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The Spillover Effect of FDI on the Manufacturing Industry in China

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Abstract

Foreign direct investment (FDI), as a form of international capital flows, plays an important role in the process of economic globalization. During recent years, the scale of FDI increased rapidly all over the world, and the multinational enterprises (MNEs) has become its main carrier. Although majority of FDI flow into the developed countries, China has become one of the most ideal destinations for global capitals year by year, especially for its manufacturing industry. So this study is going to analyze the impact of FDI on the manufacturing industry in China.

The researcher selects the positivism research philosophy and the deduction research approach to carry on this study. And the secondary quantitative data is used to conduct the descriptive study and the regression analysis.

The research result shows that both industrial and regional distributions of FDI in China are unbalanced now. Most foreign capitals are mainly concentrated in the eastern coastal areas of China, and more than half of them are invested in the manufacturing industry. FDI could promote the performance of domestic enterprises in China. In addition, the FDI from foreign developed countries has a significant and positive spillover effect for both state and non-state owned companies in China. While the FDI from Hong Kong, Macao and Taiwan is proved to have a positive spillover effect on non-state owned firms, but it has a negative spillover effect on the state owned enterprises in the manufacturing industry in China.

Key words: FDI; Spillover effect; Manufacturing industry; State owned enterprises; Non-state owned enterprises

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INTRODUCTION

(1) The Development of FDI in the World

Foreign direct investment (FDI), as a form of international capital flows, plays an important role in the process of economic globalization, and it has become the main driving force which promotes the economic development of both host countries and home countries. According to the definition of International Monetary Fund (IMF), FDI is a kind of investment behavior that the investors of one country invest their capital directly in other countries, with the purpose of production or business operations, and they would master the control power of foreign enterprises to some extent during this process. FDI is an international transfer process of the monopoly advantage from the home country (YANG, 2005) such as advanced technology, efficient management experience, well-known trademarks, better financing channels and powerful sales networks all over the world (CHEN, 2009). Multinational enterprises (MNEs), with the purpose of making good use of the local advantages in the host country, optimizing resource allocation in the worldwide range and maximizing the final profits (HE, 2003), has become the main carrier of FDI (CHEN and CHEN, 2009), which

promotes the free movement of many factors all over the world, such as capital, technology and personnel.

(2) The Development of FDI in China

Since the reform and opening up policy has been carried by the Chinese government in 1978, more and more foreign capitals began to enter the Chinese market. Because of the huge market potential, cheap labor force and abundant natural resources, China has become one of the most ideal destinations for global capitals year by year, and it attracts a large number of MNEs' attention all over the world. In particular, China joined into the WTO (World Trade Organization) in 2001, after that the Chinese government reduced the entering restrictions for foreign capitals to a large extent, so a large quantity of MNEs began to invest in China directly. Based on the survey carried by UNCTAD (2009), China is one of the top five investment destinations which are preferred by the world's largest MNEs. Among the top 500 biggest MNEs around the world, 450 of them have already invested in China in 2005, and more and more MNEs began to target the Chinese market as the key area for their future investments (HE, 2005). In 2007, China accepted $83.5 billion FDI inflows, which accounts for about 4.56% of the global total amount, and yet the annual average amount of inward FDI in China from 1990 to 2000 is only $30.1 billion (UNCTAD, 2008). So the scale of FDI inflows in China is increasing rapidly during recent years. Additionally, in 2003, China with a record FDI inflow of $53.5 billion surpassed the US for the first time and became the biggest host country in the world (UNCTAD, 2004).

In the 1980s, the FDI in China is mainly from Hong Kong. However, in the 1990s, the source of FDI in China has changed a lot. Although Hong Kong, Taiwan, Singapore and other Southeast Asian countries are still the primary investors for China, which takes nearly 50% of total amount of FDI in China (YU, 2004); many foreign investors from US, Japan and European countries began to invest in China directly, and it played a more and more momentous role for the source structure of FDI in China during the following years. Additionally, the industrial structure and the regional distribution of FDI inflows have changed obviously in China. The FDI from Hong Kong mainly focuses on the real estate sector in the 1980s, and which generally distributed in Pearl River Delta region of China (PING, 2007). In the 1990s, the range of FDI has been expanded to many other kinds of industries, which are from labor-intensive industries to technology-intensive industries and capital-intensive industries. Manufacturing industry is the most attractive industry for foreign capitals, which occupies more than 60% of the total amount of FDI in China (YU, 2004). The distribution of FDI is still unbalanced during this period, and most of them are located in the east of China.

(3) The Current Situation of China's Manufacturing Industry

The manufacturing industry in China developed rapidly during recent years, and it plays a vital role for the economic growth of China. Nearly half of the central finance income of Chinese government is contributed by the manufacturing industry (LI and YANG, 2006), and it creates a large number of job opportunities for Chinese labor force market. Moreover, the exports of manufacturing industry are the main source of foreign exchange earnings for the Chinese government (TONG and WU, 2002). Because of the low labor cost, the products manufactured in China have great price advantages in the international market, so China's manufacturing industry attracts a great deal of foreign capitals all over the world. Global market share of Chinese manufacturing industry has been increasing year by year, and more and more people around the world begin to be familiar with the brand of "Made in China". Therefore China is considered as the "world factory" due to the large scale of its manufacturing industry.

However, the structure of manufacturing industry in China is unbalanced at the present stage. The scale of labor-intensive industry is much larger than the technology-intensive industry and capital-intensive industry, which means most companies in the manufacturing industry are mainly engaged in the production of low-end consumer goods with low value-added and high pollution, but few of them are concentrated in the equipment manufacturing fields. So-called equipment manufacturing industry, which is the leading industry in the industrialized countries (LI and YANG, 2006), it contains energy industry, machine building industry, electronic industry, chemical industry, building materials industry and so on (LUO, 2009). In addition, most firms of manufacturing industry in China lack advanced technology and managerial skills, especially for the key technology, so they are excessively depended on the technology transfer from foreign companies. And most companies in the manufacturing industry belong to the SMEs (small and medium enterprises), which blocked the formation of the scale effect of China's manufacturing industry (XU, 2006).

1. LITERATURE REVIEW

1.1 The Spillover Mode of FDI on the Host Country

The spillover effect of FDI means that the inflow of foreign capitals would promote the performance of domestic companies in the host country, and the monopolistic advantage which is owned by MNEs would spill over into the host country during the process of FDI.

The spillover effect of FDI has the following modes:

The first one is competition effect (WANG and SHI. 2007). As more and more MNEs invest directly in the host countries, the competitive atmosphere in the host country is getting more and more intense. The transnational corporations make good use of their own technical advantages and the cheaper labor force and resources in the host country, and they provide a large number of products with better quality to the local customers, which reduce the market demands for the same kind of products made by domestic companies. So the domestic companies are forced to improve their production technology by learning from the MNEs. During this process, the advanced technology which is brought by foreign investors would spill over into the host country.

The next mode is demonstration effect (WU, WANG, Tseng, and WU, 2009). The multinational corporations establish subsidiaries and conduct the production and operating activities in the host country, and they bring the advanced technology, mature management skills and efficient management mode into the host country, which would set up a good sample for local firms to learn and imitate. And the operating performance of domestic enterprises would be improved during this process.

The third pattern is information effect (Young and LAN, 1997). The MNEs usually have the advanced marketing concept and extensive marketing network all over the world, which could provide a great deal of valuable marketing information around the world to host country. Thereby, it is good for domestic companies to explore the international market.

The last way is human capital flows spillover effect (JIANG, Christodoulou and WEI, 2001). Most MNEs would provide some special training subjects to the local employees to promote their working abilities. Because of the free mobile of labor force, there is a possibility that the skilled workers and senior staff members may move to the domestic enterprises, so the advanced technology and management experience would spill over into local companies during this process.

1.2 The Impact of FDI on the Technology Progress of Host Country

Based on the previous research, it is proved by many scholars around the world that the FDI would generate a positive effect to the technology progress of the host country. The technology spillover effect would exist in the process of FDI (Erdilek, 2007), which is rooted in the theory of technical diffusion (SHEN and LIU, 2007). The technology spillover effect of FDI means that multinational companies promote the technological level and productivity of the host country during the process of localization, and this phenomenon is caused by the involuntary technical diffusion of transactional companies, which makes them not eligible to obtain the full investment benefits (LI and LI, 2007). The technology spillover effect of FDI is divided into two aspects: one is horizontal effect, and the other is vertical effect (Markusen and Venable, 1999).

1.2.1 Horizontal Technology Spillover Effect

With the purpose of enlarging the international market share under the competitive environment, MNEs have more motivations and pressures to conduct the technical innovation compared with SMs (FENG, 2007). The advanced technological know-how would spill over to the host country during the process of FDI. The horizontal effect refers to that the entry of transnational corporations would promote the advanced technique to spill over into the domestic companies in the same industry (WANG, 2008). The main channels for the horizontal spillover effect are as follows:

First is competition effect. The MNEs with advanced production technology, abundant capital and rich management experiences enter the host country's market, which brings great competitive pressure for the local firms. The foreign companies have obvious advantages compared with the domestic firms, so they would enlarge the market share in the host country and gain more benefits. On the contrary, the local companies with low level of manufacturing technique and production efficiency would be in the poor position in the competition. Thereby, under this competitive pressure, the domestic firms are forced to accelerate the speed of technology innovation and increase productivity to maintain their market share (CHEN and CHEN, 2009). Additionally, for some monopoly industries, the influx of foreign capitals breaks the original equilibrium of the domestic market and optimizes the allocation of resources, which is good for the technology spillover and absorption (WU and HUANG, 2007).

The second one is demonstration-imitation effect. The FDI of transactional corporations set up a good sample for local companies, while the domestic companies that struggle to maintain the market share would observe and learn the advanced technology, efficient managerial skill, operating model and marketing skills from the foreign funded companies (QIU, YANG and XIN, 2008). Therefore, the technological level and competitiveness of local companies are improved during this demonstration and imitation process (Hartungi, 2006).

The next is training effect. In order to reduce the operating cost and understand the local culture better, the MNEs usually employ a large number of employees in the host country (ZHAO and XUE, 2006). They provide many kinds of professional training projects and courses to their employees to improve their working capabilities. However, the skilled workers and senior managers who are trained by foreign companies may be switched to local companies, which would greatly improve the competitiveness of local companies and enhance the technology spillover effect (CHEN and CHEN, 2009).

The last one is the internalization of research and development. With the increasingly development of economic globalization, more and more MNEs began to transfer the R&D departments from the home country to the host country. It is another effective form of technology spillover, especially for the core technology. According to the research of Feng (2007), the main channels of the globalization of R&D are establishing new overseas R&D institutions, technology outsourcing, building the strategically technology alliance with local companies and setting up the virtual R&D organizations.

1.2.2 Vertical Technology Spillover Effect

Based on the research of Markusen and Venable (1999), vertical technology spillover effect means that the FDI of MNEs would promote the technological capability of other related industries in the host country. Because the foreign companies have absolute advantages on technology and information, so the advanced technology will inevitably spill from the oversea subsidiaries to the related upstream and downstream industries in the host country. As a result, there is a "free-rider" effect for the local firms (JIANG, 2009). The vertical technology spillover effect contains two aspects: the one is forward linkage effect, and the other is backward linkage effect.

On the one hand, transnational corporations need to buy the raw materials, semi-productions and components which are produced by the local companies, so there is a backward linkage relationship between the subsidiaries of MNEs and the suppers in the upstream industries of the host country (LI, 2007). In order to satisfy the quality requirements of MNEs, the local companies would strive to improve their technical level. At the same time, the foreign companies would provide some training programs to the local suppers to help them improve technical capabilities and operating skills (XU, 2009). Therefore, the valuable technology would spill to local companies during this process. Additionally, due to the backward linkage effect, MNEs bring a great deal of demands to the local suppliers, which would promote the development of upstream industries in the host country (WANG, 2008).

On the other hand, the local companies in the downstream industries would provide many services for the products made by the subsidiaries of MNEs, such as package, sale and maintenance (FENG, 2007). And some products with better quality which are produced by foreign companies may become the intermediate products for the domestic firms in the downstream industry (CHEN and CHEN, 2009), which greatly improves the quality of final products of domestic firms. So there is a forward linkage relationship between them, and the technology spillover effect is existed in this process.

1.2.3 The Extent of Technology Spillover

The FDI of MNEs brings technology spillover effect to the local companies in the host country. However, what extent to which the technology spillovers from foreign companies to the host country? It depends on many factors.

The technology gap between foreign-funded companies and domestic companies plays a staple role for the extent of technology spillover effect. Yan (2005) presents that the technology spillover effect would be more obvious for the industries with larger technology gap between foreign and domestic companies. But some scholars obtain the opposite result through the regression analysis, especially for the developing countries, because the absorption capability for the advanced technology is a significant factor for the technology spillover effect (CHEN and CHEN, 2009). Additionally, if the industry where the multinational corporation in has closer relationship with the upstream and downstream industries, the technology spillover effect would be more evident during the process of FDI (FENG, 2007). Javorcik (2004) studied the situation in Lithuania, and made a conclusion that the vertical technology spillover effect is more obvious than the horizontal effect, especially for the backward linkage effect.

2. METHODOLOGY

2.1 Research Method

The previous research about the spillover effect of FDI is usually to establish a series of empirical regression models to analyze the correlation of the relative variables, such as the performance of domestic funded enterprises, the inputs of foreign capitals and other relative factors. This study is generally following the research method which was used by Buckley, Clegg and Wang (2004), and that method was also utilized by Wang, Zhang and Xu (2006). Actually, it expands the Cobb-Douglas production function and adds into several relative controlling factors to obtain a new regression model.

In order to reduce the volatility of the model, we finally use the following logarithmic-linear form:

$$Log(Y_i) = \beta_0 + \beta_1 Log\,(M_i) + \beta_2 Log(Size_i) + \beta_3 Log(L_i) + \beta_4 Log(K_i) + \beta_5 Log(Fh_i) + \beta_6 Log(Fwest_i) + \varepsilon_i \quad (1)$$

Where:

Y_i --- The annual added value of domestic funded enterprises within the industry.

M_i --- The per capita management cost of the domestic funded enterprises within the industry.

$Size_i$ --- The average total assets per company.

L_i --- The total number of employees of internal capital firms within the industry.

K_i --- The capital inputs of domestic funded enterprises.

Fh_i --- The investment shares which are from Hong Kong, Macao and Taiwan within the industry.

$Fwest_i$ --- The investment shares from foreign countries within the industry.

ε_i --- The remainder stochastic disturbance term.

In equation (1), the subscript "i" means the index of

different detailed industries within the manufacturing industry. FDI is considered as an external factor in this regression model. So there is an assumption that the performance of domestic funded companies (represented by the amount of added value) is the function of FDI and some other relative factors.

According to the Chinese actual situation, the FDI in China is mainly from two channels: one is from Hong Kong, Macao and Taiwan, and the other is from foreign countries, such as the US, EU countries and Japan. The former is mainly focus on the labor-intensive industries, and the latter is primarily concentrated in the capital-intensive industries. The investment from Hong Kong, Macao and Taiwan is basically carried by Chinese, so they are quite familiar with the traditional culture and the local environment in mainland China, and the technology they brought in belongs to the appropriate technology, which is standard and mature (ZHANG and Yuk, 1998). However, the investment from foreign developed countries brings a great deal of relative advanced technology to China, which is much higher than the average technological level in China (LI, Lam and FU, 2000). Because the characteristics of these two kinds of FDI is quite different, so this study considers them as two separate variables, which are represented by "Fh_i" and "$Fwest_i$", and to examine the spillover effects of these two types of FDI on the manufacturing industry in China.

Additionally, the rest of variables (M_i, $Size_i$, L_i and K_i) in equation (1) reflect other relative factors which would affect the performance of the domestic funded companies in the manufacturing industry, and the use of these control variables plays an important role for taking a more accurate determination about the correlation between the FDI (both Fh_i and $Fwest_i$) and the added value of domestic funded companies within industries. The statistical criterion of the variables in equation (1) is domestic capitals except for "Fh_i" and "$Fwest_i$". And that would reduce the deviation which is caused by that most MNEs tend to invest in the industries with high production rate during the process of estimation for the spillover effect of FDI. If there is a positive correlation between the input of FDI and the performance of domestic funded enterprises, which means FDI has a positive spillover effect for domestic funded enterprises in China. Vice versa, if a negative correlation is existed between these two factors, it is proved that the foreign capitals have a negative spillover effect for domestic companies. In another words, the entering of foreign owned enterprises would generate a negative influence on the performance of domestic companies.

2.2 Data

This research uses the latest cross section data to analyze the spillover effect of FDI for the domestic funded firms in the manufacturing industry. And the data is mainly from the <2010 China Industry Economy Statistical Yearbook>, which reflects the economic statistical results in 2009 in China. And this study chooses 34 detailed industries within the manufacturing industry in China and 238 observations to conduct this regression analysis. Because not all the fields of manufacturing industry in China are open to foreign investors, such as the tobacco industry. So in order to reduce interference for the finial result, this research eliminates this kind of industries and finally chooses the 34 typical manufacturing industries as the research objective.

This research chooses the Ordinary least squares (OLS) to do the data analysis, but the data we used belongs to cross-industry data, and all the large scale companies and the small and medium enterprises are mixed together, so the heteroscedasticity problem may be existed during this process. Actually, the result of White test has proved the extensive existence of heteroscedasticity in this model. Thereby, a readjustment process for the entire variance-covariance matrix within this sample is being carried out based on White method (1980). And the final outcome shows that equation (1) is a proper model (the significance is below 5%).

2.3 Research Hypothesis

Based on the previous research, several research hypotheses are designed in this study. And this regression model is to be used to test whether the following hypotheses are true.

H1: The spillover effect arising from the investment of foreign countries is greater than that from Hong Kong, Macro and Taiwan.

H2: FDI (both Fh_i and $Fwest_i$) have positive spillover effects for state owned companies in the manufacturing industry in China.

H3: FDI (both Fh_i and $Fwest_i$) generate positive spillover effect on the non-state owned enterprises in the manufacturing industry in China.

3. THE SPILLOVER EFFECT OF FDI ON THE MANUFACTURING INDUSTRY IN CHINA

Table 1 shows the general situation of the spillover effect of FDI on the domestic funded enterprises. Adjusted R-squared stands for the goodness of fit statistics of the regression model, which is used to measure the extent that the regression model fits the data. Based on the results shown in Table 1, the value of adjusted R-squared in this test is 0.950893, which means this model has a strong power to explain the changes of dependent variables (Y_i). Additionally, the value of F-statistic of this model is 107.5005, and its significance level close to zero, which is far less than the normal level of 5%. So it is proved that this model could reflect the real relationship between the performance of domestic funded enterprises, FDI and

several other relative variables to a large extent.

Table 1
The Spillover Effect of FDI on the Whole Manufacturing Industry in China

Variable	Coefficient	t-Statistic	Prob.
C	1.238707	33.36562	0.0000
Log (M)	0.016584	5.517836	0.0000
Log (Size)	0.001713	2.286508	0.0303
Log (L)	0.066716	6.504195	0.0000
Log (K)	0.058623	6.991761	0.0000
Log (Fh)	0.009921	1.145745	0.0620
Log (Fwest)	0.012148	1.381435	0.0185
R - squared		0.959822	
Adjusted R - squared		0.950893	
F - statistic		107.5005	
Prob (F - statistic)		0.000000	

According to Table 1, it is clear that the coefficient of both "Fh" and "Fwest" are positive and statistically significant. So it means that the existence of FDI promotes the performance of domestic funded enterprises in the manufacturing industry in China. In another words, the FDI, both from Hong Kong, Macao, Taiwan and other developed foreign countries, brings the positive spillover effect for domestic companies. Because the investments from MNEs bring advanced technology and mature management skills into home country, which would spill over into the domestic funded enterprises through the competitive effect, the demonstration effect, the information effect and the spillover effects of human capital flows.

As presented in Table 1, the coefficients of "Fh" and "Fwest" are 0.009921 and 0.012148, with the significance under 10% (0.0620) and 5% (0.0185). And it means that if the investment shares from Hong Kong, Macao and Taiwan increases 1%, the average annual added value of the domestic funded enterprises would increase about 0.99%. Similarly, when the investment shares from foreign countries rising by 1%, the added value of internal companies would rise by 1.21%. From the coefficient point of view, the positive spillover effect of FDI which is from foreign countries is slightly greater than that from Hong Kong, Macro and Taiwan. So it is clear that the first hypothesis (H1) is proved to be correct. That may be caused by several reasons. Firstly, the MNEs from foreign developed countries bring more advanced technology into the Chinese market compared with the investors from Hong Kong, Macao and Taiwan, which make their products have more technical advantages and greater competiveness in the Chinese market, and it becomes a greater threat to domestic funded enterprises. However, it also stimulates the domestic enterprises to learn from foreign companies and to improve their production technology. Secondly, compared with the investors from Hong Kong, Macao and Taiwan, the MNEs from foreign developed countries usually have more powerful capabilities to provide a range of staff trainings in China, and the free mobile of staff between foreign and domestic companies would improve the performance of domestic funded enterprises and enhance the spillover effect of FDI. Thirdly, the foreign investors from developed countries usually have larger marketing network all over the world, and it also provides more business information to domestic firms, which is good for promoting the operating performance of domestic funded enterprises in China.

Additionally, Table 1 also displays that the coefficients of "M", "Size", "L" and "K" are all positive and significant. So it means that the management cost, total assets, number of employees and capital inputs of domestic companies also play an important role on the progress of operating performance of domestic funded enterprises in the manufacturing industry in China.

3.1 The Spillover Effect of FDI on the State Owned Enterprises in the Manufacturing Industry in China

The domestic funded enterprises in China are generally divided into two classes: one is stated owned companies, and the other is non-stated owned companies. The ownership structure of these two kinds of enterprises is different, which may lead to the different spillover effects of FDI.

Table 2
The Spillover Effect of FDI on the State Owned Enterprises in the Manufacturing Industry in China

Variable	Coefficient	t-Statistic	Prob.
C	-2.732606	-3.917094	0.0006
Log (M)	0.127550	3.450149	0.0019
Log (Size)	0.024970	2.239657	0.0335
Log (L)	-0.375783	-1.702033	0.1002
Log (K)	1.569517	7.791079	0.0000
Log (Fh)	-0.610584	-4.142140	0.0003
Log (Fwest)	0.408672	2.621747	0.0142
R - squared		0.918543	
Adjusted R - squared		0.900442	
F - statistic		50.74391	
Prob (F - statistic)		0.000000	

Equation (1) is used again to test the correlation between the performance of state owned enterprises in the manufacturing industry in China and the FDI from Hong Kong, Macao, Taiwan and foreign developed countries. Table 2 illustrates the regression results that the value of adjusted R-squared in this model is 0.900442, which implies this empirical model could explain about 90% changes of the dependent variables (Yi). Moreover, the magnitude of F-statistic is 50.74391, and its significance is closing to zero. So it is clear that equation (1) is overall fitting the data, which could reflect the real relationship between dependent variables and these relative independent variables.

Based on Table 2, the coefficient of "$Fwest_i$" is 0.408672, and its significance level is 0.0142, which is far less than the normal significance level of 5%. So it

means that the FDI from foreign developed countries has a positive spillover effect on the performance of stated owned enterprises in the manufacturing industry in China. If the share of investment from foreign developed countries increased 1%, the average annual added value of state owned enterprises in China would increase 40.87%. So the FDI from foreign countries is improved to be a very important factor for the improvement of state owned companies, and the spillover effect of FDI is significant during this process. This phenomenon is mainly caused by the following reasons. The foreign capitals from developed countries mainly concentrated in the capital-intensive industries, and most enterprises in these industries belong to the state-owned or state-owned holding companies. So the state owned enterprises in the manufacturing industry received the majority of FDI which is from developed countries, and they have more opportunities to learn from foreign companies, not only the advanced technology but also the mature management skills and marketing network. Additionally, many state-owned enterprises have abundant capital and relatively advanced production equipments, and they also have more high-quality employees, which enhances their ability to absorb new technologies.

However, Table 2 suggests that the coefficient of "Fh_i" in this model is -0.610584, with the significance level of 0.0003, which implies that the FDI from Hong Kong, Macao and Taiwan has a negative spillover effect on the performance of state owned enterprises in China. This result proves that the second assumption (H2) in this empirical research is false. Why we would obtain this outcome? On one hand, the FDI from Hong Kong, Macao and Taiwan mainly focus on the labor-intensive industries, with the purpose of making good use of the cheap labor force and raw materials in China, and the companies in this kind of industries usually belong to the non-state owned small and medium enterprises (SMEs). So there is little direct spillover effect of FDI from Hong Kong, Macao and Taiwan for the state owned enterprises. On the other hand, the technology which is brought by Hong Kong, Macao and Taiwan investors mostly belongs to the standardization technology, which may be not higher than the technical level of state owned enterprises, there is nearly no indirect spillover effect during this process.

In addition, Table 2 also states that the variables of "M", "Size" and "K" all have positive coefficients, which means the management cost factor, total assets factor and capital inputs factor play a positive role for the performance of state owned enterprises in the manufacturing industry in China. Yet, the amount of labor force has a negative correlation with the average added value of state owned companies (shown as Table 2). That reflects the truth that most state owned companies in China belong to capital-intensive industry, and their output growth primarily depends on the increasing inputs of the capital and technology factors, rather than the quantity of labor.

3.2 The Spillover Effect of FDI on the Non-state Owned Enterprises in the Manufacturing Industry in China

Table 3 describes the regression outcome with reference to the spillover effect of FDI on the non-state owned enterprises in the China. The researcher uses the same regression model to test whether or not the data from non-state owned companies in the manufacturing industry in China is corresponding to the relationship which is obtained from the previous two tests. The results from Table 3 show that the value of adjust R-squared in this test is 0.884228, and this figure is high enough for the sample with cross section data. And it proves that this model could basically explain the reasons which affect the fluctuation of the performance of non-state owned companies. Moreover, the value of F-statistic is 43.00697, and its significance level is closing to zero, which illustrates this model is generally fitting for the data.

Table 3
The Spillover Effect of FDI on the Non-state Owned Enterprises in the Manufacturing Industry in China

Variable	Coefficient	t-Statistic	Prob.
C	-0.594719	-1.125959	0.2701
Log (M)	-0.800560	-2.180874	0.0381
Log (Size)	-0.789871	-4.051478	0.0004
Log (L)	0.296646	1.503979	0.1442
Log (K)	1.282256	7.502247	0.0000
Log (Fh)	0.465411	4.183604	0.0003
Log (Fwest)	0.445857	3.081667	0.0047
R - squared		0.905277	
Adjusted R - squared		0.884228	
F - statistic		43.00697	
Prob (F - statistic)		0.000000	

Table 3 indicates that the coefficients of "Fh_i" and "$Fwest_i$" in this regression model are 0.465411 and 0.445857, and their significance levels are 0.0003 and 0.0047, where both of them are far less than the normal significance level of 5%. So it signifies that whenever the portion of FDI from Hong Kong, Macao and Taiwan increases 1%, the average added value of non-state owned enterprises in the manufacturing in China would increase about 46.54%. In a similar way, if the shares of investment from foreign countries raise 1%, the added value of non-state owned companies would aggrandize approximate 44.59%. So it circumstantiates that the third postulation (H3) is correct, that the investments, whether from Hong Kong, Macao and Taiwan or from foreign developed countries, have significant and positive spillover effects for the non-state owned companies. And the extent of these two spillover effects is nearly the same.

So far as we know, a large number of non-state owned enterprises in China appertain to SMNs, so the small operating scales make them have more flexible mechanism to suit for the competitive environment which is caused by the entering of MNEs all over the world. And the non-state owned companies' operating strategies are market-

oriented, which makes them have more learning intention to improve their operating performance during the competition process, and it also leads to strong digestions and absorption abilities of non-state owned firms for the advanced technology and operating skill. That is why the spillover effect of FDI is so significant on the performance of non-state owned enterprises in China.

According to Table 3, the controlling variables "L" and "K" have positive coefficients although the significance of "L" is only on the 15% level (0.1442), it could still reflect the overall trend that the amount of labor force and capital inputs would improve the outstanding achievement of non-state enterprises. However, the course of exchange ratio of "M" and "Size" are demonstrated to be negative and significant, which connotes that the increase of management cost and total assets has negative impact for the average add value of non-state owned companies.

CONCLUSION

The researcher establishes a regression model (equation 1) to conduct an empirical research on the relationship among the performance of domestic funded enterprises (No matter the state or non-state owned companies), the FDI from Hong Kong, Macao, Taiwan and foreign developed countries, and other relative controlling variables. Finally, we find that all variables in equation (1) are significantly linear correlation, and the FDI is an important factor which could improve the overall performance of domestic funded enterprises in the manufacturing industry in China. The outcome of this regression analysis suggests that the FDI from foreign developed countries has a greater positive spillover effect for domestic companies compared with the investment from Hong Kong, Macao and Taiwan. Additionally, the foreign capitals from developed countries play a positive role for the performance of both state and non-state owned companies in China. While the FDI from Hong Kong, Macao and Taiwan has a positive spillover effect on non-state owned firms, but it has a negative spillover effect for the state owned enterprises in China. Moreover, the regression results also displays that the capital inputs of domestic funded enterprises play an important role of improving the performance of both state and non-state owned companies, because this variable always has a positive and significant coefficient in this empirical model.

RECOMMENDATIONS

At the end of this research, the researcher provides the following recommendations for the Chinese government, which could help China to take full advantage of FDI.

Firstly, The Chinese government should continue to focus on attracting foreign investments as much as possible in the following years. Because the result of this research proves that the FDI would have positive spillover effect for domestic enterprises, so the government should make adopt policy and improve the investment environment to attract the foreign investors. As the increasing inflows of foreign capital, a great deal of human capitals, advanced technology, customer resources and operating skills would be brought into China, which would improve the technical level of domestic companies.

Secondly, the government has to make proper policies to encourage more and more foreign investors to invest in the middle and western regions of China, which could adjust the current situation of the unbalanced distribution of FDI in China. In order to achieve this goal, the government should increase the budget for the infrastructure construction in the western region of China to improve the investment environment, and to attract more and more attentions of foreign investors.

Thirdly, Chinese government should increase the research and development expenditures to promote the technical level of domestic enterprises, so that would improve domestic enterprises' absorption ability for the foreign advanced technology. Because this research finds out that the domestic technical level in the home country is a very important factor for the spillover effect of FDI. The higher the level of technology in the home country, the stronger the ability to absorb the new technology; and the spillover effect is more significant.

Fourthly, the government should also take some actions to enlarge the proportion of FDI which is from foreign developed countries, as that is proved to have greater spillover effect for domestic companies compared with the FDI from Hong Kong, Macao and Taiwan. Because, most investors from foreign developed countries belong to MNEs, they would bring more advanced technology and operating skills to China, which provides greater motivation for domestic companies to learn from them.

Last but not least, Chinese government should develop appropriate policies to enhance the industrial contacts between foreign investors and domestic enterprises, which is good for improving the spillover effect of FDI in China. Additionally, increasing salary of employees would attract many valuable employees from foreign companies, and the mobile labor force between domestic enterprises and foreign companies would enhance the spillover effect of FDI.

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