



INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION AND MANAGEMENT

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FOREIGN DIRECT INVESTMENT AND ITS IMPACT ON TECHNOLOGY DIFFUSION: SOME ISSUES AND CHALLENGES AHEAD

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ABSTRACT

This study aspires to understand the impact of Foreign Direct Investment (FDI) in general and its associated diffusion of technology in developing countries in particular. General findings during the literature review indicate that impact of FDI on technology diffusion is either positive or negative. So this study attempts to analyze the causes of negative and positive impacts of FDI on technology diffusion. As seen, the effects of FDI vary depending on the host country's characteristics and policies, and there is a role of government for economic policy in maximizing the potential benefits of FDI and minimizing negative impacts of FDI. It also deals with some related issues and challenges such as mechanisms of technology diffusion, measurement of technology diffusion and role of the State. It also tries to suggest some policy measures to improve the negative impacts of FDI. Finally the question of how to maximize potential benefit of FDI and minimize negative impact could also be dealt with.

KEYWORDS

Foreign Direct Investment, Negative and Positive Impacts, Technology Diffusion.

INTRODUCTION

The issue of technology transfer should be at the core of the development debate in the context of Foreign Direct Investment (FDI)¹ inflows. Transformation of developing countries from a stage of low technological development to high technological development would be possible through transfer of technology. In recent years India has been actively encouraging the inflows of foreign direct investment (FDI) because during the financial year 2009-10 FDI equity inflows have been US \$ 27,149 million. If reinvested earning and other capital flows are also included, the total inflows in 2009-10 add up to US \$ 37,182 million. In the year 2010-11 from April to August the country received FDI inflow of \$ 11,390 million (DIPP²).

During the financial year 2009-2010 FDI inflows were more in Service, Telecom, Electrical Equipments, Real Estate and Transportation sectors. Top foreign investments received during the financial year 2009-2010 were M/s. Vodafone (Mauritius) (US\$ 801 million) (telecom), M/s. Matsushita Electric Works, Japan, (US \$ 342 million) (electrical products), M/s. GA Global Investments Ltd., (US\$ 258 million) (National Stock Exchange), M/s. EMAAR Holdings, Mauritius (US\$ 204 million) (Real estate construction), M/s. L B India Holdings Mauritius Ltd. (US\$ 118 million) (Real Estate) (Ministry of Commerce and Industry, Government of India).

Endogenous and classical growth theories have a role for technology in promoting economic growth. It then becomes necessary for economies to have policies that promote technology transfer. Technology is a key to economic development (United Nations Conference on Trade and Development (UNCTAD)³ 1992, pp.53). Innovation and Technology diffusion is important for growth (Organisation for Economic Co-operation and Development (OECD) 1991). The growing attraction of India as an investment destination and identified the following as the nine sectors with potential – automobiles and auto ancillaries; information technology (IT) and IT – enabled services; pharmaceuticals; housing and real estate; construction activities; banking sector; biotechnology; food processing; and telecommunications. FDI is a vehicle for effective technology transfer. But it need not be shy of imposing essential conditions on FDI. The experience of China in handling FDI is an eye-opener in this regard. Over the last decade India has clearly demonstrated that FDI is an instrument for economic growth through technology transfers, employment generation, improved access to managerial expertise, global capital and product markets, marketing and distribution networks. A striking feature in this context is how MNCs are increasingly shifting their portfolios of mobile assets across the globe to find the best match with the immobile assets of different locations which means when MNCs are transferring technologies through various channels it requires good infrastructure facilities. They are also shifting some functions that create their ownership assets like R&D, training and strategic management ('the process of deep integration') within an internationally integrated production and marketing system.

The growth of international production is driven by economic and technological forces. It is also driven by the ongoing liberalization of Foreign Direct Investment (FDI) and trade policies. In this context, globalization offers an unprecedented opportunity for developing countries to achieve faster economic growth through trade and investment. In the 1970s, international trade grew more rapidly than FDI making it the most important international economic activity. This situation changed dramatically in the middle of 1980s, when the world FDI started to increase sharply. In this period, the world FDI increased its importance by transferring technologies and establishing marketing and procuring networks for efficient production and sales internationally (Shujiro Urata, 1998). Through FDI, foreign investors gained by utilizing their assets and resources efficiently, while FDI recipients acquired technologies and got involved in international production and trade networks.

FDI is an important channel for accessing resources for economic development for the developing nations as it represents transfer of a bundle of assets like capital, technology, and access to export markets, skills and management techniques and modern environment management systems. Increasingly, foreign direct investment is assuming a prominent role in the development and growth strategies of developing and emerging countries more so because of inadequate resources to finance development projects. Proponents of foreign direct investment such as development institutions, economists, academics and policy makers argue that foreign direct investment ensures efficient allocation of resources as compared to other forms of capital inflows. In addition, it is argued that foreign direct investment enhances economic growth through technology spillover, creates employment, reduces dependence on accumulation of debt as a source of

¹ FDI includes the three following components: equity capital reinvested earning and intra company loan.

² For detail see DIPP fact sheet on Foreign Direct Investment.

³ For details see UNCTAD, 1992, World Investment Report, pp.12-18.

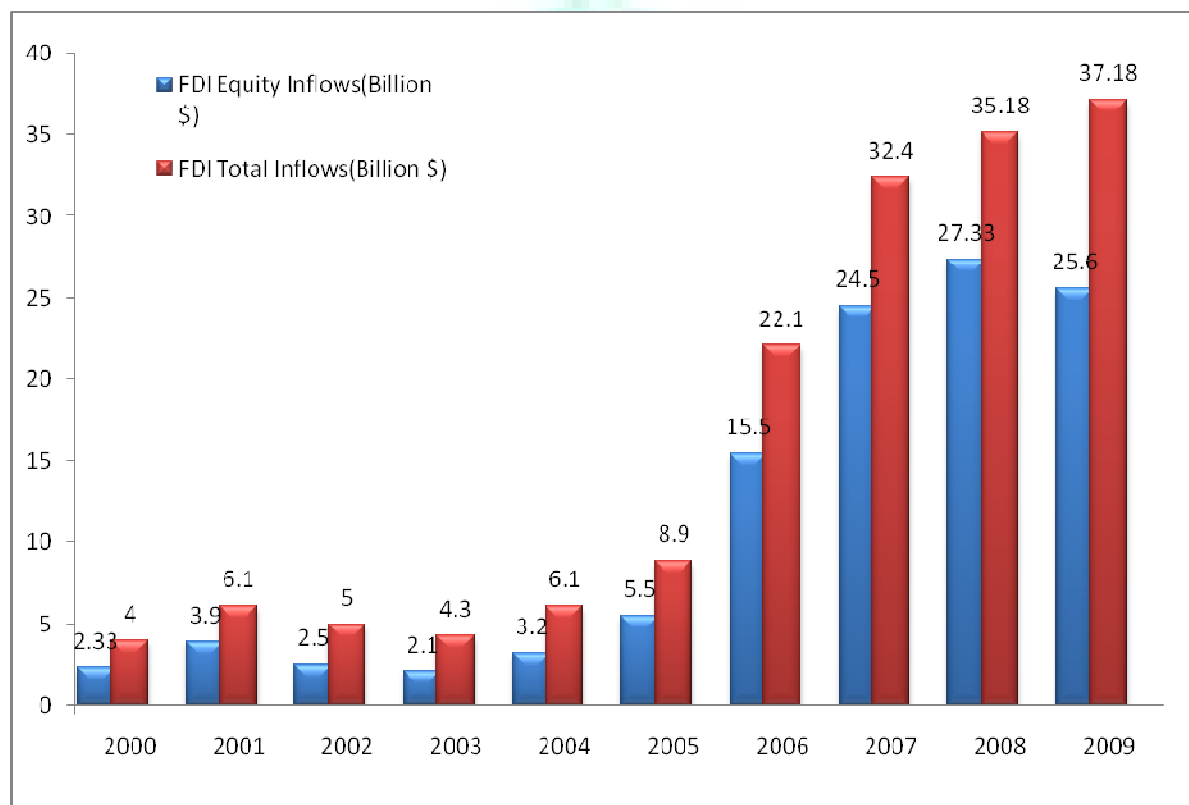
development financing and enhances human capital and entrepreneur skills. Increasing the level of literacy of work force is one of the imperative aspects that countries seeking to attract foreign direct investment should aspire to achieve. This is because literacy is a key business consideration by multinational enterprises looking to invest in foreign countries. In addition, not only does a literate work force attract foreign direct investment but it also ensures maximisation of human capital spillovers that could arise from the presence of foreign enterprises. The obvious benefit from foreign direct investment in relation to human capital formation and enhancement is that multinational firms tend to offer more training to their employees compared to domestic firms. Empirical studies in developing countries have found spillovers of both management and technical skills.

DIMENSIONS OF FDI INFLOWS IN INDIA

The dimensions of FDI flows in India can be explained in terms of their growth and size, sources and sectoral compositions. The growth of FDI inflows in India was not significant until 1991, due to its regulatory policy framework. However, under the new policy regime, it is expected to assume a much larger role in India's economic development. It can be observed that there has been a steady build up in the actual FDI inflows in the post-liberalization period. After the post liberalization and particularly at the beginning of twenty-first century and beyond that the FDI inflows have undergone a drastic change. During the financial year 2009-10 FDI inflows

have been US \$ 37.18 billion as compared to US \$ 35.18, 32.4, 22.1, 8.9, 6.1, 4.3, 5, 6.1, & 4 billion in the year 2008-09, 2007-08, 2006-07, 2005-06, 2004-05, 2003-04, 2002-2003, 2001-2002 & 2000-2001 respectively (DIPP). It can be easily seen from the figures given as below.

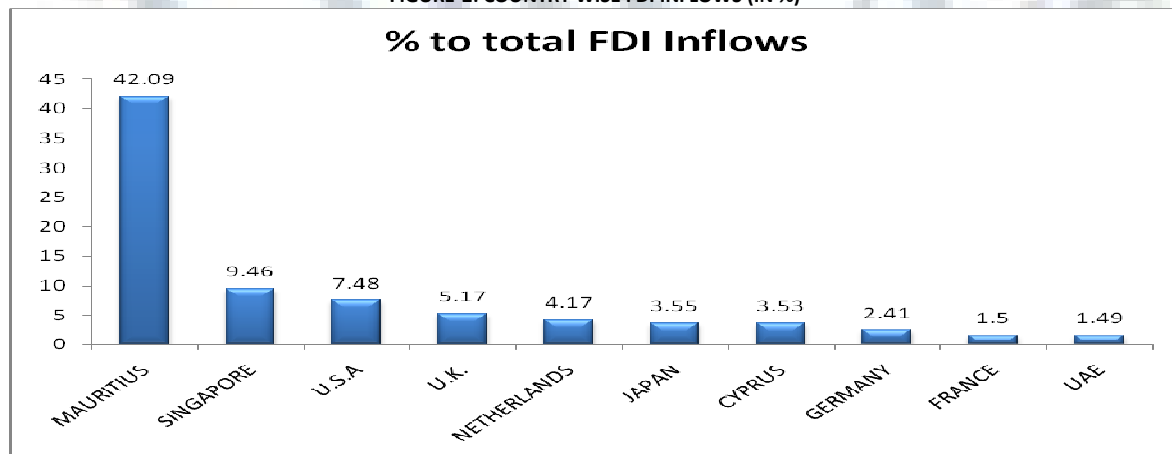
FIGURE-1: YEAR WISE FDI INFLOWS (IN US \$ BILLIONS)



Source: Fact sheets on FDI, DIPP.

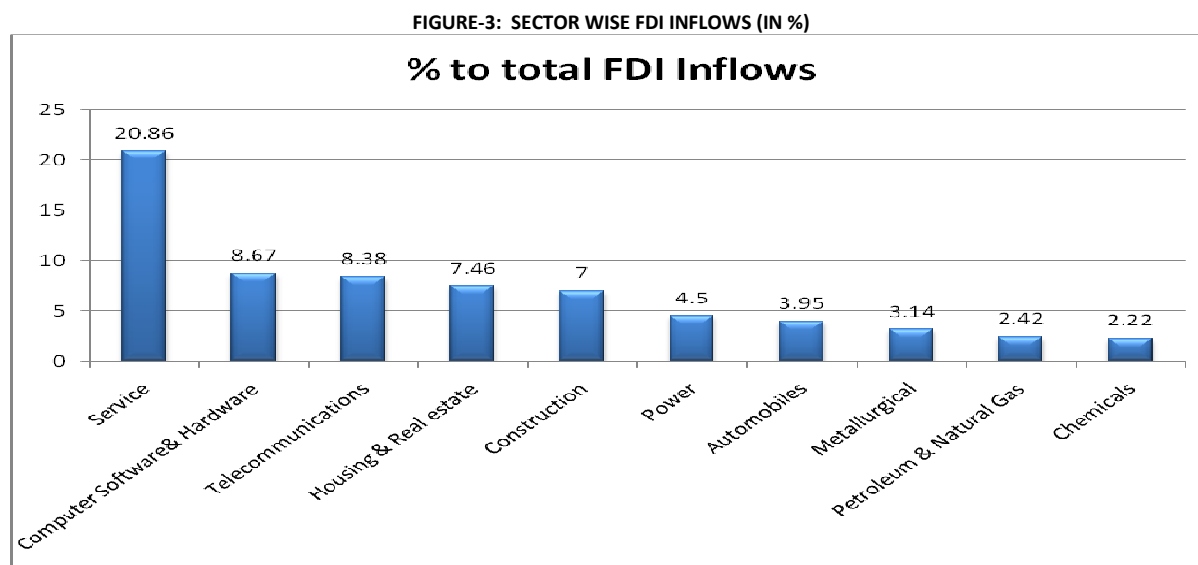
Top Foreign Investing countries during 2000-2009 were Mauritius (42.09%), Singapore (9.46) U.S.A (7.48%), U.K. (5.17%), Netherlands (4.17%), Japan (3.55), Cyprus (3.53), Germany (2.41), France (1.50) and U.A.E. (1.49). This shows the growing confidence of foreign investors in the Indian economy. It can be easily perceived from the figures given as below:

FIGURE-2: COUNTRY WISE FDI INFLOWS (IN %)



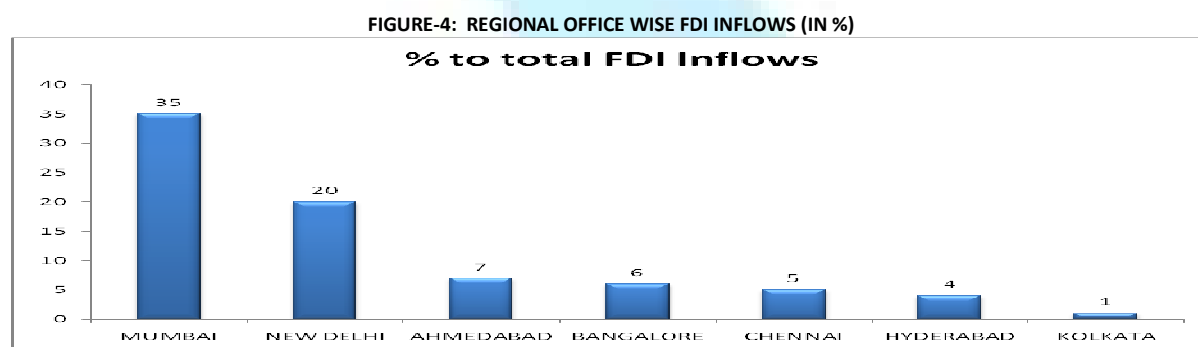
Source: Fact sheets on FDI, DIPP.

If we will consider sector wise FDI inflows, then services sector attract more than one-fifth share out of total. Other sectors like computer Software & Hardware, Telecom industries, Housing & Real estate, Construction, Power, Automobile, Metallurgical, Petroleum & Natural Gas and Chemical sector also capture a significant percent of total FDI inflows. It can be easily seen from the figures given as below.



Source: Fact sheets on FDI, DIPP.

If we will consider from view point of regional office of RBI then, Mumbai regional office of RBI received around 35% of the total inflows during 2000-2009. Delhi, Ahmedabad, Bangalore, Chennai and Hyderabad are the other major regions which have received FDI inflows. The six regions mentioned above constitute two-thirds of the total inflows received (Ministry of Commerce and Industry, Government of India).



Source: Fact sheets on FDI, DIPP.

REVIEW OF LITERATURE

The role of foreign direct investment on technology diffusion of host country has received considerable attention in recent years, especially in the context of liberalization and globalization through MNCs. Recently, a number of empirical studies have been done to understand the role of FDI in technology diffusion. Many studies have discussed FDI and its impact on technology diffusion, a few are discussed below:

A study by **Holger and Nunnenkamp (2009)** showed that FDI inflows have positive impact on technology diffusion through productivity, wage, R & D intensity and level of human capital. Authors used cross sectional data for 294 manufacturing firm of German FDI from 2001 to 2005. A similar study by **Asiedu (2008)** reported that FDI inflows have positive impact on technology diffusion through GDP per capita, infrastructure quality, and openness of the economy. Author had used cross sectional data from period 1980 to 1994 for 71 developing countries (32 SSA countries and 39 non-SSA countries). On the contrary a study by **Gachino (2007)** on Kenya shows that impact of foreign direct investment on technology diffusion is negative in case of manufacturing sector. This paper examined the effect of foreign presence on firm level productivity in the Kenyan manufacturing industry employing "traditional" and "recent" methodologies both based on production function framework. Author used panel data from unpublished plant level collected in an annual survey by the Ministry of Trade and Industry, Kenya. In another study by **Johnson (2006)** employed a panel of 90 countries and hypothesized that FDI should have a positive effect on economic growth as a result of technology spillovers and physical capital inflows. Performing both panel and cross-section analysis, he found that FDI inflows enhance economic growth in developing economies, but not in developed economies. In addition, Johnson (2006) also provides an excellent review of the existing empirical literature on FDI and technology diffusion that invokes macroeconomic data. Against this a study by **Blyde et al. (2005)** reported that impact of FDI on technology diffusion is negative rather than positive. Authors used panel data for the period 1995 to 2000 and conducted a study for Venezuela. A similar type of study by **Javorick and Spatareanu (2004)** shown that FDI has negative impact on technology diffusion. Authors used panel data for the period 1998 to 2000 and done a study for Romania. The study by **Siddharthan and Lal (2004)** used panel data for the period 1993 to 2000 and examined the impact of FDI on technology spill-over. The author said that FDI has positive impact on Technology diffusion. In a different type of study by **Bengoa and Sanchez-Robles (2003)** showed that FDI inflows have positive impact on technology diffusion. Authors used panel data for 18 Latin American countries applying random and fixed-effects techniques for its estimation. They established a positive effect on economic growth and the magnitude seemed to depend on host country conditions. An interesting study by **Carkovic and Levine (2002)** found that FDI has insignificant effect on technology diffusion. Authors employed both panel and cross-section data for 72 developing and developed countries over the time period 1960-1995 period to investigate the issue, using both OLS and Generalized Method of Moments (GMM) methods of estimation. They established that FDI inflows do not exert a robust influence on economic growth. Another study by **Zhang (2001)** found that FDI has positive impact on technology diffusion. Author had used time-series data for 11 developing countries. However, the magnitude again appeared to depend on host country conditions. A different type of study by **Pradeep Agrawal (2000)** on impact of foreign direct investment on technology diffusion in south Asia by using panel data from five South Asian countries; India, Pakistan, Bangladesh, Sri Lanka and Nepal. Author had found that, the impact of FDI

inflows on technology is negative prior to 1980, mildly positive for early eighties and strongly positive over the late eighties and early nineties. A path breaking⁴ study by Aitken and Harrison (1999) showed that FDI has negative impact on technology diffusion. Here authors used panel data for the period 1976 to 1989 and carried out a study for Venezuela. The study by Borenztein et al. (1998) reported that FDI has positive impact on technology diffusion. For this study authors used cross-section data for 69 developing countries during the period 1970 to 1989 and employed seemingly unrelated regression methods for their estimations. Their main finding was that FDI has a positive effect on technology diffusion, but the magnitude of the relationship depends on the quality of the human capital of the host country. In a similar vein, a study conducted by Aitken et al. (1997) reported that FDI has positive impact on technology diffusion. Authors had used for Mexican manufacturing firms for the period 1986 to 1990. Authors also founded that export decision of Mexican firms is positively related to foreign firms' presence that is measured using two separate variables - MNCs' output (production) and their exports. In an earlier study by Balasubramanyam et al. (1996) shown that FDI has positive impact on technology spillover. For this study author used cross-section data for 46 developing countries over the period 1980 to 1995 and employed the OLS method to estimate the relationship between FDI and technology diffusion. They found that FDI has positive spillover effects on economic growth, but that its effects are limited to host countries that adopt export-promoting policies.

FOREIGN DIRECT INVESTMENT

There are many definition of Foreign Direct Investment provided by different organizations and authors. It is not easy to define FDI because there is no universal acceptable criterion. Some of famous ones are as follows:

According to Moosa, A.L.(1998) "Foreign Direct Investment (FDI) is the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country)". According to Buckley, P. J (1995), "Foreign Direct Investment (FDI) is an investment made by Multi-National Enterprises (MNEs) or by a non-resident in an enterprise of Host (recipient) countries over which they have a control and earn private return". The United Nations Conference on Trade and Development (UNCTAD), 1999 World Investment Report defines FDI as 'an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise, affiliate enterprise or foreign affiliate). The term 'long term' is used in the last definition in order to distinguish FDI from portfolio investment, the latter characterized by being short-term in nature and involving a high turnover of securities. The common feature of these definitions lies in terms like 'controls' and 'controlling interest' which represent the most important feature that distinguishes FDI from portfolio investment, the latter characterized by being short-term in nature and involving a higher turnover of securities.

The International Monetary Fund's Balance of Payments Manual (fifth edition, 1993), defines FDI as 'an investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise.' The general rule of thumb presented in the *Manual* is that the direct investor owns (or controls) at least 10 per cent of the ordinary shares, voting power or equivalent. FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the host country.

It is important to distinguish between Direct and Indirect Foreign Investment. The indirect investment includes portfolio investment, acquisition of stock of an enterprise, medium-term and long-term loans by financial institutions and intermediaries, and investment in new issues of national loans, bonds and debentures. The direct investment is a long-term equity investment in a foreign company that gives the investor managerial control over the company (De Mello, L. 1999). The definition of FDI and computation of FDI statistics used by RBI does not conform to the guidelines of the IMF. Some of the main discrepancies are - first, India excludes reinvested earnings (which are part of foreign investor profits that are not distributed to shareholders as dividends and are reinvested in the affiliates in the host country) while estimating actual FDI inflows. According to IMF guidelines, these reinvested earnings are a part of FDI inflows, and should be recorded as inflow on the capital account of host country's balance of payments. Second, India does not include the proceeds of foreign equity listings and foreign subordinated loans to domestic subsidiaries which, according to IMF guidelines, are part of inter-company loans (long- and short-term net loans from the parent to the subsidiary) and should be a part of FDI inflows. Third, India excludes overseas commercial borrowings, whereas according to IMF guidelines financial leasing, trade credits, grants, bonds, etc, should be included in FDI estimates. Fourth, as per IMF standards, if a shareholding of 10 per cent or more is acquired eventually by a non-resident who entered initially through the portfolio route but holds investment aggregating over 10 per cent through the purchase of additional shares in subsequent transactions, those additional shares should be regarded as a part of FDI. However, in India some Foreign Institutional Investors (FIIs) hold well over 20 per cent of the equity in the form of American Depository Receipts (ADRs) and Global Depository Receipts (GDRs) but these are not a part of FDI.

TECHNOLOGY DIFFUSION

In general, technology diffusion is a process by which technology is accepted by firms or individual consumers, either at home or international level. Technology diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social System. In other words, the study of the diffusion of technology is the study of how, why, and at what rate new ideas and technology spread through cultures. It applies, for example, to the acceptance of new technological products like the wristwatch and the personal computer, foods like tomato sauce and sushi, music styles like opera and bossa nova, dressing styles like the top hat and blue jeans, ideals like democracy or feminism, and so on (Rogers, 2003). Technology diffusion addresses the broader scope and approach of facilitating change or implementation of technologies that reduce raw material use and waste at industrial facilities, thus achieving pollution prevention.

Technology diffusion involves the dissemination of technical information and know-how and the subsequent adoption of new technologies and techniques by users. In this context, technology includes "hard" technologies (such as computer-controlled machine tools) and "soft" technologies (for example, improved manufacturing, quality, or training methods) (Kokko, 1994). Diffused technologies can be embodied in products and processes. Although classic models of technological development suggest a straightforward linear path from basic research and development to technology commercialization and adoption, in practice technology diffusion is more often a complex and iterative process (de Mello, L. 1999). Technology can diffuse in multiple ways and with significant variations, depending on the particular technology, across time, over space, and between different industries and enterprise types. Moreover, the effective use of diffused technologies by firms frequently require organizational, workforce, and follow-on technical changes.

Technology diffusion can be contrasted with technological innovation, which emphasizes the development of new knowledge, products, or processes, and government-oriented technology transfer, which frequently seeks to shift advanced technology out of laboratories into commercial use. In many cases, diffused technologies are neither new nor necessarily advanced (although they are often new to the user), and they may be acquired from a variety of sources, including private vendors, customers, consultants, and peer firms, as well as public technology centers, government laboratories, and universities. Technology also diffuses through the internal "catch-up" efforts of firms, the transfer and mobility of skilled labor, the activities of professional societies and the trade and scientific press, varied forms of informal knowledge trading, and such practices as reverse engineering.

CHANNELS OF TECHNOLOGY SPILLOVERS

The empirical studies on spillover effects of FDI are based on the notion that MNCs possess superior organisational and production techniques compared to the domestic firms (Hymer 1976). MNCs can transfer technology through various means like licensing, trade, FDI, subcontracting, franchising and strategic alliances. Nevertheless, the preferred mode of technology diffusion is through foreign direct investment since it can internalise the transfer of superior technological assets at little or no extra cost (Caves 1996). In addition, FDI is considered as the best means to keep control over the technological knowledge. The spillovers

⁴ In FDI literature this study first reported that FDI has negative impact on technology diffusion

can be in the form of improvement in the productivity of the domestic firms. This is neo-classical view on spillover effects. The commonly identified mechanisms of spillover from MNCs are illustrated in the figure below. Let us discuss briefly one by one

Trading-- It refers to the voluntary exchange of goods and services through money. In financial market its refers to buying and selling financial instruments.

Licensing – To give some countries official permission to invest.

Franchising – To sell a particular product in particular region or in other words it is a formal permission given by a company to somebody who wants to sell its goods and services in a particular area.

Subcontracting – A contract to do part of the work that has been given to another person or company. A subcontractor is hired by a general contractor to perform a specific task as part of the overall project.

Strategic Alliance – It is a formal relationship formed between two or more parties to pursue a set of agreed upon or to meet a critical business need while remaining independent organizations. Alliance is cooperation or collaboration which aims for a synergy where each partner hopes that the benefits from the alliance will be greater than these from individual efforts.

The spillover effects from the FDI can be broadly classified as horizontal (sectoral) and vertical (inter-sectoral) spillover. We examine both horizontal and vertical spillovers in detail below.

HORIZONTAL (INTRA-INDUSTRY) SPILLOVERS

The horizontal spillovers shows the spillovers effects from the multinational in the same industry. For example when FDI is coming to Automobiles sector and if technology will spread to only Automobiles sector then we will call it horizontal spillovers. The entry of foreign firms may lead to an increase in the productivity of the domestic firms in the same industry through various means. First, demonstration effects refer to the copying or the imitation of foreign firms' technology and organisational practices by the domestic firms. Second, labour turnover arises from the mobility of the skilled and trained workers from MNCs to domestic firms. These workers are carriers of MNC's technology. Multinationals can prevent the flow of labour by paying higher wages. On the other hand, there is a possibility of reverse labour turnover. The employees of domestic firms can move to foreign firms. Third, competition effects refers to a situation in which entry of foreign firm forces the domestic firms to increase their efficiency by improving the existing methods of production or adopt new ones.

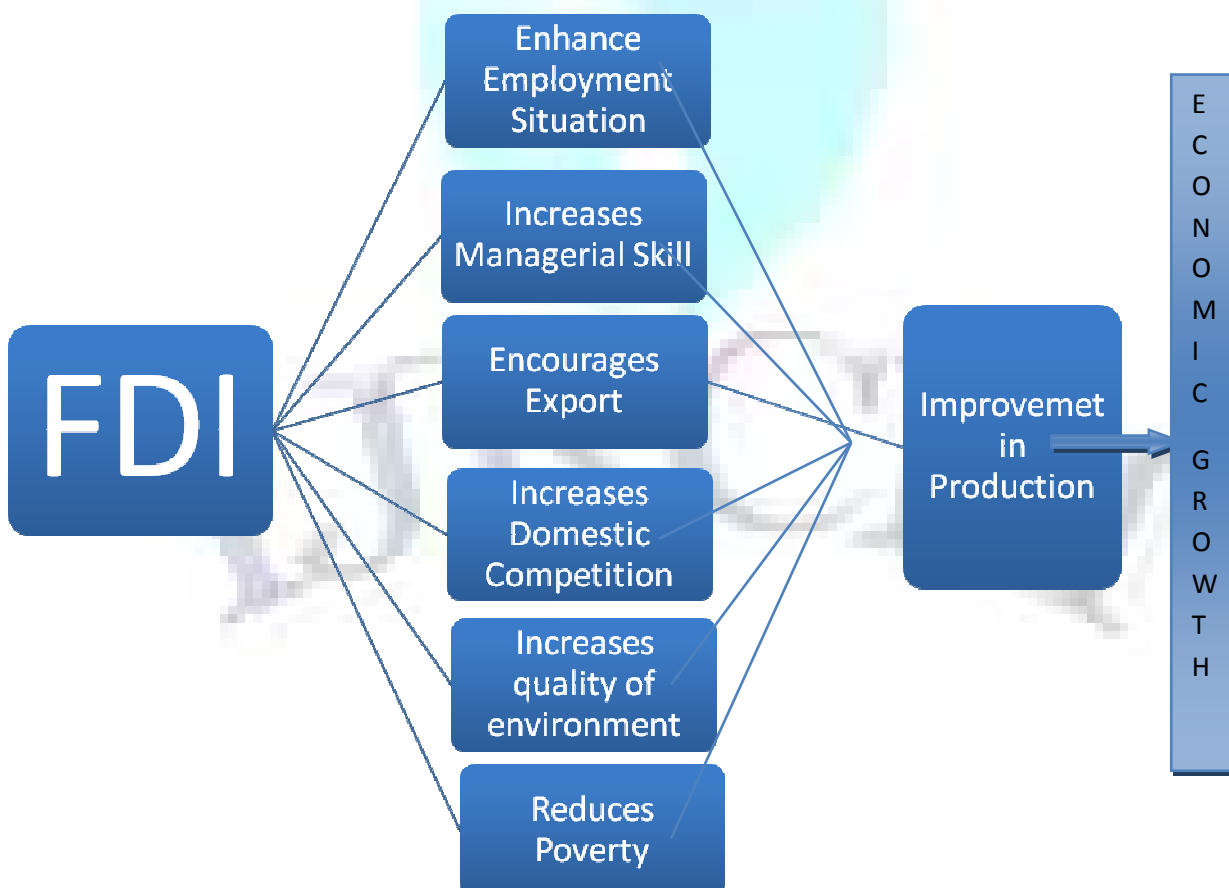
VERTICAL (INTER-INDUSTRY) SPILLOVERS

Vertical spillover shows the spillovers effects from the multinational to different industries in that country. For example when FDI is coming to Telecommunications sector and if it will spread the technology of manufacturing, power, and mining sector then we will call it vertical spillovers. The phenomenon of spillovers is not just confined within industries. It can arise as a result of interaction across industries. The inter industry spillover arises mainly by the customer-supplier relationship between foreign firms and domestic firms. According to Dunning (1993, p.456), "the presence of FDI has helped to raise the productivity of many domestic suppliers, and this has often had beneficial spillover effects on the rest of their operations". It is believed that spillovers are more likely in the case of inter-industry than with in the same industry. The reason behind such a belief is that, MNCs can prevent the leakage of technology to its competitors, while it has no incentive to prevent the technology diffusion to its suppliers and clients (Javorick 2004). Vertical spillover mechanism operates both at the upstream and downstream sector.

FDI AND ITS IMPACT OF TECHNOLOGY DIFFUSION ON THE HOST COUNTRY

When technology diffusion occurs through FDI to any country it improves condition of some major economic activities such as- enhance employment situation, increases managerial skill, encourages export, increases domestic competition, increases quality of environment and reduce poverty. All above activities lead to more production in that country which finally leads to economic growth.

Figure 2-Impact⁵ of FDI



⁵ Authors own imagination regarding Macro Economic impact of FDI

TWO SPECIFIC QUESTIONS

On the specific question of whether the superior technology involved in the inward foreign investments “spills over” to domestically owned firms rather than being retained entirely by the foreign-owned firms, Teece (1977) argued that since the assets are almost always gained through experience, they cannot be easily licensed to host country firms, but can be transferred at a reasonable cost to subsidiaries who locate in the host country. Against this backdrop, in India, government has an expressed foreign technology agreement in which Reserve Bank of India through automatic route within certain prescribed monetary limits related to Royalty, permits foreign technology agreements in all industries (Ministry of Industry and Commerce, Department of Industrial Policy and Promotion, Govt. of India, 2005).

Another question is related to effects of spillover is linked to wages, i.e., whether the multinational firms pay higher wages for domestic labour, which consequently raise the average wage level in the host country, and particularly whether these higher wages spill over to local firms (Lipsay and Sjöholm, 2005). The answer is positive due to two reasons: first, it is not possible to transfer labour for their country to host country, if possible it is a costly affair so they trained domestic labour and paid high wage. Second, in developed countries labourers are not so cheap like in developing countries and also in some developed countries labourers are not available abundantly.

SOME CRITICAL ISSUES ON FDI AND TECHNOLOGY DIFFUSION

Based on the above discussion, we can conclude that the net effects of horizontal and vertical spillovers can be either positive or negative. Therefore, from the results of the previous studies, we can safely conclude that positive effect is not always the outcome of FDI. We argue that the positive effects of FDI postulated in much of the recent debate are not automatic, that the effects of FDI will vary depending on the host country's characteristics and policies, and that there is a role for economic policy in maximising the potential benefits of FDI. Many developing countries have traditionally relied on a combination of various fiscal incentives and performance and technology transfer requirements to attract foreign multinational firms and to control their operations. However, these measures may not be sufficient to generate significant knowledge spillovers if the majority of local firms employ technologies that are very different from those used by foreigners. Some critical issues related to FDI and its impact on technology diffusion is listed below.

Due to competition effects, foreign firm can lead to crowding out of domestic firms. Those firms which are unable to compete with the foreign firms are forced to make an exit which is known as market stealing effect. Therefore in the short run, the productivity of the domestic firms decline which shows that technology transfer through FDI has negative effect.

The argument about positive competition effect holds only if domestic firms are not far below the technological frontier. On the other hand, in an industry characterised by weak firms, the entry of foreign firms may eventually lead to an exit of the weak domestic firms which is the main cause for negative spillover effect. It is the fact that spillovers are more likely in the case of inter-industry than within the same industry. The reason behind such a belief is that, MNCs can prevent the leakage of technology to its competitors, while it has no incentive to prevent the technology diffusion to its suppliers and clients. So vertical spillovers are negative here. When MNCs prefer to source from their international supplier, the domestic firms have to upgrade their technology in order to meet the global demand. Those supplying firms failing to meet the requirements of the MNCs or unable to meet the import competition will be forced to exit from the market. As a result a negative vertical spillover can arise in such an eventuality. The economic effects of FDI are very difficult to represent a complex package of attributes that vary over time and from one host country to another. They are difficult to separate and quantify. Where their entry has large (non-marginal) effects, measurement is even more difficult. The econometrics analysis of FDI and technology diffusion is of long standing, but its conclusion remains unclear. Some analyses show a positive impact while others remain agnostic. FDI spillovers are not always positive because two factors are themselves highly interdependent. It needs to be acknowledged that the ability of the domestic economy to benefit from MNCs investment crucially depends on the relative technological capabilities of the recipient and the transmitter, and at the same time, those MNCs investments will depend on domestic capabilities.

POLICY ISSUES ON FDI AND TECHNOLOGY DIFFUSION

In order to address above critical issues we should think about some valuable policies for India to make technological diffusion fruitful. We know that positive effects and negative effects are prevailing outcomes from inward FDI through technological diffusion. Being a researcher we should suggest some policies which can minimise negative effects and maximise positive effects. There are policies which can give better direction to FDI flows to India. There should be policies to support local technological capability and labour skills may facilitate spillovers of technology from FDI inflows. The reason is not only that the local industry's ability to absorb foreign technology improves, but also that a more skilled local labour force reduces the cost of intra-firm technology transfer within the MNC, which is likely to encourage affiliates to import “more” technology from their parents. Policies are required to give correct information or coordination in the international investment process which can lead a country to attract good quality FDI. There should be policies to keep balance between the private interest of investors and the economic interests of the host country. This can bring positive effect on development. Policies are needed to take care of both employment as well as exchange rate problems. If more than requirement FDI flows will occurs low technology investment by local firms will make an exit. There should be policies to counteract market stealing effect. We should frame policies which will keep proper balance between export-oriented FDI and domestic market oriented FDI according to economic situation of the country. There should be policies to bring in more transparency in the foreign investment policy in order to improve the inflow of FDI. If there is transparency, the foreign investor knows exactly where he stands. Import duties should be reduced to match the world standard import duties on components and raw materials which are not available in India should be declined further so that the cost of production falls and goods can be offered at cheaper rates. FDI should come into infrastructure and area where technological gaps exist. FDI inflows should commensurate with the need of the economy. Tax rate should be brought down to increase the flow of international direct investment in India. There is need for lower interest rates, easy availability of credit from banks and financial institutions. India should enter into more bilateral agreements with different source countries as these agreements increase the confidence of the investors in the host country and they are encouraged to undertake FDI in different areas. There is need for coherence between different policy areas including investment, trade, technology and competition and also between initiatives at the bilateral, regional and multilateral levels, guided by the principle of non-discrimination. FDI policies should be dynamic in character in order to face changing economic scenario at the global level, at the home country as well as at the host country level.

CONCLUSION

FDI is an important mean by which domestic firms can be made more competitive, this should be part of a more holistic development strategy. If above policies can be properly implemented by the government in case of exact time and situation of economy then our policy suggestion can bring some fruitful result in FDI inflows to India and its impact on technology diffusion. If MNCs operated in efficient markets and acted with full information, there would be no need for policy intervention. If markets were not efficient, or MNCs did not have full information on investment opportunities in particular locations, there would be a case for interventions in markets and the investment decisions of MNCs. It is likely that markets information are deficit in developing countries under development is typified by a lack of efficient markets and institutions. The recent policies like SEZ (special Economic Zone) policy, and increased investments in export-related infrastructure, are expected to attract more export-oriented FDI. This would not only help the foreign firms to set their export base in the country, but the domestic firms to reduce their exporting costs and to become more competitive.

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