters in one country, but with bases, manufacturing or assembly plants in others. However any company that establishes a site on the Internet automatically becomes a Multinational corporation", which would suggest that most large national corporations are in fact multinational because of the very fact that a website makes them global and open to a foreign market but this is somewhat wrong because it does not fulfill the criteria of FDI in a country. National firms become multinational for a number of key reasons, to take advantage of overseas resources and factors of production, to be closer to their market, to avoid legislation, to gain tax advantages, to weaken domestic unions, to increase global sales and to gain monopoly power over their competitors. Although multinationals can be defined into three categories, natural resources e.g. petroleum and mining, manufacturing e.g. chemicals and consumer goods and lastly the service industry e.g. shipping and banking. We will look at the term multinational in its broadest sense because each fragment has its own individual reasons but all of them carry common themes many policy makers and academics contend that foreign direct investment (FDI) can have important positive effects on a host country's development effort. In addition to the direct capital financing it supplies, FDI can be a source of valuable technology and know-how while fostering linkages with local firms, which can help jumpstart an economy. Based on these arguments, industrialized and developing countries have offered incentives to encourage foreign direct investments in their economies.

The role of FDI in the growth process has been a burning topic of debate in several countries including India. According to the International Monetary Fund, foreign direct investment, commonly known as FDI, "refers to an investment made to acquire lasting or long-term interest in enterprises operating outside of the economy of the investor." The investment is direct because the investor, which could be a foreign person, company or group of entities, is seeking to control, manage, or have significant influence over the foreign enterprise. Foreign direct investment, or FDI for short, has become a cornerstone for both governments and corporations. By acquiring a controlling interest in foreign assets, corporations can quickly acquire new products and technologies, as well as sell their existing products to new markets. And by encouraging foreign direct investment, governments can create jobs and improve economic growth. Globalization has changed economic realities. First, the competences of multinational enterprises (MNEs) are becoming increasingly mobile and

knowledge-intensive. MNEs thus give more attention to the availability and quality of the created assets of alternative locations. Second, among developing countries there are now considerable differences between the catching-up countries (e.g. newly industrialized countries) and falling behind, less developed countries. These developments have helped change the opportunity sets of both MNEs and host countries. Foreign direct investment (FDI)-based development strategies are now commonplace among less developed countries, but there is also increased competition for the right kinds of investment. In general, the balance in bargaining power has shifted in favor of the MNE, and less developed countries increasingly need to provide unique, non-replicable created assets to maintain a successful FDI assisted development strategy. The relevance of sustainability aspects in overall strategy is generally acknowledged today. Few enterprises seek to gain the competitive edge afforded by the ability to implement a far sighted corporate policy efficiently, effectively by sustainable development strategies, and at the same time pragmatically at different times and at different places.

Review of Literature

In this paper we suggest that there is a strong link between the core competitive advantages of MNEs that enable them to invest in other countries and the extent and type of spillover effects that arise as the result of this FDI. Hence, in this paper we review the literature regarding both research streams. First we review the literature regarding the competitive advantages of MNEs that enable them to compete in foreign markets with the local firms, despite the cost of foreignness. Then we briefly explore the negative spillover effects of MNE in the developing countries. In the third part of this paper we link these two streams suggesting that the spillover effects depends to a large extent on the competitive advantages that the foreign firms hold over their local competitors.

➤ **Competitive Advantages of MNEs**

One of the most discussed and well researched model that indicates towards the competitive advantage of MNEs is given by Dunning (1993). This famous framework has become known as the OLI-framework, which suggests that there should be three conditions in order for a company to invest in a foreign country. These three conditions (or advantages) are Ownership, Location and Internalization. The ownership advantage means that the firm possesses the ownership of a product, process or some knowledge that other firms do not have. The location advantage represents that there are some advantages (such as low labor or raw material cost) associated with the foreign country and thus it is cheaper to manufacture in that country instead of producing the product in home land and then exporting to the foreign country. The internalization condition suggests that the first two advantages can more effectively and efficiently be obtained while carrying out the operations within the firm as a subsidiary instead of some market arrangements such as exporting, licensing or franchising. Kosova (2010) points towards several competitive advantages of MNEs such as operating at lower costs, better management and technology, early entry advantages, economies of scale, favorable public policies and a superior product. Here, we will discuss some of the competitive advantages that MNEs hold and which determines the nature and magnitude of spillover effects. Working for MNEs is a pride in many developing countries. Further, working for MNEs means more international exposure and better training and learning abilities. Hence, even if the MNEs pay similar wages as their domestic rivals do, they still attract the best talent in a developing country and attracting the best talent becomes their competitive advantage. Driffield & Hughes (2003) agree that MNEs pay higher wages to attract the best talent in developing countries and the domestic firms due to their financial constraints cannot match the wages. The fact that domestic firms are more labor intensive due to less atomization and normally are less labor efficient, severs this problem for domestic firms.

➤ **Effects of FDI on Developing Countries**

The research to explore the spillover effects of FDI on developing countries is limited in many ways. There are several factors - other than FDI - that are responsible for positive effects in the economies of developing countries; however, these are frequently taken as indication of positive spillover effects of FDI. We will discuss some of these here.

➤ **Measuring Spillover Effect**

Goldberg (2007) suggests that many researchers assume that since the industries with high FDI concentration are more productive, the high productivity is due to the MNE presence. However it is quite possible that those industries were more productive even before the arrival of MNE and actually MNE selected those industries due to their high productivity. Cross sectional studies cannot deal with such reverse causation problems that FDI leads growth or follows it. As an example the rise of Indian software industry is frequently associated with FDI coming from North America, however, Parthasarathy & Aoyama (2006) attribute the rise of the Indian software industry to the diaspora effect and not to the FDI. They suggest that FDI actually comes to Indian software industry when the initial development and growth has already taken place. They propose that the return of Indians from USA made a wide range of skills including managerial skills and international marketing and networking locally available which initiated the boom in Indian software industry.

Another issue in estimating the spillover effects has been pointed out by Kosova (2010). He notes that researchers normally assume that in the developing country there are several of local firms and only one MNE.

This assumption is over simplistic and can affect the research findings. Vertical linkages with suppliers and customers are considered as the most effective channel of positive spillover effects to the host economy, but what if the up and down stream companies are themselves MNE! In this case the positive spillover to host country will be greatly reduced. Kosova (2010) further suggested that measuring spillovers by estimating productivity enhancement is not a good idea, as measuring the productivity at the firm level is not easy from distance while using the industry level data. Hence all the studies that operationalize spillover effects in term of productivity increase of the local firms suffer with this issue. Kosova (2010) thus suggests that growth is not a good criterion to evaluate the effects of FDI.

➤ **Linking FDI Effects with MNEs Competitive Advantages**

In this part of paper, we will link the competitive advantages of MNEs to their spillover effects on the local firms and economy. We will discuss the competitive advantages that can affect the local firms negatively one by one.

➤ **Technology & Productivity**

Although MNEs are better places in comparison to their competitors as far as technology is concerned, the decision of bringing the latest technology to the host countries depend upon a number of factors, including the relative price factors, the intensity of competition in the host country market, the requirements of industrial and final customers, and the global strategy followed by MNEs (Chudnovsky & Lopez, 1999). The spillover effects from highly technologically advanced MNEs reach the host firms through the channels of labor turnover, competition, linkages and demonstration (Spencer, 2008). The channels of demonstration and competition are of more importance as these are not dependent on MNEs policy of establishing linkages with domestic firms and employing local managers. Based only on these two channels, we can suggest some spillover to host firms that will enable them to improve their technology and productivity. Hence we propose that: The MNEs with core competitive advantage of superior technology and higher productivity will create positive spillover effects for the domestic firms. It is well established in literature that in order to get the advantages of MNEs, the host firms must possess high absorptive capacity (Nunnenkamp, 2004; Castellani & Zanfei, 2003; Kathuria, 1998; Kathuria, 2000). Hence the superior technology of MNEs in itself does not assure positive spillover effect. Driffield & Hughes (2003) also suggest that the positive spillover effects are largely dependent on the extent to which multinational enterprises (MNEs) introduce new technology to the host country and the ability of the domestic firms to assimilate this technology. Hence we propose that the positive spillover effects of superior technology are moderated through the absorptive capacity of the host economy, such that the spillover is positive in the presence of high absorptive capacity and with a low absorptive capacity, the spillover effects are negligible or even negative.

➤ **Better Management Practices and Strategic Decisions**

It is generally accepted that MNEs have better management skills (Agosin & Machado, 2005; Zhou et al., 2002; Kathuria, 1998) and ability to take long term strategic decisions (Rui & Yip, 2008). The relation of this advantage with spillover effects is similar to that of technological superiority and higher productivity. The spillover effects for host firms would be positive as the local firms will learn and adopt these management skills as well as taking long term strategic decision. Hence we propose that the MNEs with core competitive advantage of better management practices and strategic decision making ability will create positive spillover effects for the domestic firms.

Positive spillover from MNEs with better management and strategic decision making are not automatic. Better management practices and strategic decision making ability are not codify able. Transfer of tacit knowledge largely depends upon availability and quality of human capital which can absorb this type of knowledge. Borensztein et al. (1998) found that the effect of FDI on host economy growth depends largely on the human capital, measured by level of education, in the host economy. Availability of human capital is not the only requirement of transferring knowledge. MNEs policy about employing local managers or having expatriate managers from the home country also plays a significant role. In the case of expatriate management, the tacit knowledge is not assessable to the local managers. Hence we propose that the positive spillover effects of better management practices are moderated through the availability of human capital in the host economy and the policy of MNEs to employ local managers. The spillover is positive in the presence of highly educated human capital and with the policy of MNEs to employ local managers.

➤ **Products, Brand and Image**

One of the competitive advantages of MNEs is their well established, well advertised and well reputed brands (Kosova, 2010). Consumers are often willing to pay extra price for these brands because of their high reputation of quality and performance and also because of the desire to associate with these brands. These brands can negatively affect the local firms as the niche segment of market would be attracted towards the international brands, leaving the low value market for the domestic firms. On the other hand, if the FDI is coming in a relatively newer sector, where concentration of local firms is low, it can have positive spillover effects. MNEs will develop a market for similar products and many domestic firms will also jump into that industry and will try

to establish their brand names. Pakistan fast food industry is an example of this phenomenon where the arrival of McDonalds, Pizza Hut and KFC has greatly motivated the local investors to invest in the fast food industry. Hence we propose that Spillover from MNEs with core competitive advantage of strong brand image depends upon the industry in which FDI comes. If it is in a crowded industry, it has negative spillover for the local firms, while if it is in a relatively new sector, it has positive spillover effects.

➤ **Attracting Best Talent**

It is well established in research that MNEs pay higher wages to its employees, compared to the local firms. Attracting best talent will result in two outcomes. First, local firms will be negatively affected as they will lose their star performers. The innovation and creativity of local firms will adversely affect as it is based on the more talented and performing employees. The increased wages will also add to the cost of local firms hence decreasing their margins. Secondly it can decrease the entrepreneurship in the host countries. If the wages of MNEs are higher than the expected returns of entrepreneurship activities, it will stimulate people to become workers instead of entrepreneurs (Backer & Sleuwaegen, 2003; Parthasarathy & Aoyama, 2006). Employee turnover from MNEs to local firms is an established source of positive spillover effects. Zhou et al. (2002) suggests that the spillover from MNEs to local firms is often credited to the turnover of employees moving from MNE to Local firms. However, as the wage rates are higher in MNEs the tendency of best talent to move from local firms to MNEs is more than the reverse of it. Balsvik (2006) in his study of Norwegian firms found that the rate of employees leaving local firms and going to MNEs is higher than that of employees leaving MNEs to join local firms. Hence sometimes, the positive spillover is from local firms to MNEs. Balsvik (2006) also suggests that MNEs can control the positive spillover to local firms by paying higher wages to their employees and hence reducing their mobility. Thus, if the core competitive advantage of MNE is to attract the best local talent, the MNE will affect the host economy negatively. Hence we propose that the MNEs, whose core competitive advantage is to attract the best local talent by giving higher wages, will produce negative spillover effects for the host firms.

➤ **International Linkages**

International linkages enable MNEs to take advantage of differences in input and output markets in different countries (Ghoshal, 1987). For example the MNE can decide to utilize global sources of raw materials if it is economically feasible. This strategy will have negative consequences on the local firms, especially in upstream industry. Many local firms in the same industry of MNEs, specially the well reputed local firms that see MNEs as their competition will also try to establish international suppliers; hence the local suppliers will be negatively affected. On the other hand by exporting their finished products to the international markets, MNEs can provide positive spillovers to the local firms by demonstrating these possibilities and hence providing them the access to international markets. Hence we propose that Spillover from MNEs with core competitive advantage of international linkages depends upon the policies of MNEs. If they are import oriented, the spillover effects would be negative, however if they are export oriented, the spillovers would be positive. FDI inflows declined drastically after global financial crisis in all major sectors as shown in Table 1 hence, it is clearly understood that after global financial crisis, major sectors have been affected in terms of FDI Inflows but the GDP growth rate and domestic investment although affected in the initial phase showed recovery signs in consecutive years.

Table 1: FDI sector-wise Growth Rate

Year	Agriculture	Mining	Electrical	Manufacturing	Construction	Hotel	Finance	Communication
2001-02	4.11	1.10	10.31	-0.28	0.00	1.59	2.33	0.00
2002-03	-0.79	-0.87	-0.89	0.23	0.00	-0.35	0.34	0.00
2003-04	1.08	0.56	-0.05	0.26	0.00	-0.35	-0.16	0.00
2004-05	-0.31	-0.17	0.47	0.44	0.00	-0.30	1.19	0.00
2005-06	0.96	40.74	-0.42	0.65	-0.09	1.41	-0.10	0.29
2006-07	-0.19	-0.45	1.46	0.25	5.19	0.44	6.96	1.21
2007-08	0.44	0.55	7.46	-0.05	0.46	1.84	0.54	1.85
2008-09	0.05	0.70	-0.32	0.36	0.16	0.46	0.06	0.61
2009-10	0.20	-0.71	0.52	-0.22	0.48	-0.22	-0.10	-0.60
2010-11	-0.43	1.84	-0.17	-0.12	-0.66	-0.36	-0.52	0.34

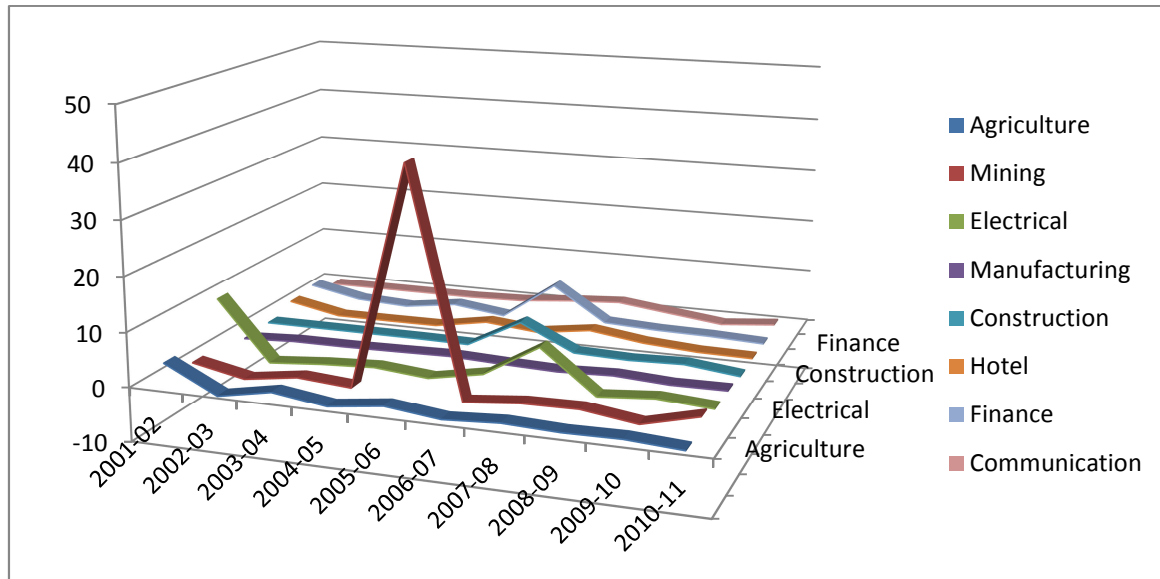


Fig. 1: FDI sector wise GDP Growth Rate in India

For international investors, seeking out investments in countries with sustainable and growing foreign direct investment is a popular strategy. These levels can be found on websites like the United Nations Conference on Trade and Development (UNCTAD). The attraction of foreign direct investment (FDI) constitutes a fundamental element to support strategies that aim to achieve sustained economic growth in developing countries. This is because globalization and the attendant opening of the economies to competition require increased financial resources and technology, which would be impossible to obtain under a policy of autarky. Though relatively well-established principles exist to explain why a multinational company may decide to move into a specific country, each experience has its idiosyncratic elements from which both theorists and policymakers can learn important lessons. There is less consensus, however, on the potential positive or negative effects that FDI may have on the host economy, and on what factors determine these effects. To keep FDI flowing in the investment regime, it has to be liberalized further and mergers and acquisitions are allowed freely. In this article, we have tried to outline a range of positive aspects of FDI as a source of development for developing countries (like India) and the role and responsibilities of various institutions in the way of sustainability. We also tried to state the features where FDI can be better applied to foster sustainable development. Sustainable development is a difficult balancing act in countries with low incomes. Society has to simultaneously accomplish three things with trade-offs: improve economic well-being with social justice for the present generation, yet manage with more restrained use of land, air, forest, energy, and water resources, and protect future generations. The choices are more difficult in developing countries because they affect people's livelihoods. (Economic Survey, 2012). A sustainable economy ensures and encompasses various aspects such as economically healthy businesses with minimum impact on environment, sustainable agriculture, growth management, appropriate development of rural resources, improved trading and tourism, and development of low-impact regional planning and transportation systems. Technological advances in business, health, education, and the environment that provide new opportunities for communities. To ensure sustainable development of the developing economy Foreign Direct Investment (FDI) can be channelized in a significant way. Although, it is a well understood notion that FDI may strengthen the economy by supplying required finance, managerial skills or technical know-how; at the same time, it may dilapidate the economy owing to its negative spill-over effects. Hence, framing meticulous FDI policy is very decisive for the future of the economy. However, understanding the need of the time, the Government of India has taken initiative in this regard and sustainable development will be the prime agenda in forthcoming planning sessions.

Objectives

1. Huge market potential of MNEs in country.
2. Exploring the linkage of FDI and MNEs in India.
3. SWOT analysis of MNEs in India.
4. To forecast the GDP growth rate by using time series model.
5. To suggest the innovative strategies for competitiveness.
6. Innovative strategies for sustainable development in India.

Research Methodology

The objective of this paper is to explore the causal nexus between FDI (Foreign Direct Investment) economic growths in India using the annual data for the period, 1990-91 to 2010-11 which includes the 21 annual observations. The two main variables of this study are economic growth and FDI. The real Gross Domestic Product (GDP) is used as the proxy for economic growth in India and we represent the economic growth rate by using the constant value of Gross Domestic Product (GDP) measured in Indian rupee. All necessary data for the sample period are obtained from the Handbook of Statistics on Indian Economy, 2010-11 published by Reserve Bank of India. All the variables are taken in their natural logarithms to reduce the problems of heteroscedasticity to maximum possible extent. Using the time period, 1990-91 to 2010-11 for India, this study aims to examine the long-term and causal dynamic relationships between the level of FDI flowing into India and economic growth. The aim of this contribution is to learn more about changes in the innovation strategies of internationally active corporations; a focus is hereby on the internationalization of research and technology.

The estimation methodology based on statistical tools, forecasting time series model and MATLAB -7.8 version software are being utilized for the analysis.

Box 1: SWOT Analysis of Multinational Enterprises in India

Strength	Weakness
<ul style="list-style-type: none"> • Having the scale economies in buying raw materials around the world at better prices than the competitor one, its knowledge of the source of supplies in the key areas. • The MNEs can move the supply of its human resources to wherever they are needed from its experts, technicians, and employees who are knowledgeable in the foreign culture, languages and management traditions • The large scale economies in advertising, marketing, finance, banking, means efficiency in business management, administration and direction. 	<ul style="list-style-type: none"> • It's large size can be a problem because of the cost, the ways of doing business, the scope of enterprise can be out of control • It tends to problems of change, adaptability as it is not able to adapt to changes in the product, markets, technologies in time • The entrenchment to the old ideas, ways, styles, cultures tend to produce inefficiency, outmoded style, technologies resulting in failure of the MNEs in many areas and countries.
Opportunities	Threats
<ul style="list-style-type: none"> • MNEs are globally recognized businesses so you have great potential for growing further. • MNEs remove established legacy businesses and promote local employment opportunities. • MNEs account for a large portion of global trade and investment, and are also major employers. 	<ul style="list-style-type: none"> • MNEs Strategy will influence various government policies making which may not always be good for the economy. • MNEs induce competition, and their profit minded operations may impact local market/produce. • Career path in MNEs will take time to establish.

Time Series Model

The time series model of the linear equation of a straight line is $Y_c = a + bX$, where, Y_c is the trend value of GDP growth rate, a is the Y-intercept, b is the increment in growth rate and X is the time factor. By using the least square method of a straight line the required equation of a trend line is $Y_c = 30.47 + 2.35X$, so the forecasting GDP growth rate in India will be $Y_{2012} = 37.52$, $Y_{2013} = 39.87$ and $Y_{2014} = 42.22$.

Table1. The GDP Growth Rate from 2008-2010.

Year	March	June	September	December	Total GDP(Y)	Trend GDP(Y_c)
2008	8.50	7.80	7.50	6.10	29.9	28.12
2009	5.80	6.00	8.60	6.50	26.9	30.47
2010	8.60	8.90	8.90	8.20	34.6	32.82

Table2. Sector wise GDP Growth Rate in India for 2010-2011.

Sector	Manufacturing	Farming	Construction	Mining	Service
GDP Growth Rate %	9.8	4.4	8.8	8	9.8

The Role of FDI in Attracting the MNEs

Since the financial liberalization in the country in 1991, the number of multinational enterprises in India has increased noticeably. American enterprises are the majority of the multinational enterprises in India. The multinational enterprises go to India for many reasons. First, India has got a huge market. Second, India is one of the fastest growing economies in the world. The most important thing is the policy of the government towards FDI has also played a major role in attracting the multinational enterprises in India. Also, India government makes continuous efforts to attract foreign investments by relaxing many of its policies. There are other reasons including labor competitiveness and macro-economic stability.

The impact of the international investment and multinational enterprises (MNEs) on host countries are now becoming a relatively new area which is being taken into consideration. It is evident that the symbiotic role between economic integration and FDI has yet to be fully analyzed and more so the issue of policy towards MNEs. We are already a long way forward of the time when the debate on inward foreign investment was highly polarized between the proponents of foreign investment as an engine of development. Hence, today all developing economies are more interested for welcoming foreign capital and competition among them is going to be rife. FDI is coming by way MNC's and it is penetrating the developing countries markets with spillover effects. Therefore, the challenging area of business research is the relationship and operation of MNEs on host economy especially in the developing countries. FDI inflows are expected to be less volatile and non-debt creating than FII. Investment by MNE's in R & D activity in host countries can contribute to the growth of local capabilities of creating the spillovers of knowledge within the host economies. Therefore, the qualities of the FDI for the developing countries depend upon the types and patterns of the FDI inflow, up-to what extent the value added to the developing countries depends upon the types of FDI received.

The Future of the Multinational Enterprises

Multinational enterprises have been an increasingly significant aspect of the corporate environment in developed countries since the 1960s, and are responsible for a high proportion of global output, exports and investment, as well as the bulk of foreign direct investment. In the past few decades their activities have been increasingly focused to developing economies, notably those which have liberalized and entered a more rapid growth phase. These economies, emerging markets, include some important world economies including China, India, transition economies such as Russia, and Latin American countries such as Brazil and Argentina. The "new institutional economics" has recently developed as a field to understand the impact of variation in institutions on economies' performance. This course will focus on how the institutional characteristics of emerging markets affect the choices and behaviour of multinational firms, now and into the future. We commence with the basic framework of analysis of the behaviour of multinational enterprises (MNEs), outlining models of the MNE which draw on transaction cost economics, the eclectic OLI paradigm of Dunning, and more recent concept such as the resource based view. We will provide an analysis of economic performance and growth in emerging markets building on the new institutional economics and working with a large variety of datasets and sources. The course will then turn to key topics. These will include the determinants of FDI; the effects of FDI on the host economy; entry mode choices; measures of institutional and cultural distance; and the growing importance of multinationals from emerging markets.

Conclusion

The main challenge for a multinational enterprise operating abroad is to responsibly exercise its rights but also to fulfill its duties as a good citizen in a particular environment. In other words, to achieve and maintain a competitive and profitable business performance, while contributing effectively towards the social, economic and ecological advancement of the society where it operates. Good practices in environmental protection could include minimizing the operational impact of industrial facilities, providing ecological compensation by establishing protected areas, managing emissions, promoting safe waste disposal and recycling, and achieving a higher efficiency in the use of water. Corporate approaches rely on technological fixes to the challenges posed by sustainable development. While there have been some efforts aimed at incorporating environmental and social equity concepts into engineering codes of ethics, social concerns have been secondary to environmental issues. The incongruity between the ideal of sustainable development and the way in which it is typically characterized by the engineering and business communities has significant implications for engineering and public policy, engineering ethics, and the potential roles of engineers and multinational corporations as facilitators of a transition to a sustainable society.

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