

The Effect of FDI on China's Position in the Global Value Chain

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1- Introduction

Since the 1990s trading intermediate goods and raw material among Multi-National Companies (MNCs) their subsidiaries and international subcontractors throughout Global Value Chain (GVC) increased sharply and dominated the global trade. In 2013, the amount of trade in GVC accounted 80 percent of Global trade (UNCTAD 2013). Revolution in Information and Communication Technology (ICT) in line with innovative technology and decreasing trade costs encouraged MNCs to fragment their productions and outsource different stages to countries with lower factor costs. Opening subsidiaries in host countries via Foreign Direct Investment (FDI) is one type of outsourcing production stages which became very popular among MNCs. The amount of FDI has increased significantly in the past three decades and even has surpassed the amount of international trade since the 1990s. According to UNCTAD (2013), the nominal stock of inward FDI raised from USD 697 billion in 1980 to USD 20,380 billion in 2012.

FDI may have direct and indirect positive impacts on manufacturing value-added via technology spillover and creating new job opportunities. However, there are various factors which can increase the positive effects of MNCs on the host country. Government policy of host countries is one of the most important factors for directing FDI into right channels.

After economic reform in 1978, China gradually became the first country among developing countries and second in the world after the USA in term of stock of inward FDI (World Bank 2012). During this gradual reform, China designed and implemented sound policies to boost economic growth and in the meantime move from low value added to medium and high value-added industries.

This paper will look at FDI effects on China's manufacturing sector during 2003-2013. For this purpose, the changes in value-added in manufacturing subsectors as well as Chinese government policies will be studied. Next section studied different perspective about effects of GVC as well as FDI on industrial development of developing countries. Section three looked at Chinese government policy toward FDI, national development plan and industrial policies. Section four analyzed and compared performance of foreign and domestic firms in textile, electronic machinery and electronic equipment industries. Conclusion had been drawn in last section.

2- Theoretical debate

The new wave of globalization also referred as second unbundling started to develop since the 1990s due to the revolution in Information and Communication Technology (ICT), reduction in transportation costs and implementation of Washington Consensus policies¹ in developed and developing countries which followed market radical policies and opened up for international capital flows. These developments allowed MNCs to break down their production process into different stages and outsource these stages to other countries to an extent not known before (Baldwin 2013). Although the history of outsourcing backs to industrial revolution and development of manufacturing sector, but rise of MNCs and creating GVC started to develop since 1960s and become dominant strategy for MNCs from 1980s (UNCTAD 2010).

New innovations (especially internet) helped MNCs to decrease the complexity of separation of production stages by using telecommunication and transferring technology and information via emails and other communication tools. In addition, huge wage differences between North and South made developing countries attractive destination for MNCs. In this regard, developing countries can become part of GVC by liberalizing their tariffs, joining WTO, signing bilateral investment treaties with developed countries and designing policies for attracting foreign investment (Andreff 2009)

The common belief among mainstream economists is that being part of MNCs' GVC, developing countries do not need to build wide and deep industrial base in order to be competitive in world market, as they can be specialized in certain stages and industries. The latter may accelerate the industrialization process in these countries (OECD 2012).

In addition, outsourcing has great support among business literatures and scholars. Michael E. Porter (1985) in his famous book "Competitive Advantages" argued that firms should focus on

¹ Williamson (1990: 18) defined a series of "prudent macroeconomic policies, FDI open up policies, outward orientation, and free-market capitalism" that firstly were imposed to Latin American countries in the 1980s and 90s by Washington based institutions (U.S. Congress, International Monetary Fund, US Treasury, World Bank etc.). According to Washington Consensus, development can be financed by large capital inflows, as it often is argued that developing countries have a financing gap. In this regard, FDI can play the role of external financing and leads to economic development in developing countries.

their core business and outsource other stages to firms which have higher competitive advantages. Therefore, he divided the whole value chain to four parts namely pre- and post-fabrication and fabrication activities. In this regard, he mainly followed the Ricardian idea of comparative advantages.

Based on the new economic geography theory which developed by Paul Krugman (1991) and Fujita et al. (1999) explain the reasons for geographical unbundling. The new geographical unbundling has two main features as follow:

- **Vertical Specialization:** the wage gap between unskilled and skilled workers determines the vertical specialization. Therefore, MNCs outsource the production stages which are labour intensive to low wage countries and outsource the skill intensive stages to countries with high skill workers with higher wages. The vertical specialization is the main explanation of North-to-South outsourcing.
- **Horizontal Specialization:** it explains the outsourcing of high value-added stages to developed countries. For doing so, production factor costs are not important and specialization and production quality play the key role in choosing the location. For instance, airplane companies such as Boeing and Airbus outsource engine production stages to companies like BMW and Rolls-Royce not for their low factor cost but because of their specialization and product quality.

Cost reduction is the main motive for MNCs in order to outsource their production stages to developing countries with lower factor costs. In addition, natural resource seeking, managing inventories, demands adjusting and efficiency seeking are other important factors that have effects on MNCs' outsourcing decision (Andreff 2009).

As mentioned above, cost reduction is the most important motivation for MNCs for outsourcing. In this sense, companies outsource low value-added stages to developing countries and higher value-added stages either stay at parent company's country or outsource to other developed countries due to specialization motives. The uneven distribution of value added through supply chain is the main feature of second unbundling.

High market power of MNCs allow them to choose a location that have the lowest factor costs, taking into account that many developing countries are willing to offer different incentive to attract foreign investors even for the low value-added production stages. This is the reason behind MNCs strategies for shifting outsourcing location from East-Asian tigers (Japan, Taiwan, Hong Kong, South Korea, Singapore and recently China) to other developing countries such as Vietnam, Bangladesh and Cambodia. When wages increased in above mentioned countries, MNCs started to outsource their activities to countries with lower wages (Baldwin 2013).

Fragmentation of different production stages to different countries allowed various ways for MNCs to choose their suppliers. Basically, outsourcing refers to developing a supply source that is located outside of a parent company which is in charge of producing final goods or services. In other words suppliers provide raw materials, tools, spare parts, components, equipment and/or semi-finished products that need to go through other production stages to become final good. But in any of these stages, parts of final goods or services are produced in suppliers companies (UNCTAD 2010).

Suppliers can be domestic firms which can be divided in domestic subsidiaries of parent companies and other domestic suppliers based on market relations, or in companies in other countries that also can be divided in foreign subsidiaries of parent company (FDI) and other foreign suppliers (international subcontracting) (OECD 2007). But in this paper I only look at FDI.

The majority of foreign companies' investments in developing countries are in low value-added stages of production that is also the main feature of vertical specialization. Thus, if FDI mainly goes to developing countries for cost reduction motives how it can lead to technology spillover and industrial upgrading?

Access to managerial skills and advanced technologies are great motives for host countries to attract FDI. Indeed, foreign owned companies can have a higher technological standard, train local staff or secure export channels. Also local firms can benefit from the technologies and managerial skills of foreign firms through joint venture, reverse engineering and hiring workers that are trained by working in foreign firms. Foreign firms can also affect local companies

through developing supply chain in host countries and force/control local firms to increase their quality and standards and/or help them to increase their managerial skills (Alfaro et al. 2010).

Companies with market seeking motivation may establish research & development centers in host countries in order to meet the special customers' demand in host countries via product localization. For doing so, usually foreign companies work with domestic experts and universities which allow them to use their expertise about tastes and preferences of domestic customers. Local experts could also benefit from working with new technologies and participation in processes of research and development and production of new goods. Their experiences can be used later in domestic companies (Damijan et al. 2003).

Another factor which has effects on technology spillovers is the market structure. If host countries' markets have high entry barriers, for instance high tariffs or the existence of dominant domestic (or foreign firms in case of latecomers companies) foreign investors have to enter into host countries with a large amount of investment and relatively high technology in order to be competitive in the market.

In general there are two types of FDI namely horizontal and vertical FDI, which each of them typically has different effects on technology spillover. Horizontal FDI occurs when a company produces a product with the same production line and value chain in the host countries as at home. Therefore, horizontal FDI can improve horizontal specialization in host countries. Vertical FDI take place when a company wants to optimize its production cost by fragmenting each part of the value chain in countries with least costs. Since 1990s, this type of FDI has become more and more popular among MNCs to decrease their production cost and to keep their high profit mark up² (Peng 2009).

In horizontal FDI the probability of positive technology spillover is higher than in vertical FDI as in this case most production stages are outsourced to host countries including some R&D. Therefore, host countries can benefit from higher value-added production stages such as design and R&D. Most horizontal FDI is within developed countries. However, some developing countries also benefit from this type of FDI due to improving income levels and big domestic

² Although it is really hard to statistically define difference between Horizontal and Vertical FDI, Alfaro and Charlton (2009) by using firm-level database of 650,000 companies found out that Vertical FDI is the dominant type of FDI among MNCs (more than 60 percent)

markets. Volkswagen in China is one of successful example for this. But it has to be kept in mind that China in a comprehensive way dictated the conditions for FDI and at the same time was because of its economic development an attractive investment location (Azarhoushang 2013). And it should be mentioned that horizontal FDI in developing countries even including research and development centers does not mean that foreign companies bring the newest technologies to developing countries. Key competences are kept in the country of the lead firm or the global North.

Vertical FDI which dominates especially in developing countries does not show such positive technology and skills spillovers as it is typically focused on low tech specialized tasks in a few number of industries. Technologically very underdeveloped countries with very low skill levels can to a certain extent benefit also from vertical FDI. However, after some upgrading of the technological and skill level there is no incentive for lead firms to improve technology and skills further.

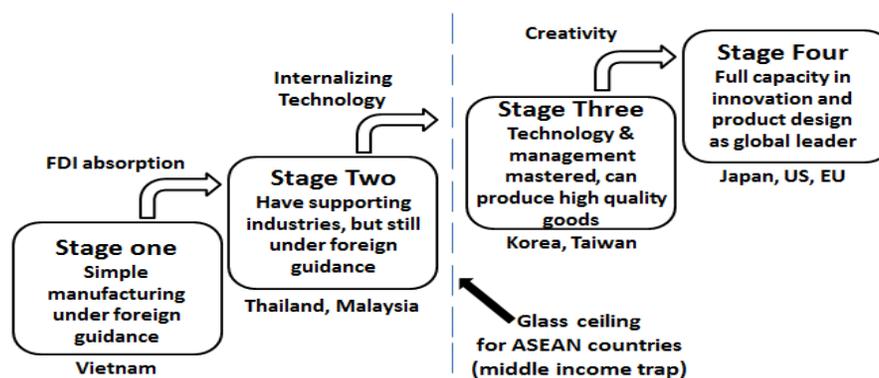
However, benefiting from positive technology spillovers of FDI (vertical and/or horizontal) depends on different factors. First, technology spillovers highly depend on the development level of the host country. If local companies do not have a relatively high technological and educational level, FDI not only will not lead to positive technology spillover but also may lead to crowding out of local companies due to their disability to compete with foreign companies (Singh 2011). Furthermore, if foreign companies invest in host countries only for exporting low value added goods and/or investing in labour intensive industries as well as natural resources, it does not have big positive effects on technology spillovers. Moreover, the type of FDI (e.g. wholly owned, joint venture or mergers and acquisitions) is an important factor. For instance, if foreign firms invest through mergers and acquisitions the level of technology spillover will be very low as usually foreign companies keep employees and production lines unchanged and only change the management. In addition in many cases foreign firms only invest for benefiting from cheap labour and other costs and/or government incentives and do not bring any positive technology spillovers.

In this sense, developing countries that want to accelerate their industrial development may face different risks of being locked in the low value-added stages of production. These risks are as followed. First, if developing countries only participate in fabrication process then the GDP

contribution of GVC will be limited. Second, the main part of GVC value-added is generated by MNCs' subsidiaries that can lead to low value capture because of price transferring or income repatriation. Third, if governments do not invest in education and improvement of local firms' absorption capacity, the technology spillover from MNCs would be unlikely that the latter prevent improvement of higher value-added creation in these countries. Fourth, the negative environmental impacts and social effects in absence of efficient regulatory framework are another risk for developing countries. And last but not least, the potential "footlooseness" of GVC activities may increase the vulnerability of local firms in facing external shocks (UNCTAD 2013b).

Hence there is a middle income trap or a glass ceiling for market based development even with a high level of FDI (see Figure 1 for Asian countries) (Ohno 2008). FDI can lead to industrial upgrading in some developing countries to some extent under certain conditions which are mentioned above, but even in such an optimistic scenario self-market mechanisms will not lead to the same income level as in developed countries.

Figure 1. Stage of industrial upgrading



Source: Ohno 2008

Therefore, Baldwin (2011) argues that economists and government should rethink about the role of manufacturing sector in economic development or at least fabrication stage in modern globalization era.

However it does not mean that countries which decreased their wage gap with developed countries are no longer competitive or increasing wages in these countries reduced their economic growth but quite in contrary in line with increasing wages some developing countries could also improve their technology levels and human capital. The latter changes the previous vertical specialization driven by wage differences into horizontal specialization which can lead to trade in similar goods if it reaches to certain level of specialization. Furthermore, horizontal specialization leads to increase in trade value as production stages that will outsource to these countries have higher value-added. East-Asian Tigers are best examples that illustrate this transition.

It should be mentioned that moving toward higher value-added activities in developing countries depends on government policies. Designing and implementing sound industrial policies in line with national development plan has the main effect on pace and direction of moving toward horizontal specialization (Mudambi 2008).

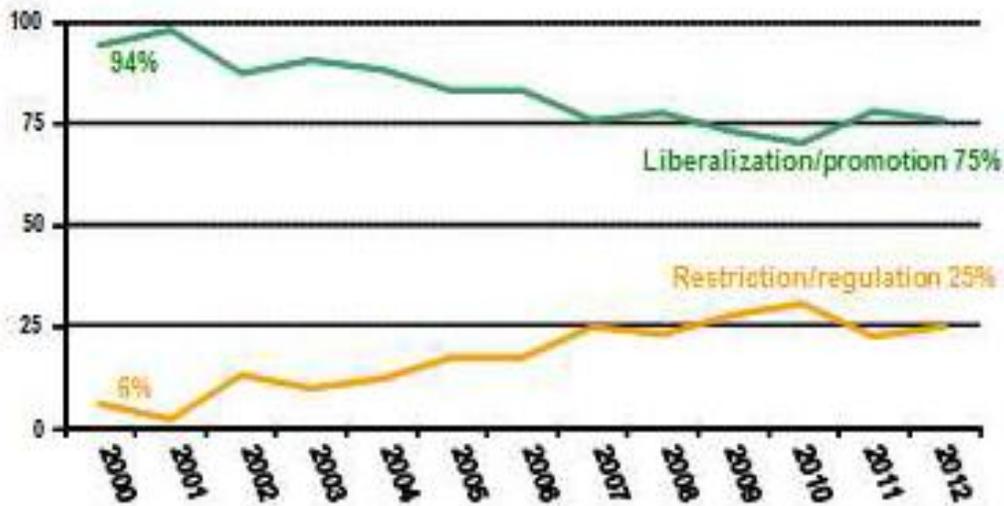
Industrial policy is strategic plan for improving growth and development in manufacturing sector. Government design and implement series of policies in order to increase productivity, competitiveness and capacity of domestic firms. These policies are designed for different industries according to country's competitive advantages and/or priorities. However, mainstream economists do not believe in industrial policy and label it as government intervention in free market mechanism (Graham 1992).

The supporters of industrial policies argue that because of market failure, government should intervene with industrial policies to support the domestic industries. However, the counterparts believe although designing sound industrial policies can be helpful and have positive effects on economy growth but, the low productivity in Stated Owned Enterprisers (SOEs) and bureaucratic procedure in government's institutions will lead to decline of country's competitiveness in international trade. Dany Rodrick on his paper "Industrial Policy: Don't ask why, Ask how (2009)" argued that low institutional quality and bureaucratic constraints is not part of industrial policy debate and policy makers should try to increase the effectiveness of institutions and their productivity.

After ending golden age in developed countries, many governments as well as some international organization followed the idea of neoliberalism and didn't pursue and/or suggest industrial policy. But successful experience of East Asian countries such as Japan, Taiwan and South Korea showed that industrial policy could improve economic performance and employment. It should be mentioned that all of developed countries which promote the free trade notion and are against industrial policies, all have the history of high protection and supporting their industries from end of 19th century until middle of 20th century (Chang 2003).

In our globalized world it is so difficult to distinguish industrial policy with trade policy and policies toward foreign direct investment because of their boundaries become more and more blurred. Therefore, policies and regulation about FDI now become part of countries' industrial policy. The number of FDI related regulation around the globe in 2012 rose by 25 percent that shows that government also accepted the importance of industrial policy for increasing domestic productivity and value-added (Zhan 2013). Figure 2 shows changes in national investment policies from 2000 to 2012.

Figure 2. National investment policies



Source: Zhan 2013

For having sound industrial policies, first of all developing countries should look at their own resource, advantages and disadvantages of being part of GVC, the absorption capacity of local

firms and country's competitive advantages. After evaluating above mentioned factors they can design and implement industrial policy for answering the question of "How we should participate in GVC". Developing countries should decide about promoting specific GVC segments which are in line with their national development strategy as well as their industries capabilities and government policy for improving certain industries' competitiveness. For doing so, government should build productive capacities in domestic companies and improve skill level of their workers. These efforts should take place within a strong environmental, social and governance framework, with strengthened regulation and enforcement and capacity-building support to local firms for compliance (Law and Tijaja 2013).

A study about industrial policy and its implication with looking at macroeconomic factors such as FDI inflow and human capital as well institutional quality in Latin American countries and East Asian Tigers showed that these countries could benefited a lot from industrial policies after WWII until 1990. The author states although industrial polices' implications were different in selected countries but, they were same in principals. For instance, investing on education and innovation, creating an effective control mechanism and competitive advantages were main pillars for all industrial policy (Di Maio 2009).

Greg Linden (2004) in his research about China industrial policy examined the designing and implementing industrial policy particularly for high tech industries. He argued that China was more successful compare to other East Asian countries because of her large domestic markets, supporting national innovation and pragmatic nature of her policies. Furthermore, he believed although China's industrial policy is politicized but, they doesn't add any extra costs to economy and in same time force domestic companies to increase their quality and productivity.

For examining the validity of theories we discuss here, we took China as examples. I looked at value-added in textile, electric equipment and machinery industries and electronic and telecommunication equipment as examples of low, medium and high value-added industries under these circumstances.

3- Government policy of China

After economic reform in 1978, China gradually became the first country among developing countries and second in the world after the USA in term of stock of inward FDI in 2011

(UNCTAD 2014). Sustained GDP growth, high rate of capital return and brisk economic development made China one of the world leading manufacturers. Designing sound industrial policies according to her development plan in line with absorbing huge amounts of FDI helped China to increase its productivity, to improve its competitive advantage which is known as “China miracle”, and to generate millions of new jobs for her people (Azarhoushang 2013).

During 1970s, China suffered from lack of modern technologies and competitive advantages. After long period of isolation, they needed to import machineries and equipment from advanced countries and at the same time they had to protect the domestic industries that were totally state-owned. But, they didn't have enough foreign exchange for trade (Naughton, 2007, 378-380).

After 1978, Deng Xiaoping as president of China started to open their economy for foreign investment. But this openness was so limited and gradual. In the first step, they allow foreign export oriented companies to come without giving them access to local markets. Foreign firms were not allowed to send their profit back to their own countries. However, obviously China couldn't attract many foreign firms with so many restrictions (Hou, 2011).

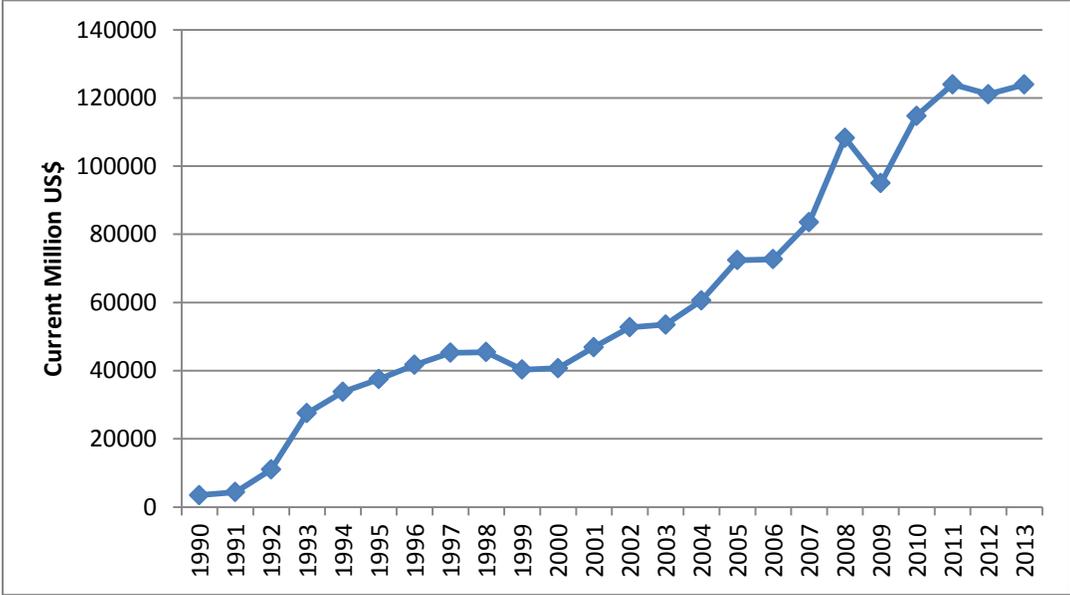
Investing on infrastructure, changing regulations and laws in favor of foreign investors, opening Special Economic Zones (SEZs), keeping high GDP growth (10 percent) and moving toward more liberalized market-based system, gave positive signal to investors.

For conserving economic growth and maintaining positive inward FDI trend, China decided to join WTO in early 1990s. Another wave of changing regulations and laws for foreign investors began that gave them more freedom to invest in different economic sectors and to access local markets. Finally after nearly 10 years, China joined WTO in December 2001. It was big event for China and the world that "People's Daily" stated in its front page in December 11 of 2001, one day after joining WTO, “This is a historic moment in China's reform and opening-up and the process of modernization” (BBC, 2001).

Institutional reforms and changes of regulations under WTO rules, stable political and social environment and optimistic perspective of economic situation encouraged increasing numbers of foreign firms to invest in China.

After global financial crisis, China experimented dramatic decline in its inward FDI. But again by keeping high GDP growth and increasing the domestic investment, China showed that it was not affected by the global financial crisis and still can be attractive for foreign investors. Figure 3 illustrates the amount of inward FDI from 1990 to 2013.

Figure 3. China’s inward FDI



Source: UNCTADstat 2015

Government policy toward FDI

A growing number of governments, around the world want to increase the inflow of FDI into their country since they have found out that it helps to improve their country in different aspects. They believe that the positive effects of FDI (i.e. poverty reduction, Technology spillover, growth and etc.) overweight negative effects (i.e. inequality, weakening trade union, crowding out effects and etc.). A country’s FDI strategy is determined based on all these positive effects from FDI as well as the level of factor endowment and also the ability to choose the level of policy intervention, after finalizing the FDI strategy they have a range of FDI policies affecting FDI (te Velde 2001).

In two and half past decades China has passed a wide and almost complete range of laws and regulations regarding foreign direct investment, which include the law of People Republic of China for Wholly owned enterprises, Sino Foreign Joint venture and etc. those regulations also

include several preferential policies for China's Special Economic Zones (SEZs). In following parts, major policies toward foreign firms, 12th national development plan and industrial policies has been discussed.

As mentioned before, China has chosen gradual approach for economic reform and opening its doors toward the world. Same approach can be seen in designing and implementing laws and regulations for foreign investors. There are so many different regulations about FDI in china but in this part, the trend of gradual changes in main and important laws and regulations are examined.

There is three ways for foreign firms to invest in China: through wholly owned companies, equity joint ventures and contractual joint ventures. In 1979, the equity joint venture regulation published by government. According to this regulation, the general manager of the joint venture company had to be appointed by Chinese partner, but in 1990 the government abolished this regulation. In 1986, the export oriented and/or high tech wholly owned foreign companies were allowed to work only in SEZs and ETDZs. In 1988, government allowed foreign companies to do business in form of contractual joint ventures. Investment in real state, stock markets and short term investment still are restricted in China. For reclassifying of companies, China passed "*The Company Law*" in 1994. According to this new law, all companies divided to limited-liability company and company limited by shares. All foreign joint ventures and wholly owned companies classified as limited-liability Company (Invest in China, 2012).

In 1995, China issued "*Interim Provisions on Guiding Foreign Investment*" and "*Catalogue for the Guidance of Foreign Investment Industries*" according to its development policies and national economic plan. Due to the new rules, foreign companies should look at the list of projects that were in line with national plan. Generally, investors should consult with administrative offices to know where and how it was better to invest (Invest in China, 2012).

Trying to become a member of WTO, China reduced its tariff rates from 42.9 percent in 1992 to 15.3 percent in 2002. So many restricted regulations were eased according to WTO rules. The main changes were:

- Abolition of the balanced foreign exchange: FIEs were not forced anymore to keep their own foreign exchange in balance. They were allowed to purchase the foreign exchange from Chinese commercial bank.
- Access to local market: FIEs get the right to access to local markets similar to domestic companies. There are no more obligations to export more than 70 percent of production for wholly foreign owned companies.
- Equal access to suppliers: before 2000, foreign companies had to work with Chinese suppliers for buying raw materials, fuel and component. By the new rules they were allowed to work with suppliers from all around the world.
- Abolition of business plan filing: foreign companies do not need to fill their business plans as a registering procedure in China any more (Chen, 2011).

In 2002, China passed the *Provisions on Guiding the Orientation of Foreign Investment*. The provisions divided investment into four categories: “encouraged”, “permitted”, “restricted” and “prohibited”. Base on this regulation, foreign investors in any format (equity joint ventures, wholly owned and contractual joint ventures) will be encouraged with incentives and different packages to invest in areas favorable to China's development plan. In the permitted category FIEs can invest in any form that they want without any restriction regarding the majority of shares belong to Chinese or foreign partners. For the restricted industries and sectors, registration of FIEs are checked case by case through very restricting criteria and requirement; and no foreign companies can invest in the prohibited category.

For better implementation of provision, China edited the "*Catalogue for the Guidance of Foreign Investment Industries*" twice in 2002 and 2004. In 2007 the catalogue was revised again. In the new catalogue more industries have been added to the encouraged category. However, companies in traditional manufacturing sectors and export oriented firms are not encouraged anymore; while, environment friendly projects, high tech industries, high end services and investment in Central and West part of China are very much encouraged in new edition (Invest in China, 2012).

For attracting more foreign investors and moved toward liberalization of FDI according to WTO rules, China issued new regulation for "*Interim Provisions on Mergers and Acquisitions of Domestic Enterprises by Foreign Investors*" in 2003 for 3 years as a trial period. In 2006, Chinese government passed *the law for "Provisions on Mergers and Acquisitions of Domestic Enterprises by Foreign Investors"* that generally allowed all foreign companies to acquire or merge any local companies (state owned or private companies) with any form (equity or asset acquisition). The only limit for acquisition is the prohibited category. FIEs cannot buy any equity or asset from local companies that work in prohibited category (Invest in China, 2012).

In 2005, "*The Company Law*" was edited to ease the registration processes for FIEs. To protect fair competition, in 2007 the "*Anti-Monopoly Law*" was issued. According to this Law, government controls the market against monopolistic activities. However, special agreement in cost reduction, protecting resources and technology development are exempted from this law.

In 2009, "*Provisions on Mergers and Acquisitions of Domestic Enterprises by Foreign Investors*" was edited to ensure that all merging and acquisition are coincident with *Anti-Monopoly Law* (Invest in China, 2012).

In 2010, after the global finance crisis, the *State Council* published the new regulations for foreign investors to promise improving business conditions and to offer incentives for high-tech companies, service sector, energy saving and environmental friendly projects. According to new regulations, qualified foreign companies can issue cooperate bonds and medium-term bills. Also, MNCs were encouraged to open R&D centers and regional headquarters in China with tax incentive by end of 2010. However, highly polluted and energy intensive companies were prohibited (People daily, 2010).

"*Catalogue for the Guidance of Foreign Investment Industries*" modified again in 2011. Due to the new rules, the high-tech industries such as aerospace, new energy automobile and development and manufacturing of internet equipment, software and chips were encouraged by different incentive packages, but manufacturing the whole automobile exempted from encouraged category (Invest in China, 2012).

In last edition of "*Catalogue for the Guidance of Foreign Investment Industries*" which is released in March 2015, in new edition more restriction on service sectors such as accounting

and auditing has been lifted and more incentive offered to foreign companies that invest in R&D in technology and medicine. Furthermore, in latest edition foreign firms are allowed to open wholly owned companies in industries such as automobile, aircraft engines and component as well as equipment machinery. Some restriction about controlling JVs by Chinese partner also lifted in various industries such as railways and sea transportation (Yao 2015).

National development plan

Chinese government same as other government use 5 years development plan for designing national goals and ways to reach to these goals. Before economic reform in 1978, national development plans mainly focused on quantity of production in a communist style. However after economic reform, national development plans changed its directions and started to include more market incentives policies as well as opening up to foreign trade. Different kind of incentive for encouraging foreign firms' investment especially in manufacturing sector as mentioned in last section are some of important features of national development plans.

The common procedure among all national development plans is that the economic development goal and strategic sectors will be pointed by government of China. Afterwards all governmental institutions and agencies should design and implement policies for pursuing these goals. Local government should also follow these goals but they can also follow special policies for improving their specific sectors (Dorn and Cloutier 2013).

In last national development plan (12th) which is from 2011 until 2015 the main goals and objectives are sustainable growth, moving up the value chain, reducing disparity, scientific development, environmental protection, energy efficiency and domestic consumption (KPMG 2011).

As manufacturing sector is the main strategic sector for China's economy, Chinese government always designed their industrial policies in line with national development for the same period of time. Therefore studying industrial policies and especial policies for promoting three industries which I investigated help us to understand how much Chinese government were successful in implementing their policies.

Industrial policy

Chinese government use various tools for implementing their policies which some of them are labeled as subsidies which are against WTO rules by other countries specially USA. The main tools are as follow:

- Income tax breaks for companies with foreign investment, located in special development zones, or designated as having “high technology”
- Loans to “encouraged” industries from government-owned banks
- Rebates of value added tax and import duties for equipment purchases;
- Low-priced land for SOEs and companies located in special development zones;
- The provision of goods and services at below-market prices by the government and SOEs
- Cash payments to companies based on factors such as export performance.

For receiving above mentioned industries, Chinese government provided a list with different criteria such as preference of foreign investment in “encouraged” activities, promoting research and development (“R&D”) and the transfer of technology, developing integrated circuits; and encouraging companies to upgrade technology and equipment that foreign and domestic firms should fulfill them in order to receive these funds (Dorn and Cloutier 2013).

In 12th national plan, nine industries including textile, machinery and electronic appliances has been chosen as strategic industries which should improve their quality, technology, know-how as well as their brand image until 2015 (Dorn and Cloutier 2013). Hence before studying the performance of these industries, it is very important to see which goals has been set for them in order to have better analyze about their performance.

Textile industry: increasing annual industry value-added by 8 percent, investing of at least one percent of core business income on R&D, development of 5 to 10 reputable Chinese international brand as well as 50 to 100 famous domestic brand and improving at least 30 percent of major textile machineries in order to meet international standards are among most important goals for textile industries (Dorn and Cloutier 2013).

Machinery industry: the industry has been labeled as “strategic industry” and “symbol of nation’s comprehensive strength” by Chinese government. It also produces more than 20 percent

of total industrial output in China. Hence huge amount of financial supports from government and its institutions are available for companies that follow national development goals in this industry. The main goal is replacement of all imported machineries by high quality domestic machineries (Dorn and Cloutier 2013).

Electronic appliance: the main goals for this industry are investment of at least 3 percent of sales revenue on R&D, establishment of 20 state supported technology centers, providing funds by government for increasing sale in rural area and that domestic products should cover 30 percent of world market. For reaching to this goal technological restructuring and local innovation will get financial and non-financial supports from central and local government as well as related institutions (Dorn and Cloutier 2013).

4- Economic performance of industrial sector

Now I am able to analyze the effects of FDI as well as government policies on China's position in GVC. In this regard, we chose Textile, Electronic Machinery and Communication equipment, Computers and Other Electronic Equipment as examples of low, medium and high value-added industries³ to examine the growth rate of their value-added during 2003-2013. For doing so, we looked at amount of value-added tax payable⁴ and total assets of foreign founded companies and compare them with stated-owned and private Chinese companies in each industry as well as their share of value-added in total manufacturing sector.

Textile industry: generally referred as low value-added industry especially in developing countries. Foreign companies which invest in developing countries mainly look for low production costs. The hypothesis was that foreign firms do not have significant effects on

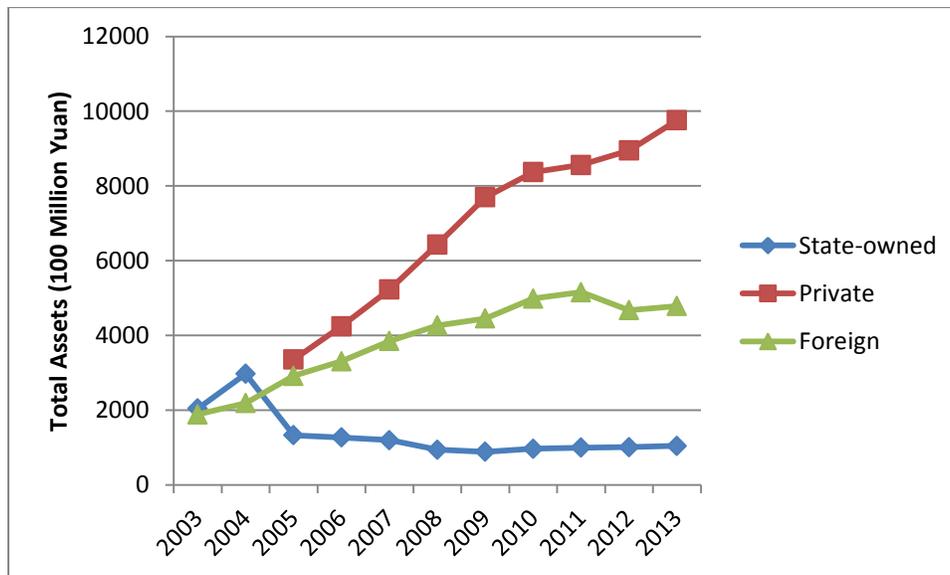
³ **Textile industry** is among the low tech sectors which are categorized in supplier dominated industries. Supplier dominated industries include traditional sectors (such as food, textile, retail services) where internal innovative activities are less relevant, small firms are prevalent and technological change is mainly introduced through the inputs and machinery provided by suppliers from other industries. **Electronic machinery** is among high-tech industries which are categorized in specialized supplier. It means that their products are new processes for other industries. R&D is present but an important innovative input comes from tacit knowledge and design skills embodied in the labor force. Average firm size is small and innovation is carried out in close relation with customers. **Communication equipment, Computers and Other Electronic Equipment** is among high tech industries and categorized as Science-Based. This category includes sectors where innovation is based on advances in science and R&D where research laboratories are important, leading to intense product innovation and a high propensity to patent (Bogliacino and Pianta 2011).

⁴ I choose this indicator as I did not have access to value-added of these industries. The only public available data for value-added was value-added tax payable which were available for the time period in China Statistical Yearbook

positive technology spillover to local firms. As they only outsource fabrication stage to developing countries.

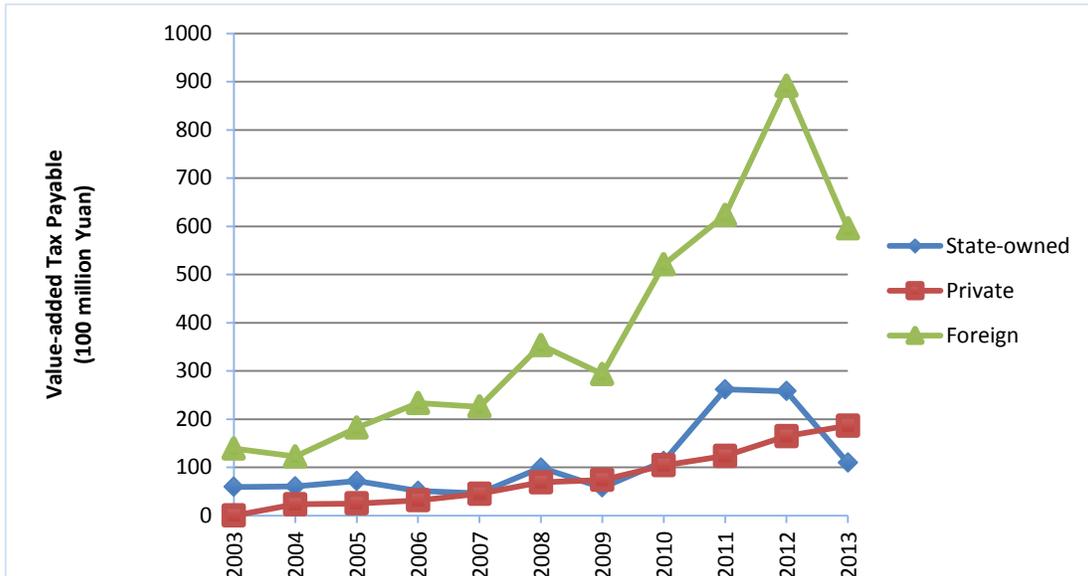
Therefore, the total assets (see figure 4) as well as value-added tax payable (see figure 5) of foreign, state-owned and private Chinese companies had been compared to see the effects of foreign firms on domestic companies. Figure 4 illustrates that private Chinese companies have the highest total assets in textile industry and Chinese state-owned has the lowest amount. We can also see the same trend in their value-added (figure 5). These two graphs show that Chinese government at least did not invest in textile industry via SOEs. Another point that these two figures illustrate is that foreign founded companies did not have any meaningful technology spillovers on local firms.

Figure 4. Total Assets in Textile



Source: Chinese Statistical Yearbook 2004-2013

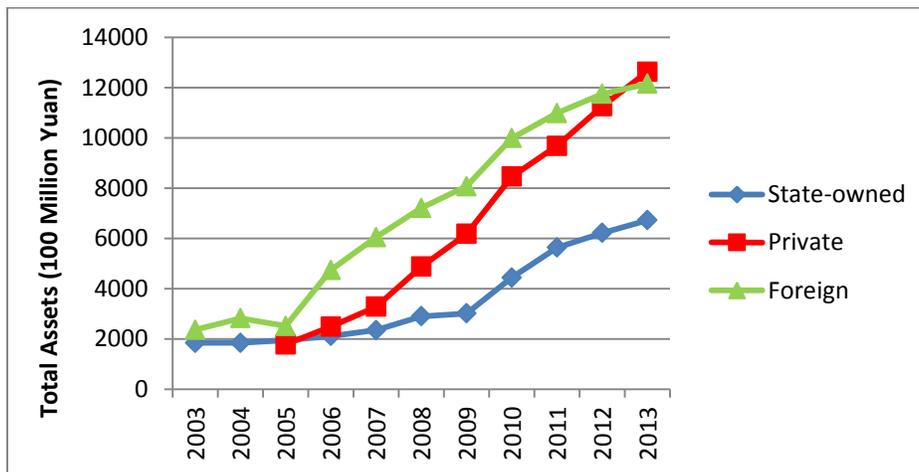
Figure 5. Value-added tax payable in textile industry



Source: Chinese Statistical Yearbook 2004-2014

Electronic Machinery: According to figure 6, all companies had more or less same amount of total assets between 2003 and 2005. After 2005 foreign companies have higher total assets compare to two other type of companies except 2012. State-owned companies same with textile industries has the lowest total assets. Small size of companies in electronic machinery industry which is assumed based on above mentioned definition is the main reason for low investment of state-owned companies in this industry.

Figure 6. Total Assets in Electronic Machinery

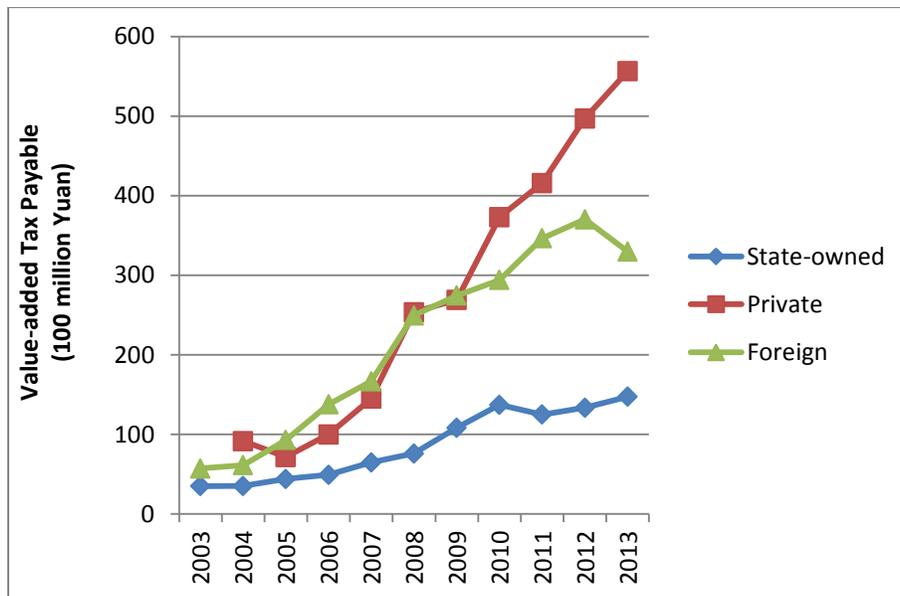


Source: Chinese Statistical Yearbook 2004-2013

Like textile industry state-owned companies have the weakest performance which is related to amount of their total assets. However, foreign companies had similar performance compare to private companies until 2009. In 2009, private companies have been catch foreign firms and show better performance (see figure 7). Global financial crisis that led to reduction in demand as well as investment in foreign firms all around the world may be a reason behind weak performance of foreign firms after 2009.

Although technology spillover in machinery industry was higher than textile industry but as it showed these effects were not meaningful due to close performance of private and foreign companies. However, presence of foreign firms encouraged private firms to increase their investment and improve their machineries based on sharp rise in total assets of private firms.

Figure 7. Value-added tax payable in Electronic Machinery



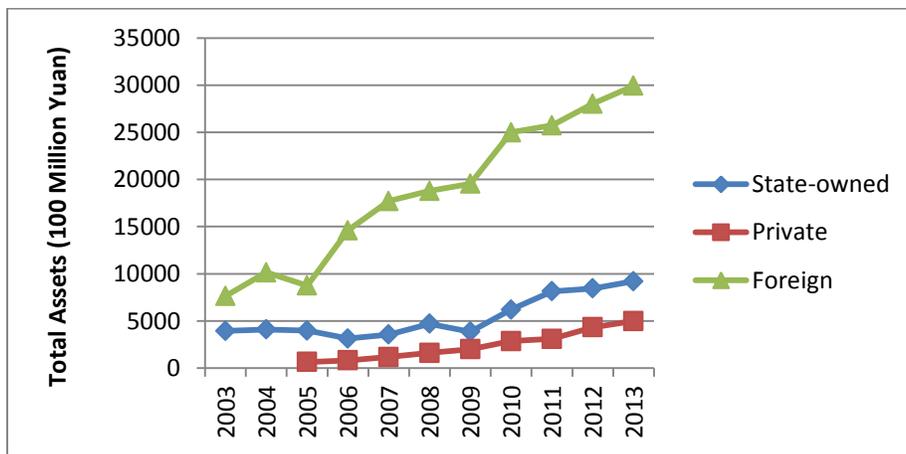
Source: Chinese Statistical Yearbook 2004-2014

Communication equipment, Computers and Other Electronic Equipment: is the industry with highest value-added which Chinese government put a lot of emphasize on improving its innovation and technological level. Based on definition of this industry and figures 8 and 9, we can see that foreign companies have the highest total assets as well as the best performance.

Unlike other two industries, state-owned companies has higher assets and better performance compare to private companies which shows that Chinese government prefer to invest in high tech industries which have higher value-added and can benefit from technology transfer.

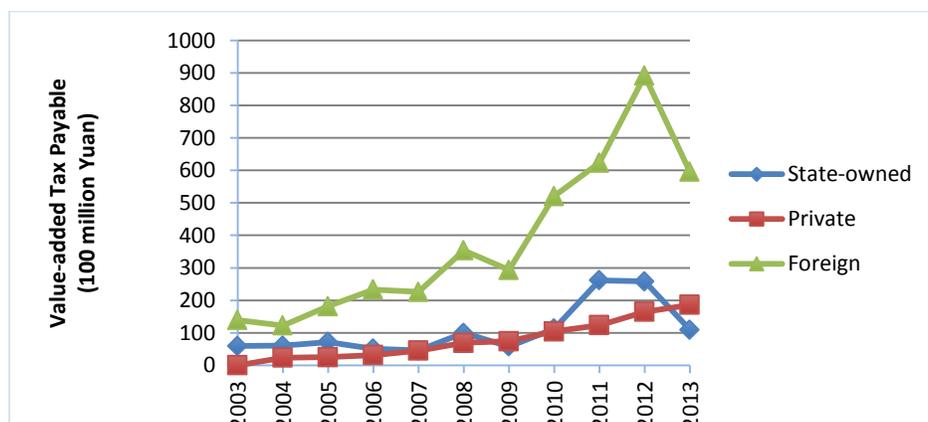
However, the gap between foreign and local firms increase more and more during our time period, despite strong support of government for domestic firms, shows that foreign firms use better technology and more skilled workers in this industry. Furthermore, this widening gap indicates that technology spillover is not significant in electronic equipment industry.

Figure 8. Total Assets in Communication equipment, Computers and Other Electronic Equipment



Source: Chinese Statistical Yearbook 2004-2014

Figure 9. Value-added tax payable in Communication equipment, Computers and Other Electronic Equipment



Source: Chinese Statistical Yearbook 2004-2014

With looking at the share of value-added of these industries to total value-added of manufacturing sector, it can be argued that despite value-added differences among three industries, based on their value-added categories, the difference in China is not high as it should be. Table 1 shows the difference in value-added, their growth rate and their share to total value-added.

Table 1. Value-added, growth rate and share to total value-added

| Year | Textile | | | Electronic Machinery | | | Electronic Equipment | | |
|------|-------------|---------------|------------------------------|----------------------|---------------|------------------------------|----------------------|---------------|------------------------------|
| | Value-added | Growth rate % | Share of total value-added % | Value-added | Growth rate % | Share of total value-added % | Value-added | Growth rate % | Share of total value-added % |
| 2004 | 217.62 | n.a | 3.40 | 238.12 | n.a | 3.72 | 216.18 | n.a | 3.38 |
| 2005 | 316.51 | 45.4 | 3.71 | 316.62 | 32.97 | 3.72 | 315.23 | 45.82 | 3.70 |
| 2006 | 381.77 | 20.6 | 3.57 | 426.09 | 34.57 | 3.98 | 410.52 | 30.23 | 3.83 |
| 2007 | 469.04 | 22.9 | 3.44 | 553.72 | 29.95 | 4.06 | 430.42 | 4.85 | 3.15 |
| 2008 | 606.07 | 29.2 | 3.43 | 618.95 | 11.78 | 3.50 | 846 | 96.55 | 4.78 |
| 2009 | 573.28 | -5.4 | 3.28 | 914.16 | 47.70 | 5.23 | 577.8 | -31.70 | 3.30 |
| 2010 | 720.78 | 25.7 | 3.21 | 1125.4 | 23.11 | 5.01 | 900.91 | 55.92 | 4.01 |
| 2011 | 814.14 | 13.0 | 3.10 | 1268.2 | 12.69 | 4.82 | 1326.1 | 47.20 | 5.04 |
| 2012 | 828.16 | 1.7 | 2.80 | 1462.2 | 15.30 | 4.95 | 1562.4 | 17.82 | 5.28 |
| 2013 | 892.34 | 7.7 | 2.96 | 1513.2 | 3.48 | 5.02 | 1163.2 | -25.55 | 3.86 |

Source: China Statistical Yearbook 2004-2014, growth rate and share of total value-added calculated by author

The average of share of total value-added of textile, electronic machinery and electronic equipment for our time period are 3.29, 4.2 and 4.03 percent which illustrates the low level of value-added in electronic machinery and electronic equipment industries. For having more precise analyze, I also looked at the ratio of total profit to total industrial costs to see whether these small differences are related to level of production or it just reflexes the value-added of these industries.

Table 2 shows the ratio of total profit to total industrial costs for these three industries as well as the whole manufacturing sector. With looking at this indicator it can be seen that textile industry had better performance compare to electronic equipment industry. In addition, all three industries had weaker performance compare to total manufacturing sector.

Table 2. Ratio of Total Profit to Total Industrial Costs

| Ratio of Total Profit to Total Industrial Costs (Percent) | | | | |
|--|----------------|-----------------------------|-----------------------------|--------------|
| Year | Textile | Electronic Machinery | Electronic Equipment | Total |
| 2004 | 3.09 | 5.1 | 3.99 | 6.52 |
| 2005 | 3.68 | 5.03 | 3.43 | 6.42 |
| 2006 | 3.95 | 5.03 | 3.58 | 6.74 |
| 2007 | 4.46 | 5.66 | 3.86 | 7.43 |
| 2008 | 4.74 | 6.59 | 3.71 | 6.61 |
| 2009 | 5.15 | 7.21 | 4.14 | 6.91 |
| 2010 | 6.45 | 7.94 | 5.47 | 8.31 |
| 2011 | 6.41 | 6.95 | 4.61 | 7.71 |
| 2012 | 6.24 | 6.62 | 4.71 | 7.11 |
| 2013 | 5.97 | 6.02 | 4.48 | 6.6 |
| Average | 5.01 | 6.22 | 4.20 | 7.04 |

Source: China Statistical Yearbook 2004-2014

In sum, it can be argued that in contrast with general argument of mainstream economists, which mentioned in theoretical section, FDI inflow does not lead to automatic industrial upgrading in host countries. Furthermore although Chinese government was in some extent successful in improving technology and value-added in industrial sector but this success was rather slow.

5- Conclusion

International organizations and mainstream economists widely believed that being part of GVC and/or hosting foreign companies will lead to industrial development especially in developing countries. In this regard, following Washington Consensus Policies recommended to developing countries as a best remedy for economic development. However, there are no consensus among scholars and empirical studies about automatic industrial upgrading in host countries.

In this paper, effect of FDI on China's position on GVC has been studied. Furthermore, the role of Chinese government policy (especially industrial policy), as most important precondition for positive technology spillover, in improving industrial value-added in Textile, Electronic Machinery and Electronic Equipment industries has been analyzed.

Based on finding, it can be argued that FDI did not have any significant effects on performance of Chinese companies. In addition, ambition goals which are set by Chinese government in 12th development plan and related industrial policy did not realize, at least until now.

With looking at close performance of three mentioned industries, the paper's hypothesis can be proved. China still is in middle income trap and it could not improve its technological level and Chinese companies are not successful in creating international brand.

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