

The impact of foreign banks penetration on emerging markets banking system: evidence from China

Master Thesis

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1. INTRODUCTION

With the wave of financial liberalization, many emerging countries have successively relaxed the conditions of financial regulation and progressively realize the opening up of financial market. The opening up of banking sector, as an important part for financial liberation, is likely to have an extremely great impact to host country's banking sector and even to host country's whole financial system. The introduction of foreign banks will have great significance to the financial industry of China which is in the period of reforming market structure and the structure of property rights. The establishment of a representative office of Japan Export-Import Bank in Beijing in 1979 opened the prelude of China's banking industry's opening up. The opening up is expanding rapidly in particular after China's accession to the WTO. In this case, to analysis and evaluate the impact of penetration of foreign banks to the performance of Chinese banks will have a great meaning to optimize of China's financial market structure and enhance the market competitiveness of Chinese banks.

To conduct in-depth study of the impact of foreign banks penetration on China markets banking system, This paper will concentrate on the following several points to introduce the conceptual framework of this study: firstly, the current state of foreign bank presence and secondly, the impact of foreign banks entry.

In the first part, I am going to study two problems: why do foreign banks choose to penetrate to China and foreign banks penetration process and their FDI activities in China. The highlight here is a model generated to inspect the impact of three categories of independent variables on FDI inflows of China. In the second part, three pieces will be generated: the cost and benefit of foreign banks entry followed with a model presented to investigate whether spillover effects or competition effects are going to be the leader -whether the positive or negative effects dominate.

The test results are almost consistent with the envisaged. In the first model, among all the variables, FDI in non-banking system, Trade, Openness, Margin, GDP per capita and Volatility of exchange rate all show significant impact to FDI inflows in China's banking system. In the second model, foreign number, foreign share, the ratio of equity to total asset and the ratio of loan to asset are greatly affect the profitability of China's domestic banks while all the variables used in the model have definite impact on the second depend variable-overhead cost.

2. BACKGROUND

2.1 Review of related literature

2.1.1 Related researches in emerging countries

Since the 1990s, more and more emerging markets have opened up to the foreign banks and the presence of foreign banks in emerging economies has significantly risen in this period. This trend has received much attention. Many studies have focused on the foreign banks entry in emerging markets. Cho (1990) discovered that foreign banks in Indonesia helps to increase the competition in the country; Denizler (2000) analyzed the impact of foreign banks on Turkish banking sector, the results of his empirical test showed that after the penetration of foreign banks, local

banks' net interest margins, return on asset and indirect costs have declined. This result supports the opinion that the entry of foreign banks could exert competitive pressure to domestic capital banks. Barajas et al. (2000) used the individual financial data on foreign banks from 1985 to 1998 of Colombia and found the more intense competition would definitely decrease the spread of local banks.

The penetration of foreign banks had some connection with the deterioration of loan quality of domestic banks. Moreover, the penetration also greatly increased the operating costs. Unite and Sullivan (2003) used the data from 16 commercial banks which are exchange-listed in Philippines to study the react of domestic banks after relaxing the control of foreign banks, they found the phenomenon of reducing profits and spread only occurred in banks which have subsidiary relationship with family business. In these banks, the penetration could improve the operating efficiency and management while reduce the dependence on relationship lending of domestic banks.

Clarke, Cull, D'Amato and Molinari (1999) studied the period of mid-1990s when the foreign banks poured into Argentina market, the findings of this study showed foreign banks trended to enter areas with comparative advantage and caused pressure to domestic banks. Traditionally, foreign banks in Argentina provide a large number of loans to manufacturing industry, domestic banks whose main business is concentrated in this field trend to have lower net interest margin and profit before tax. In Clarke, Cull, D'Amato and Molinari (1999), there is another point that for the domestic banking business field where foreign banks have not get involved, such as consumer loans, local banks could perform better. Apart from these, how the banking system and in particular the finance market in China will react to the gradual openness of China's banking system and whether they will be able to support the phenomenon and how they will adapt to this presence has been carried out and caused great discussion (Chiarlone and Amighini 2007; Lemoine 2005; Rampini 2006).

2.1.2 Literature regarding drivers for foreign banks to penetrate

The study of Lindgren, Balino, Enoch, Gulde, Quintyn and Teo (2000) illustrated that after the East Asian crisis, barriers for foreign banks entry have reduced. Because of the trend of internationalization and globalization, foreign banks are fueled to expand abroad to capture larger market share and develop new business field in host countries. For example, in China, according to the statistic from China Banking Regulatory Commission (CBRC), the overall market share of foreign banks increased from 1.7% in 2009 to 1.83% in 2010. Furthermore, during the ten years after accessing to WTO, the average annual compound growth rate of foreign bank assets was 19% and the annual growth rate of profit reached 26%.

Some earlier researches like Clarke, Cull, Martí'nez Peri'a, and Sanchez (2003) explored the drivers for multination and showed that compared with smaller banks, larger ones are more likely to expand. Moreover, this study also demonstrated that regulations on foreign bank entry may decrease the incentives for banks to enter foreign countries. Another research- Bertus, Janera and Yost (2008) also presented foreign banks penetration is less in countries which have more discipline and regulation in domestic market. Apart from this, Focarelli and Pozzolo (2005) found banks are more likely to enter foreign countries which are suffering from the inefficiencies of domestic banks and have higher expected increase in economy. Combined with the national condition in China, since banks' main source of interest comes from the deposit and loan spreads, the four biggest stated-owned commercial banks have

accumulated a large number of non-performing loans which are unable to insolvent. This vision is also verified by Garc ía-Herrero, Gavil á Santab ábara (2009) and Lin and Zhang (2009) in which showed a not surprising fact that the biggest five state-owned commercial banks in China have been the least profitable ones in China's bank system. Xi and Zen (2003) used overall economies of scale as an indicator to reflect the relationship between banks' operation scale and its cost. The study concluded a disputable fact that the four biggest state-owned banks do not have economies of scale. These results are not surprising, not only because it is similar with the foreign research results, but also for it is broadly similar to the assumptions made by many Chinese native scholars.

2.1.3 Literature regarding the impact of foreign banks penetration

Claessens, Stijn, Asli Demirguc-Kunt and Harry Huizinga (2001) studied the influence of foreign banks to local markets from based on the empirically investigate. The study employed a great volume of data gained from BankScope, consisting of more than 80 developing and less developed countries from the period of 1988 to 1995. Based on this data set, they concentrated on the foreign banks double-sided impact. On one hand, the foreign banks penetration decreases the profits, incomes and income of local banks. On the other hand, the local banks gain efficiency through more intense competition and more complete functions. Since this study, the comparison between the benefit and the cost of foreign banks entry has received much more attention. Some studies such as Wu, Hsiu-Ling, Chien-Hsun Chen and Mei-Hsuan Lin (2007) found the foreign bank penetration reduces the profitability of Chinese banks, but others hold the opposite view (Ma, 2007). Moreover, Laurenceson and Qin (2008) found no positive improvement by emphasizing bank cost efficiency. From the research of Lensink & Hermes (2004), there is a quite different saying. They believed the effect of foreign banks penetration depends on the level of economic development in the host country. After introducing the variable - the level of economic development, the research showed higher cost and spreads in developing countries, but there was no similar phenomenon in developed countries where the cost and spread declined at the same time or there is no obvious relationship within these variables at all. Apart from these, Niels Hermes and Robert Lensink (2001) found an U-shaped relationship between local banks performance and foreign banks presence, showing only when the presence of foreign banks arrived at a certain minimum level can the local banks feel the threaten of competition and lack of efficiency.

In the paper Shen and Wang (2001), interest rate and the amount of banks are used as theoretical basis to study the degree of openness of the host country's banking system and combine the degree openness with the status quo of China's banking system to analysis the motivating and protection factors of banking sector openness. They concluded from the study of the expected effects from both positive and negative side, the time is ripe for the China's banking system to open and the benefit out weights the cost if open. Guo and Zhang (2005) studied the China's commercial banks earning capability, operating level and the ability the resist risk from the base of Claessens, Stijn, Asli Demirguc-Kunt and Harry Huizinga (2001). They found the influence of foreign banks is not significant in the early 1990s but later it gradually become more significant from 1998. With the deepening penetration of foreign banks, the spreads of domestic banks has increased but the profit margin, non-lending rate of return and the cost rate have declined obviously. But since China's banking system is more closely linked with the industry-wide macro-factors and banks are experiencing rapid reforms, the impact of penetration of foreign banks is more difficult to capture (Liu 2002).

In many literatures, the discussion about the impact of foreign banks to local banks mainly concentrates the following three aspects (Table 1): the impact on host country banks' competitive position; the impact on the host country banks' efficiency and the impact on the stability of the system in the whole country. This paper will focus on the impact of foreign banks to local banks' performance.

Table 1	
Literatures regarding the impact of foreign banks from three most common aspects	
<i>Literature</i>	<i>Main findings</i>
1. Literatures about the impact on host country banks' competitive position	
Allen N. Berger, David C. Smith and Jennifer Judge (2003)	Domestic banks possess some competitive advantages that may significantly limit the global integration of the banking industry.
Stijn Claessens and Neeltje Van Horen (2007)	A relative higher institutional quality in the host country will have a positive impact on cross-border banking.
Aneta Hryckiewicz and Oskar Kowalewski (2008)	Foreign banks will see an opportunity to export their knowledge which will provide a competitive advantage in the host banking sector after entering a foreign market.
2. Literatures about the impact on host country banks' efficiency	
Tigran Poghosyan (2009)	Foreign greenfield banks exhibit superior operational efficiency in comparison to domestic and foreign acquired banks.
Robert Lensink, Aljar Meesters and Lloko Naaborg (2008)	The highlight is on examining whether the efficiency of banks depends on the institutional quality of the host country or on institutional differences between the home and host country.
Juan Cárdenas, Juan Pablo Graf and Pascual O' Dougherty (2003)	Benefits stem from efficiency gains are brought about by new technologies, products, management techniques and increased competition stimulated by new entrants.
3. Literatures about the impact on the stability of the system in the whole country	
Stijn Claessens and Neeltje van Horen (2012)	The impact of foreign banks on financial sector development and financial stability depends on host country, home country and bank characteristics.
Alicia García Herrero and Daniel Navia Simón (2006)	Foreign banks play a neutral or positive role in the financial stability of emerging countries.
Ursula Vogel and Adalbert Winkler (2010)	Countries with a high share of banking sector assets held by foreign banks experienced a more stable pattern of cross-border bank flows during the recent crisis.
Source: own summary.	

2.2 The development process of China's banking system

As an attractive emerging country, China's banking system is also one of the biggest in this world. But despite such a large scale, China's banking system is always far from being efficient. Some think it is because China's finance market is not developed enough and the bank financing is still the mainstream of financial activities in society. For example, in 2011, the amount of annual total social financing reached 12.8 trillion yuan, while the banking loans

accounted for 58% of the total size of the social finance. Most of the literature attributed the inefficiency to the bank's internal structure. Since China's four largest banks are owned by the government, it is unnecessary for the bank staff to worry about unemployment, what they hold are iron rice bowls which will never be smashed. The other also thinks this inefficiency is due to lack of competition. In early times especially before entering to WTO, from the capital requirement like minimum total assets to the activity constraints like customer type, branch type and locations the foreign banks in China were constraint by strict entry requirements and their activities were highly regulated by the government. But whatever the reasons, the government has tried to change the situation and implemented several reforms during the last 30 years.

The beginning of the reform of China's bank system can be traced back to January 1978 when People's Bank of China and the Ministry of Finance were divided and opened the prelude of China's banking reform. Subsequently, the Agricultural Bank of China, Bank of China, China Construction Bank, Industrial and Commercial Bank of China have been separated from the People's Bank to set up the four biggest state-owned specialized banks and each bank has its own responsibilities of different specialized business. In order to promote competition in the domestic banking system after 1987, a number of new joint-stock commercial banks like Bank of Communications have set up. In 1994, the banking system began the reform of commercialization of specialized state banks, aiming at transforming specialized banks to real state-owned commercial banks. At that time, three policy banks were newly built and commitment to the original policy operations of the four major banks to achieve the separation of policy oriented finance and commercial finance. After that, the four stated-owned banks began to transform to real commercial banks. The banking system which is constituted by coexist development and competition of State-owned commercial banks, joint-stock banks and rural credit cooperatives and other types of banking institutions has been initially formed and play an extremely important role in China's economic life.

For a long time, the market structure in China's commercial banking market is oligopoly by the four biggest stated-owned banks. Despite other commercial banks have made great progress, this oligopolistic market structure is difficult to break in short term. After formally proposed the application to restore the contracting party status in General Agreement on Tariffs and Trade (GATT) in 1984, China is trying to promote economic liberalization from then on. The financial services trade agreement was entered into force in 1999 and 102 members have made a binding reduction commitment to open their financial services market. By that time, the banking system which is occupying an extremely important place gradually went on the way of liberation (Table 2). In table 1, we can clearly see within the period of entering WTO, the restrictions for foreign banks have gradually reduced. Until the end of 2006, there have been no obvious constraints for foreign banks entry and activities, local and foreign banks could compete under a relatively fair environment. Through the development of these two decades, the openness of China's banking system is expanding. Here, I can say that to access to WTO is a turning point in the development of China's banking system.

Table 2: Gradual liberalization of China's banking market

	<i>Time</i>	<i>Process of Change</i>
<i>Location</i>	<i>pre-WTO accession</i>	
	April 1985	Shanghai
	December 1996	Shanghai, Shenzhen
	<i>WTO accession</i>	
	December 2001	4 cities
	December 2003	8 cities
	December 2006	20 cities
<i>Customer type</i>	<i>post-WTO accession</i>	
	December 2006	No restrictions
	<i>pre-WTO accession</i>	
	April 1985	Foreign firms and individuals
	December 1996	Foreign firms and individuals
	<i>WTO accession</i>	
	December 2001	Foreign firms and individuals
<i>Currency denomination of business</i>	December 2003	Chinese firms only
	December 2006	Chinese firms and individuals
	<i>post-WTO accession</i>	
	December 2006	No restrictions*
	<i>pre-WTO accession</i>	
	April 1985	Foreign currency only
	December 1996	Local currency and foreign currency
	<i>WTO accession</i>	
	December 2001	Foreign currency only
	December 2003	Local currency and foreign currency
	December 2006	Local currency and foreign currency
	<i>post-WTO accession</i>	
	December 2006	No restrictions

The table combines tables in Leung et al. (2003) and Bonin and Huang (2002).
 *Only applies to locally-incorporated wholly-owned or joint-venture foreign banks.

3. RESEARCH QUESTIONS AND METHODOLOGY

3.1 Current state of foreign bank presence

3.1.1 The status quo of foreign banks in China

Since the 1980s, because of the rise of financial liberalization in emerging markets, the process of financial globalization has shown significant effect in these emerging countries. As an important component in financial globalization, bank internationalization has become an unstoppable trend sweeping around the world. Many emerging market countries have suffered from financial crisis during the phase of the late twentieth century and early twenty-first century during which we can clearly observe financial crisis are always accompanied by severe penetration of foreign banks. Since banks are always playing an important role in a country's economic life and a favorable operating environment can greatly improve the efficiency of resource allocation and social welfare, theorists and policymakers in emerging countries are paying more and more concern for the penetration of foreign banks. Obviously now it is an important and urgent work to study the impact of foreign banks on emerging markets banking system.

China, as the largest emerging market, is enjoying the rapid development since the announcement of the reform and opening up policy. As I have discussed above, because of the commitment when applying for entry into WTO,

China has liberalized the entry of foreign banks from December 11, 2006. Since then, foreign banks can conduct RMB business without geographical and customer restrictions and gradually, native and foreign banks can compete in a relatively fair environment. Moreover, because of WTO commitments and the needs of prudential supervision of the banking system, China revised and promulgated a series of rules, laws and regulations including Management Ordinance of foreign banks to establish a uniform application of a prudential supervision system and create an equal operating and competitive environment. According to the statistics from China banking regulatory commission, the development of foreign banks in China can be studied through followed aspects:

First of all, by the end of September 2011, apart from Tibet, Gansu, Qinghai and Ningxia province, foreign banks have set up branches in 48 cities of other provinces, 28 cities more than before accession to the WTO, filling the blank condition of 12 provinces.

Secondly, when considering about the volume of branches, foreign banks have set up 39 incorporated foreign banks (including 247 branches and subsidiary bodies), one financial company, 93 foreign bank branches and 207 representative offices until now. Compared with the number before accession to WTO, the volume of branches of foreign banks increased by 175 while the number of sub-branches jumped from 6 to 380 during the same period. It is the most intuitive phenomenon of foreign banks development in China.

Thirdly, the rapid growth of foreign banks asset has drawn much more attention compared with the volume of branches. With the quantity of 2.06 trillion by the end of September, 2011, the total assets of foreign banks are enjoying the compound annual growth rate of 19% after China entering WTO. The average growth rate is several times more than the parent bank (or heading office).

Fourthly, despite the steady increase in asset size, foreign banks are operating healthily with excellent asset quality at the same time. Here, there are some representative data to illustrate the problem: first, not-performing loan ratio was 0.41%, which is lower than the national level of the banking sector; then, the provision coverage ratio reached 270.72%, which means strong ability to make up loan losses and loan risk prevention; next, the liquidity ratio is 70.94%, which means adequacy liquidity within banks; afterward, the domestic assets and liability ratio is 152.14%; finally, the average capital adequacy ratio and core capital adequacy ratio are 18.2% and 17.77% respectively, which represent adequate and high quality of bank capital.

Last but not least, the local customer base is gradually formed. Before accession to WTO, because of the highly constraint environment, foreign banks mostly only applied service for foreign-funded enterprises, foreigners and a very small number of Chinese-funded enterprises and residential customers, but now, these newcomers have a relatively larger proportion of Chinese-funded enterprises and residential customers, accounting for 54% of all customers owned by foreign banks. Apart from this, the trend of staff and management localization is evident. Foreign banks have employed 33,000 local employees, the number of which has accounted for more than 90% of total number of employees of foreign banks. All the statistics above can testify the rapid penetration of foreign banks in China, for the evidence show above, I can draw a conclusion that foreign banks would have a far-reaching impact on China's local banks as well as the local economy.

With the gradually more intense competition between native and foreign banks, the advanced management philosophy and operating methods from foreign banks could have broader exemplary and promoting effect on native banks and generate an obvious double-edged sword effect-both as opportunity and challenge. By studying the data in balance sheet and income statement from the representative 14 commercial banks (four state-owned commercial banks and 10 comprehensive joint-stock commercial banks) during the period 1997 to 2006 with GLS estimation method, Jiao (2008) found that the entry of foreign banks have a significant positive impact on China banks income, profitability and robustness of operation while there is a significant negative effect on banks operating expense ratio.

3.1.2 Why do foreign banks choose to penetrate to China?

Since China allowed foreign banks to set up a representative office in 1979, the openness of China's banking system is deepening step-by-step. The network of foreign banks is expanding and their business is rapidly increasing. Until 2006 when the China's bank market has been fully liberated, the penetration of foreign banks has become more unpredictable while the local banking system structure would suffer from profound changes. Despite there are more opportunities to cooperate, we still can't ignore the intense competition. In this case, to systematic explore the incentives for foreign banks to enter the Chinese market would have an extremely important theoretical and practical significance. Combining with the national conditions in China, I will provide the following significant influencing factors which are likely to affect foreign banks entry.

First, the most cited explanation for this question is the "follow- the-customer" hypothesis put forward by Grubel in 1977, the penetration of foreign banks is significant especially when the home country has extensive trade links with foreign countries. In this perspective, banks trying to enter other countries are aiming at foreign operation of their domestic corporate institutions because they could take advantages over host countries' banks over the first years through the relationship capital as well as investment information supply. In the study of Vastrup (1983), he suggested in credit rating activities, there is always a fixed cost element, so banks are more likely to lend to existing customers than competitors. For developed market, the studies about this strategy started from Goldberg and Saunders (1980), they explored how U.S. banks expanded overseas in the 1970s. At that time, banks from America primarily invested in the United Kingdom. They found a positive correlation between FDI of U.S. in UK and exports of U.S. to UK. For emerging market economies, the research about if foreign banks follow the customer's business strategy or not is rare. Liu and Wang (2007) empirical studied the applicability of the "follow – the –customer" hypothesis in China based on foreign counterparts' analytical methods and research literature concerning about the motivation of foreign banks to internationalization. Using the multiple linear regression model, they found an anticipated result in China's market and concluded an outcome that FDI and exports both have a significant positive impact on the entry of foreign banks while there is a significant negative correlation between imports and penetration of foreign banks.

Secondly, from the domestic point of view, the size of Chinese market is larger and growing faster compared with other developing countries like India, Brazil, South Africa and Russia. Now, China is the second largest economy in this world and the economic scale is three times as large as Brazil, quadruple the size of India and Russia and exceeds South Africa by sixteen times. At the same time, the ratio of the assets of China's banking system to GDP is more than any other emerging countries. In China, the loans flowing to the private sector was equivalent to 130% of

the total amount of GDP during 2010. From 2001 to 2006, the total assets growth rate of China's banking industry exceeded 15% per year, which was also the highest among these five countries. Moreover, from 2001 to 2010, the China's total banking assets soared from 17 trillion to 107 trillion yuan and the profit level jumped from 60 billion yuan in 2002 to over 800 billion yuan in 2011. This means from the total point of view, there are many opportunities for both foreign and Chinese banks to develop. This huge economy not only attracts international institutions but also many local agencies.

Thirdly, deregulation of the host country reduces the barrier to entry. The impact of the laws and regulations in host countries is relatively direct compared with other motivations because banks would face strict constraint regulations wherever they are based. These restrictions prevent the entry of foreign banks and limit competition in the domestic banks. According to Focarelli and Pozzolo (2000), foreign banks are more willing to invest in the countries with fewer restrictions against banks operations. The research of Barth, Caprio and Levine (2001) showed a finding that more stringent restrictions on the banking system often associates with higher spreads and management costs. As to the situation in China, after joining the WTO, the government in China has modified the laws concerning about the management of foreign banks and reconstructed the existing market access system in accordance with the commitments. The management of foreign banks has gradually become standardization since the implementation of the new "foreign financial institutions ordinance" in February 1, 2002.

Fourthly, from the international perspective, the banking industry has been highly developed in developed economies and their domestic markets are almost saturated. This saturation means an indisputable fact that from the perspective of the number of bank branches per capita, from their competitive density and from the penetration of banking services in entire socio-economic, the banking system's level of development in developed countries has been far more advanced than the world average. Because of this, their operating margin is relatively lower compared with other industries and there are no so-called monopoly profits. Since then, many financial institutions which have developed many years in such a perfect competition domestic markets would naturally have motivations to go abroad. From this point of view, China is an attractive choice not only because the efficiency of domestic banking system, but also because of the huge amount of business opportunities.

3.1.3 Foreign banks penetration process and their FDI activities in China.

In this part, firstly a model will be demonstrated to analysis foreign banks activities in China.

There are some models to analysis FDI in host country's banking system, such as Sabi (1988) and Buch (1999 & 2000), but this model has some obviously defects as it doesn't comprise the entering cost and moreover, when concerning about the empirical testing, the data of expected return is hard to obtain because of the economic conditions in emerging countries, so the appropriate proxies for the variable expected return- $E(R)$ should be derived. To overcome this defect, this paper will use another formula to do the basic regression to analysis foreign banks FDI in China's banking system:

$$FDI_t = \alpha_t + \sum_{l=1}^L \beta_l LINKAGE_{l,t-1} + \sum_{m=1}^M \gamma_m MARKET_{m,t} + \sum_{n=1}^N \delta_n RISK_{n,t} + \epsilon_t,$$

with

LINKAGE comprises two proxies to represent the degree of internalization of banks' comparative advantage:

- FDI in non-banking system: lagged data, means non-financial sectors FDI inflows linked with GDP.
- Trade: lagged data, means total volume of trade in host country linked with GDP.

MARKET comprises the attractiveness in the host country:

- Bank free, Openness: means legislation management effort and the degree of openness to foreign bank activity no matter on operation or investment.
- Real interest rate, Margin: to measure the potential return and competition level between banks, each means the real interest rate and banking margin return.
- GDP per capita: means real GDP generated per capita.
- Financial concentrate: means the level of stock market capitalization to measure financial concentrate.

RISK comprises both microeconomic and macroeconomic risk:

- Country risk: means country risk and political risk.
- Volatility: to measure the fluctuation of real exchange rate.
- M2/RES: to measure the degree of incipient banking crisis.

Based on the descriptions, the formula can be written as a more detailed form:

$$\begin{aligned}
 FDI_t = & \alpha_t + \beta_1 FDI \text{ in non} - \text{banking system}_{t-1} + \beta_2 Trade_{t-1} + \gamma_1 Bank \text{ free}_t \\
 & + \gamma_2 Openness_t + \gamma_3 Real \text{ interest rate}_t + \gamma_4 Margin_t + \gamma_5 GDP \text{ per capita}_t \\
 & + \gamma_6 Financial \text{ concentrate}_t + \delta_1 Volatility_t + \delta_2 M2/RES_t + \epsilon_t
 \end{aligned}$$

The calculation methods and the source of these variables are shown in the following Table 3 and Table 4. The time period is from 2000 to 2011 which is consistent with the variable selection in the next model.

Table 3: Descriptive statistics of the variables.							
variables				mean	standard deviation		
<i>Dependet variable</i>							
FDI in banking system (RMB 100 million)				31,89		33,78	
<i>Linkage</i>							
FDI in non-banking system (RMB 100 million)				5261,10		1254,31	
Trade (RMB 100 million)				125251,5		67427,58	
<i>Market</i>							
Bank free				31,67		5,77	
Openness				55,02		5,28	
Real interest rate				0,08		0,02	
Margin				0,03		0,0048	
GDP per capita (RMB 100 million)				17084,94		8977,56	
Financial concentrate (RMB 100 million)				125326,4		107552,8	
<i>Risk</i>							
Volatility				5,07		5,63	
M2/RES (%)				5,51		2,24	
Source: own calculation.							

Table 4: Descriptions and sources of variables		
FDI in banking system	FDI inflows in banking system relative to host country GDP.	China Statistical Yearbook from the website of National Bureau of Statistics of China
FDI in non-banking system	FDI inflows of the non-banking system relative to host country GDP.	China Statistical Yearbook from the website of National Bureau of Statistics of China
Trade	Total trade (sum of exports and imports) with the host country relative to its GDP.	China Statistical Yearbook from the website of National Bureau of Statistics of China
Bank free, Openness	Bank free is the index of financial freedom. Openness is the equally-weighted index of monetary freedom and investment freedom.	Annual Index of Economic Freedom from the website of Heritage Foundation
Real interest rate, Margin	Real interest rate means the real interest rate, i.e the lending rate minus the inflation rate. Margin represents the spreads between lending rate and deposit rate.	China Statistical Yearbook from the website of National Bureau of Statistics of China
GDP per capita	GDP per capita is gross domestic product divided by midyear population	China Statistical Yearbook from the website of National Bureau of Statistics of China
Financial concentrate	Financial concentrate is calculated as the share price times the number of shares outstanding in relation to GDP. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year.	The annual report from the website of China securities Regulatory Commission
Country risk	Country risk is not included in this test.	
Volatility	Volatility measures the variance of the RMB against the U.S. dollar.	Report from the website of State Administration of Foreign Exchange
M2/RES	M2 is money and quasi money (sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government). RES denotes gross international reserves (holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities).	China Statistical Yearbook from the website of National Bureau of Statistics of China
The table combines the table in Torsten Wezel (2004) and own conclusion.		

3.1.4 Hypothesized variables

(a) FDI in banking system

The dependent variables utilized here are the year-to-year data for FDI inflows in banking system. Some literatures such as Sabi (1988) used the total assets of foreign banks' subsidiaries as endogenous variables. Most studies used

this variable as the measure of the penetration of foreign banks, but FDI, in some degree, is also a comprehensive measure especially from the aspect of purely accounting. But both of these two means of measurements can rational represent the degree of the cross-border capital supplied by foreign investors after all.

(b) FDI in non-banking system

As to the independent variables, I choose the data of FDI in non-financial sector. After 1977 when Grubel suggested the hypothesis that a country's banking system should maintain their market share and customer base through cross-border direct investment, Tschoegl formally proposed the theory of follow –the-customer in banking sector FDI in his empirical research. In some former researches like Buch (2000), Buch and Lapp (1998), through discussing the data from German, they found a significant positive relationship between FDI in non-financial sector and in host countries' banking system. But according to the paper written by Miller and Parkhe (1998), there is a quite different result. With the data from America FDI in developing countries, they found no obvious correlation of FDI and the response of local banking system. For china's domestic researches, scholars Zen and Xiao (2010) investigated the impact of international trade on financial sector FDI in China on the basis of regression methodology and Granger causality test, finding a very significant positive correlation during the test, but no significant causal relationship is found. In this case, a positive sign of FDI in non-banking system to FDI in financial sector in China is expected.

(c) Trade linkage

After discussing the FDI in non-financial sector, this paper is going to explore the sensitivity of changes on financial sector FDI to trade. Similar to the correlation between financial and non-financial sector FDI, the international trade activities can be deemed as the driving force to FDI and penetration of foreign banks. From the perspective of Sagari (1992), without the entry of banks, the operation of import and export trade will become too difficult to carry on. For this variable, a positive sign is assumed as well.

(d) The openness of domestic financial sector

The openness and the degree of bank free are also important influencing factors for financial sector FDI. The banking systems in the host countries are always oligopolistic. In most cases, these oligopolies will gradually form a barrier in nature to separate foreigners from entering. This phenomenon is quite typical in China where the majority of the market share is owned by the state-owned commercial banks. But this kind of market structure is a double-edged sword. On one hand, local banks can benefit from the monopoly profit; on the other hand, it is hard for local ones to give up their quiet life and pursue efficiency. Even after a foreign bank's entry, the government treatment and regulations will put it on a disadvantageous position. According to the study of Guo (2009), there are two purposes for foreign banks to enter in China, one is for profit and another is for the financial and management control in the future. Faced with this situation, Chinese government formulates a three-year lock-up period regulation, which does not allow foreign investors to sell their shares within three years. For the foreign direct investment to large commercial banks, the Chinese government's orientation to maintain the absolute control of Chinese banks is very obvious. In Sagari (1992), the author pointed out that a high degree of openness in financial sector plays a significant promoting role for FDI inflows in banking system. In this paper the data from website of Heritage Foundation will be utilized to measure the degree of openness in banking system in China. By searching for the index of economic freedom, the index of financial freedom, investment freedom and monetary freedom during the period 2000 to 2011 are extracted to construct two variables: bank free and openness. Financial freedom

is used as bank free and openness is calculated as the equal-weighted number of investment freedom and monetary freedom index. From the discussion above, a positive correlation between bank free, openness and FDI inflows is expected.

(e) Real interest rate and bank margin

A larger number of measures have been suggested to indicate the host country's attractiveness in former literatures. In the study of Classens et al. (1998), the author made use of the real interest rate, that is, the lending rates minus the inflation rate as a variable. The implication of this choice means the foreign banks can freely choose investment opportunities from home or abroad. Blandón (1998) believed that the interest margin can not only represent the competitive position but also indicate a market's attractiveness. As for the China's national condition, just as what have been mentioned above, the main source of local banks is still the spreads and the deposit and loan spreads is one of the most important driving forces for foreign banks to penetrate to China. In this part, to measure the impact of profit opportunities on the FDI inflows in financial system, real interest rate and margin are going to be presented. The former is calculated as the lending rates minus the inflation rates and the latter is counted as the lending minus deposit rates in China.

(f) Host country income

GDP is often recognized as the best indicator for a country's economy. It reflects a country's economic performance as well as a country's national strength and wealth. Most of the studies in this field prove a strongly correlation between a country's real GDP or GDP per capita and the FDI inflows in financial sector, but Goldberg and Johnson (1990) provided a negative coefficient for GDP per capita through the study of data from US. The expectation in this paper would follow a mainstream value that a positive correlation is expected.

(g) Market capitalization and International financial centers

Stock market capitalization is a good measurement for financial concentrate. This factor has been considered by many scholars since early times, but there is not a unified view on this point. Cardone-Riportella (2000) suggested an insignificant coefficient between the size of market capitalization and FDI inflows in Finland, but interestingly, the correlation is quite strong in Spanish market. In China, Chen and Zhang (2012) believed that for Chinese market, to foster a mature capital market is an inevitable trend because perfect capital markets and financing service system in host countries are fundamental guarantees for FDI inflows, but now, there are still many restrictions and man-made obstacles.

The economic development of host country is one of the determinants for multinational financial institutions to decide whether to invest or not. An international financial center, well equipped financial infrastructure, convenient interbank market, professional financial talents and other favorable conditions in host country will promote FDI inflows. Moreover, multinational financial institutions would likely to have more cooperation opportunities if there is a geographic proximity, they can gain the positive external benefit from the information spillover of international financial center. Here, it can be assumed that the host country will be more attractive if it owns an international financial center.

(h) Country risk

To invest abroad will inevitable face many risk factors. For most investors, the first risk to consider is country risk. In one of the few studies considering about the relation between country risk and FDI inflows in financial sector, Yamori (1998) found a coefficient between the host country risk index and Japanese banking FDI. But nowadays, most of the developing countries show high stability in the existing political environment. As this paper is considering about China only, to include the country risk of China is unnecessary.

(i) Likelihood of banking crisis

Since country risk just illustrates the macroeconomic variability from national aspect, for banking sector, it also suffers from industry-specific risks in their field of business. Many indicators have been used to demonstrate bank crisis such as inflation, output and real interest rate. But since all of these indicators are almost determined by GDP, estimation in this paper is going to utilize a variable named M2/RES which is calculated by the ratio of M2 to gross international reserves to measure the impact of banking crises to FDI inflows in financial sector. It is a perfect indicator-not only for currency supply, but also for crisis in banking system- for when crisis is coming, the denominator and numerator would change to the opposite directions. In this case, the ratio would deviate a lot from normal ones. Taken into account the national condition in China, particularly after joining WTO, the government has gradually relaxed the financial control and supervision. These policies means there would be followed with strong capital flows and surging volume of international reserves, consequently, problem on this field is more worth exploring.

In former empirical literature, the ratio of M2 to gross international reserves has been used for several times. One of these studies is Kaminsky and Reinhardt (1999) which discovered a strong predictability for this variable. In Tian and Xu (2008), by analyzing data from 14 sample countries, the authors suggested that in 9 of these 14 countries, the offset coefficient index of international FDI inflows to money supply is less than zero, which means the increasing money supply would induce FDI outflows and when tightening money supply, FDI inflows would arise. Moreover, Moshirian (2001) found a significant negative sign between these two variables through researching German banking FDI.

(j) Exchange rate volatility

Last but not least, it is interesting to inspect whether the exchange rate volatility has an impact on FDI inflows. Generally speaking, the uncertainty of exchange rate indicates the possibility to gain higher rate of return. In the paper written by Sung and Lapan (2000), volatile exchange rates can be deem as a driving force for investors to establish plant abroad. But this opinion only refers to manufacturing industry; it may not apply to banking sector. Apart from this, another research has provided a certain result: Moshirian (1998) used the flow and stock data of financial service industry in Australia from 1985 to 1996 to analysis the determinants of FDI in financial industry and found real exchange rate is one of the main influencing factors. Buch (2000) also pointed a negative sign through cross sectional regression. This study utilizes the variable volatility to test the sign of this volatility measure.

3.1.5 Estimation methodology and discussion of results

Basically, a panel estimation methodology-the fixed and random effects regression is going to be used through the test.

The following Table 5 shows the regression result of the impact of various independent variables on FDI inflows in banking sector in China.

Table 5: Regression results for model 1

Regression results for model 1 are shown, the dependent variable is FDI inflows in banking sector.

<i>FDI in non-banking system</i>	0.052* (1.749)
<i>Trade</i>	0.001* (1.675)
<i>Bank free</i>	0.797 (0.395)
<i>Openness</i>	4.228 (1.001)
<i>Real interest rate</i>	0.021 (0.338)
<i>Margin</i>	0.56 (1.221)
<i>GDP per capita</i>	0.023** (2.156)
<i>Financial concentrate</i>	0.001* (1.812)
<i>Volatility</i>	-1.128 (-0.673)
<i>M2/RES</i>	-0.005** (-2.119)

Note: p-values in parentheses. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

In this test, all the variables are estimated at one time. The results are quite satisfied because half of the variables used here are tested to have significant effect on FDI inflows in financial sector. Take a quick look at the t-value and other outstanding numbers, we can easily draw a conclusion that the influences from market integration is definitely and these influences are dominating the scenario in some degree. If we divide these variables into three parts: LINKAGE (FDI in non-banking system, trade), MARKET (bank free, openness, real interest rate, bank margin, GDP per capita, financial concentrate) and RISK (volatility, M2/RES), we can see that overall, the most outstanding part arises in LINKAGE. Two variables included in this part all have obviously positive impact on FDI inflows in banking sector.

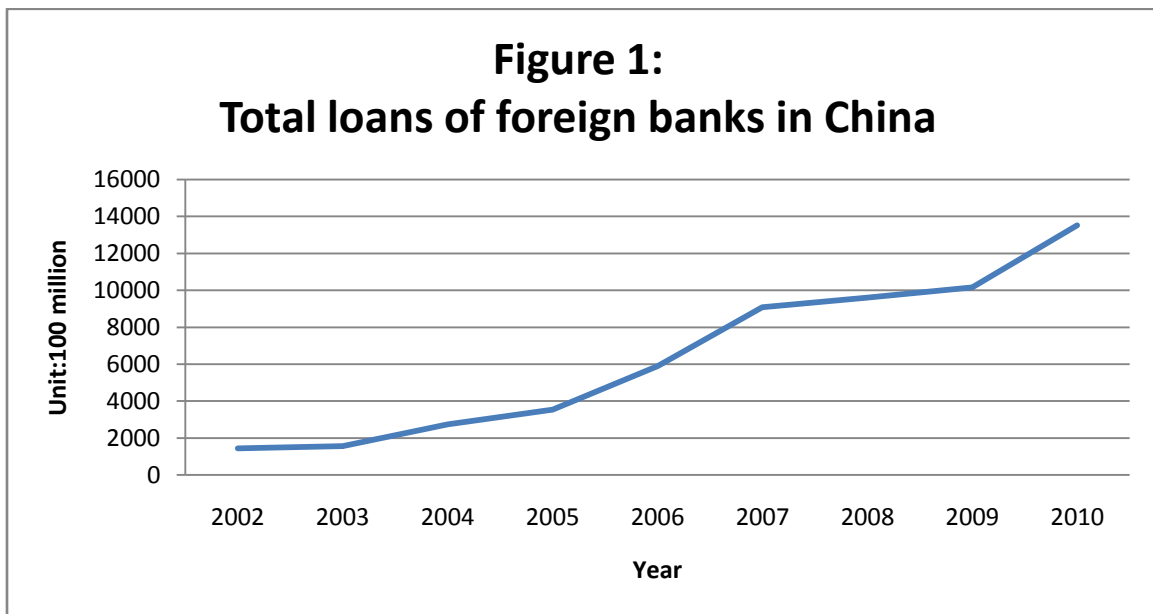
Since the “follow-the-customer” hypothesis, it is almost a unified consensus for most scholars in theoretical circles to recognize that the FDI inflows in banking sector have been tightly related to the host country’s international trade activities and FDI inflows in non-banking sector. In the research of domestic scholars Wang (2005) and Yan (2001), both of them confirmed that the direct investments as well as the import and export trade are the most important factors to influence the foreign banks’ development in China. The regression results in this paper also confirmed this point combined with the national conditions in China. The positive test result 0.052 means when the independent variable FDI in non-banking sector change a unit, the quantity that the dependent variable is going to change. This number combined with a significance of 10% also shows a relatively strong positive influencing effect and a complementary effect of FDI inflows in non-banking sector on the FDI inflows in banking sector. The number 0.001 which is also at the significance of 10% can be used to demonstrate the economic relevancy of variable trade. When the total volume of import and export improve a unit, in the significance level of 10%, the volume of international trade will improve 0.1%.

Compared with the manufacturing, banking is a special industry. As an important part of financial service sector, the external market of banking system is incomplete because of information asymmetry, difficulty to pricing intermediate business and inconvenience to protect the confidentiality of commercial banks. Multinational banks have to construct internal market by cross-border extension of customer and resource to maintain their unique advantages. In fact, the foreign banks penetration caused by follow the customer motivation is an important reflection of pursuing internalization advantages. The two outstanding estimation results showed in the first part of LINKAGE definitely proves this point. In normal circumstances, to follow the original customers can minimize the banks’ transaction cost and information searching cost so when a bank’s major clients develop investment and trade practices overseas, the banks would carry out business activities in the corresponding host country to apply financial services. A considerable part of the empirical studies including Demirguc and Huizinga (2000) have confirmed that despite foreign banks, compared with local banks which do not have obvious advantages in developed countries, in emerging market their performance should be significantly better than local ones. This motivation might perform stronger in emerging market like China, because the level of development of domestic financial industry tend to be relatively slow, after opening up the local banking sector in China can’t provide necessary financial support in the beginning. The unsatisfied need will attract foreign institution to come to China. In this situation, the gradually opening up of investment and trade in China will inevitably promote foreign banks to follow their customers’ investment and trading behavior.

One of the characteristics of the emerging countries before opening up is the widespread “financial repression”. During the process of opening up in China, many measures have been taken, such as the liberalization of interest rates, exchange rate and the abolition of the intervention to the financial institutions’ operation. In this field, there is a similar study considering about the emerging market: Hermes and Lensink (2002). In that paper, the author suggested a significant impact of opening up policy to the entry of foreign banks through analyzing the data from 8 countries in Central and East Europe including Poland, Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Lithuania and Latvia. In China, from July 2002 when the government released the policy of Qualified Foreign Institutional Investors to December 2006 when the 5-year period of protection after accession to the WTO is terminated, China’s financial sector is fully open and RMB retail business is fully liberated. Despite the test result for bank free with the number 0.797 and the number 4.228 for the variable openness didn’t show any significance

impact on FDI inflows in China's banking system from a statistic point of view. The positive effect from the policy of opening up is evident and has an obvious practical importance.

For margin, despite the test didn't show statistic significance with the test result 0.56 shown here, there are also many literatures such as Tu (2009) in which the author believed that establishment a branch of foreign banks is tightly related to the import and export volume and domestic deposit and loan spreads in China. In fact, since 2001 after China's accession to the WTO, most domestic and international experts predicted the main business of foreign banks would concentrate on intermediate business. But in recent years, the actual developing trend is far away from imaging. The lending business continues to expand and the loan assets continue to rise while income from non-interest business is showing a trend of a decline, the foreign banks are snatching loan market share from local ones. The following Figure 1 shows the definitely increasing trend for the total volume of loan business of foreign banks in China from 2002. Despite the increasing trend of total volume of loan business, the one-year deposit and loan spreads has maintained around 3% since 2002, this number is significantly lower than the average for Latin American countries and countries in transition. Such a phenomenon is a result of government interest rate controls and lacking of pricing power of local banks. If the deposit and lending rates of commercial banks are totally determined by the market and the commercial banks in banking system are independent and self-financing market player, the deposit and lending spreads will be larger than the current level in China. As the inefficiency of local banks is a great power to promote the entry of foreign banks, the penetration of foreign banks would accelerate the reform and interest rate liberation as well.



Source: Compiled by author.

As to the impact of GDP per capita on the FDI inflows in banking sector, the most significant value 0.023 which is highlighting a definitely positive outcome is shown here. This number means when the GDP per capita change for a unit, the FDI inflows in China's banking system will change for 2.3% in the same direction at the significance level 5%. Since the variable GDP per capita is an indicator to measure the status of economic development, such an

attractive number can illustrates from all the variables this paper explored, the status of economic development owns the most obvious impact. The sustained and stable economic growth can reflect a fine investment environment and an open market prospect, from this perspective, increasing foreign revenue for the future can be expected. Apart from this, the stagnation in economic growth and the recession of macro-economy would promote foreign investors to increase the host country's investment level of rating and then influence the FDI inflows. The paper of Du (2008) empirically tested the positive relationship between GDP and FDI inflows, the test was corresponding with the result here, which is also demonstrate a judgment that the healthy development of China's economy is a strong guarantee of the foreign direct investment in the banking sector. This second largest economy will keep attracting the penetration of foreign banks.

After the introduction of the relevant provisions of the Qualified Foreign Institutional Investor (QFII), Swiss Bank, Nomura Securities, Morgan Stanley, Citigroup Global Markets, Deutsche Bank, ING bank, Goldman Sachs and many other financial institutions have become the QFII. Although the total amount of market capitalization allowed for these qualified foreign investors to invested is not really large-scale, with the rather outstanding tested outcome showed in the table above, an obvious conclusion can be got - the continuous strength of the share market has stimulated the FDI inflows in China's banking sector. In the significance level of 10%, when the total amount of market capitalization in China change a unit, the FDI in flows in China's banking system will change for 0.1% correspondingly.

Despite the test result for variable volatility didn't show significant impact for FDI inflows in China's banking system. Some former papers have proved the great effect of exchange rate volatility. One of these earlier researches is Zhang (2006), in which author pointed out to attract foreign investment, the government in China must maintain the relative stability of RMB exchange rate because the stability of exchange rate can reflect the stability of economy in a country in some degree while a stable economic environment is also an important factor to attract foreign capital inflows.

Last but not least, the impact of the likelihood of banking crises to the FDI inflows in banking system in China is as we have expected. The number 0.005 with a negative sign means when the possibility of taking place bank crisis rise for a unit, the FDI inflows will decrease for 0.5% at the significance level of 5%. According to the statistics announced by the ministry of Commerce, from January to November 2008, the total amount of actually used foreign investment increased for 26.29%, which is 35.06% less than the amount used for the first 10 months of 2008 while the total amount of actual foreign direct investment in November 2008 decreased for 36.52% compared with the same period over last year. This means the increasing likelihood of banking crisis has obviously influenced the FDI inflows in China and certainly and the banking industry was not spared. The variable M2/RES not only shows the strong influencing impact of money policy on FDI inflows, but also shows the foreign investors are likely to have a professional risk rating system which is quite sensitive to the occurrence of banking crisis.

3.2 The impact of foreign banks entry

The penetration of foreign banks is a double-edged sword to the banking system in emerging market like China. Many empirical studies tend to support the entry of foreign banks. Terrell (1986) is one of the early studies

concerning on the impact of penetration of foreign banks. He used the data from 15 developed countries during 1976 and 1977 and found an interesting phenomenon compared with the countries which didn't allow the penetration of foreign banks: countries which had allowed foreign banks to enter are lower in gross interest income, pre-tax profit and operating costs.

In this section, first I am going to discuss the benefit and the cost of foreign banks entry in theory and then I will employ the Generalized Least Square (GLS) methodology to investigate whether spillover effects or competition effects is going to be the leader factor - whether the positive or negative effects dominate.

3.2.1 The benefit of foreign banks entry

First of all, many scholars and policy implementation in developing countries believe the penetration of foreign banks will give local commercial banks strong competitive pressure, then resulting in a "catfish effect". This effect would likely force the local commercial banks to actively improve the management level, thus contributing to improve efficiency.

Secondly, the entry of foreign banks would produce a positive spillover effect. It means foreign banks would play an exemplary role in financial services, products, technology and personnel training. Compared with local banks, the foreign banks have more extensive experience in both traditional and emerging businesses. Through technology spillover effect, local banks could improve capital efficiency as well as service efficiency and master advanced business technology by imitating. Especially when foreign banks are directly involving in the management of domestic banks (such as merger and acquisition or to establish joint venture banks), foreign banks would help domestic banks to improve management level. The penetration of foreign banks could improve the quality of human capital from many aspects such as the local managers can learn new knowledge with high-skilled staff from abroad. When foreign banks invest to train local employees and financial professionals, the quality of human resources in domestic banking system will improve and promote the efficiency of operation and finally contribute to the reduction of cost. In empirical test, banks in China have benefited from the spillover effect. For example, in China, a few years ago when foreign banks launched a structured exchange deposit product in Shanghai, the domestic banks in China tightly followed by and released a similar product in less than half year; in turkey, foreign banks introduced the information infrastructure to local banking system; in India, foreign banks brought credit card and automated teller machine. But there is another word, according to the research about spillover effect like Glass and Saggi (1998, 2002), whether the opening up will promote the efficiency of local banking system mainly depends on the local banks imitate and absorptive capacity, this means the idea about foreign banks will bring a positive spillover effect is a controversial result.

3.2.2 The cost of foreign banks entry

Firstly, when capital market, money market and foreign exchange are fully opened, free movement of capital will bring many problems such as objective economic regulation and financial supervision to monetary authorities. If money price lacks of flexibility, it will contribute to roundabout investment, short-term arbitrage and many other

non-health financial behaviors. Especially when investors lose confidence, a lot of capital flight will lead to financial instability. In this regard, the financial crisis in Southeast Asian countries during 1997 and the financial turmoil in Brazil during January, 1999 gave the world a profound lesson. According to Lardy (1998), “the inter-bank competition intensifies exert enormous pressure on the large-scale state-owned banks, in accordance with the current system, it is difficult for these large banks to survive”. As the intensifying market competition and the transparency of crisis, the rules of financial market will change. Facing with the dramatic changes in market structure, the state-owned commercial banks will have to change their original behavior: from traditional to modern and from inefficient to efficient. Apart from this, after the penetration of foreign banks, domestic banks will gradually lose their protective barrier because of the market adjustment, especially those state-owned commercial banks which are backed by national credit. Over the years, when government required state-owned banks to shoulder the policy functions, it also offered special treatment to these banks. Now, since the state-owned commercial banks must comply with the WTO rules and at the same time ensure full transparency and fairness, administrative protection measures which these commercial banks depended on overtime in the past have disappeared. Now commercial banks are totally exposing to a variable of risks in the market.

Secondly, the entry of foreign banks may result in the reduction of loans to small and medium enterprises (SMEs). From the perspective of operating management, initial entry foreign banks are most likely to aim at multinational corporations, large scale local companies and local high-value type of crowd (mainly wealthy families or individuals). The phenomenon of so-called “cherry-pick” or “cream-skimming” behavior is the best summary of the characteristics of this business. Obviously, during the period, many SMEs in host countries are hard to get loans from foreign banks while domestic banks can not compensate for this deficiency. Because of the competitive pressure they faced, local banks will be trapped in increasing operating costs and shrinking profit margins. From this case, these domestic banks are unable to support loans to these poor SMEs which are small scale, with scatter demanding, lacking of collateral and without perfect credit. In this point of view, the entry of foreign banks does not solve the long-existing problem, but will aggravate the severity.

Thirdly, it increases the domestic banks’ short-term operating costs to the host country. Faced with well-equipped foreign banks, domestic banks must be adjusted with the fastest speed. Greater investment in management, technological innovation, product innovation is needed inevitable. All these needs will definitely increase the short-term costs. Taking into account that the entry of foreign banks also brings the possibility to reduce the level of profitability in host banking sector, the short-term operation of the domestic banks would be more difficult and lead to turmoil in local banks. But if we look into this problem from another perspective, despite competitive pressures may brought by the entry of foreign banks, the effectiveness gained by reform will gradually appear. This operating efficiency would eventually eliminate the negative impact and lead local bank system to the next higher level. In this sense, the penetration of these foreigners can be deemed as a driving force of a reform, the harms it brings are short-lived, temporary but the benefits are long-lasting. The costs and benefits of the opening up are convertible in a certain extent.

3.2.3 Empirical model

The highlight of the second section is to test whether the spillover effects or competition effects is going to be the leader - whether the positive or negative effects dominate. To illustrate this problem, I am going to employ the Generalized Least Square (GLS) methodology. GLS methodology uses time-series cross-section data to do the regression while controlling some of the bank-specific variable. The time span is set from 2000 to 2011. Here, the variables are described in the following table:

Table 6: Descriptive statistics of the variables.			
Variables	Description	Mean	Standard deviation
<i>Dependent variables</i>			
Profitability	Ratio of before-tax profits to total assets	0,0085	0,0045
Overhead cost	Ratio of overhead expenses to total assets	0,0091	0,0034
<i>Bank Variables</i>			
Equity/total asset	Ratio of capital equity to total assets	0,0430	0,0269
Loan-to-asset	Ratio of loans to total assets	0,5470	0,3279
Customer funding	Ratio of short-term and long-term deposits plus non-deposit short-term funding to total assets	0,7533	0,1357
Loan loss provision	Ratio of loan loss provisions to total loans	0,0228	0,0154
Market share	Ratio of total assets of the bank to total assets of the commercial banking system	0,0053	0,0058
<i>Foreign banks Presence Indicators</i>			
Foreign number	Ratio of number of foreign banks to total number of banks	0,0012	0,0005
Foreign share	Ratio of foreign bank assets to total assets	0,0197	0,2535

Source: Maria Chelo V. Manlagñit (2011) and own calculation.

In this model, profitability and overhead costs of the banks are utilized as the indicators to demonstrate local bank performance during 2000 and 2011. These two variables are dependent variables in which profitability is defined as the ratio of before-tax profits to total asset of the local bank while the overhead cost is defined as the overhead expenses to the total asset of the local bank and can be seemed as an indicator of the efficiency of local banks to manage their operating costs.

Regarding to the bank variables, the ratio of number of foreign banks to total number of local banks and the ratio of foreign bank asset to the total asset of local banks are used to analysis the degree of foreign banks penetration in China. In former literature, Claessens, Stijn, Asli Demircuc-Kunt and Harry Huizinga (2001) chose the number of banks as the most suitable indicator of presence. If the foreign force and the local banks are in competitive conditions, to prevent the expansion of foreign banks, local ones have to adjust their operating management, product range, pricing and almost all the other activities. But this paper also points out that the ratio of foreign bank asset to total asset of local banks is a more suitable indicator if the foreign force has already had a significant impact on the local bank system, especially when foreign banks begin to influence the spreads of local banks.

For bank-specific variables, to compare the benefit and cost induced by foreign bank presence, some bank-specific determinants have to be controlled. The determinants include: equity; loan; customer funding; loan loss provision and market share. In most cases, the shareholders' equity indicates banks' ability to resist risk; it is assumed that well-capitalized banks always represent well management. According to Rao (2005), there is always a positive

relationship between profitability and shareholders' equity, so these banks can take advantage over operating costs and risk-bearing capacity. The loan to asset is an effective measurement of a bank's competitive condition especially in China where the main source of profits comes from spreads and to get more loans means more market share and competitive advantage. Almost all models have proved a negative relationship when analyzing the impact of loan on banks' profitability. But in this paper, maybe there would be a different result because of quite specific conditions in China where over 80% profit comes from spreads. Apart from this, the ratio of loan loss provision to the total asset is used to measure the quality of loans. As loan takes the main part of a bank's asset, it also represents a bank's quality of asset. But since loan loss provision would increase a bank's operating costs, a high degree of loan loss provision is hypothesized to link with lower profitability. The ratio of total asset of the bank to the total asset of the bank system is noted as market share, this number not only illustrate each bank's power, but also show the market structure.

Since the banks mentioned here are all listed banks, the data including dependent variables, independent variables and bank-specific variables from 2000 to 2011 for 13 commercial banks used in this Generalized Least Square (GLS) methodology can be easily gained from each bank's income statement and annual balance sheet publicized on Shanghai Stock Exchange (SSE) website. These data include the following commercial banks: Industrial and Commercial Bank; China Construction Bank; Bank of China; Agricultural Bank of China; Bank of Communications; China Merchants Bank; China Minsheng Bank; China Everbright Bank; Huaxia Bank; Shenzhen Development Bank; China's Industrial Bank; Nanjing Bank and Shanghai Pudong Development Bank. Apart from this, the data of overall situation of China's banking system like the volume of total assets and total profitability can be gained from statistics of China Banking Regulatory Commission website. The independent variables are gained from the annual report from China Banking Regulatory Commission website as well.

3.2.4 Empirical results

The following Table 7 is the regression result of GLS model for the dependent variable of profitability of domestic banks.

Table 7: Regression results for model 2			
The regression results are presented, the dependent variable is the profitability of domestic banks.			
<i>Foreign number</i>			0.458
			(0.144)
<i>Foreign share</i>			9.963***
			(4.069)
<i>Equity/total asset</i>			-0.004
			(-0.063)
<i>Loan-to-asset</i>			-0.004
			(-1.246)
<i>Customer funding</i>			0.035**
			(2.012)
<i>Loan loss provision</i>			-0.202**
			(-2.202)
<i>Market share</i>			0.801
			(0.217)
Note: p-values in parentheses. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.			

The Table 8 is the regression result of GLS model for the dependent variable of overhead cost of domestic banks.

Table 8: Regression results for model 2			
The regression results are presented, the dependent variable is the overhead cost of domestic banks.			
<i>Foreign number</i>			-6.267**
			(-2.025)
<i>Foreign share</i>			0.016
			(0.007)
<i>Equity/total asset</i>			-0.006
			(-0.099)
<i>Loan-to-asset</i>			0.004
			(1.168)
<i>Customer funding</i>			-0.03*
			(-1.795)
<i>Loan loss provision</i>			-0.196**
			(-2.199)
<i>Market share</i>			-5.645*
			(-1.671)
Note: p-values in parentheses. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.			

For foreign bank penetration indicators, the estimation results in the above tables show that the number of foreign banks has an obviously negative impact on the overhead cost of local banks while the variable foreign share has a greatly positive impact on the profitability of local banks. The number 9.963 in Table 7 with positive sign means at the significance level of 1%, when the ratio of foreign bank asset to the total asset of banking system increases a unit, the profitability of local banks would increase 9.963 units while the number 6.267 with a negative sign in table 8 represents at the significance level of 5%, when the number of foreign banks to total volume of banks in banking system increase a unit, the overhead cost in local bank system will decrease 6.267 units definitely. The increasing profitability and decreasing cost means the penetration of foreign banks doesn't show obvious pressure on China's banking system in some degree. This result is consistent with the opinion mentioned above. A similar result is also demonstrated in the paper Claessens, Stijn, Asli Demircug-Kunt and Harry Huizinga (2001) which discovered a negative effect between foreign banks penetration and the overhead cost in local banks. The cause in Claessens, Stijn, Asli Demircug-Kunt and Harry Huizinga (2001) was attributed to the cost efficiency. At first, because of the competitive pressure induced by these foreign banks, banks in host countries will go through an uncomfortable period when the profit would decline and customers would likely be snatched away by these intruders. But in the long run, the pressure will push local banks to pay more attention on their day-to-day management. With decreasing customers, they have to control cost to maintain profit. In such circumstances, to optimize their management ability, product ranges and all the other operating activities is an inevitable choice especially for those non-state-owned commercial banks. Then, the spillover effect, especially the positive spillover effect called by foreign banks will arise; the negative effect shown at first will gradually disappear because of the increased efficiency. From this part, the foreign banks penetration associated with competitive pressure will increase profitability and decrease overhead expenses of local banks ultimately.

Taken as a whole, several conclusions can be draw. First, both the number of foreign banks and the total asset of foreign can significantly influence the competitive conditions in China's banking system. Second, according to the estimation results, China's domestic banking system has benefit from the positive spillover effect caused by these new comers, the long-run competition effect is contributing to the increasing local banks profitability. Just like Claessens, Stijn, Asli Demircug-Kunt and Harry Huizinga (2001) which indicated that the foreign banks penetration forces local banks to give up quiet life and pay more attention to cost management and efficiency operation.

For bank-specific variables, the variable – ratio of equity to total asset didn't show any significant effect on both dependent variables from statistic point of view, but this ratio plays a quite important role for banks' daily operation. This problem can be analyzed from two aspects: on one hand, banks are likely to have excessive debt if the equity ratio is too low and this kind of excessive ratio would weaken banks' ability to resist external shock; on the other hand, if the equity is too high, it means banks haven't properly used financial leverage to expand the scale of operation. To maintain a proper value of this ratio is one of the guarantees for banks' sustainable development.

Despite the test results -0.004 and 0.004 shown in Table 7 and Table 8 didn't indicate the existence of significant impact of the ratio loan to total asset, this ratio is still worthy to investigate. Different from developed countries where intermediate businesses play a main role in banks' daily life, in China, the main profit comes from spreads for all the banks no matter for state-owned or non-state-owned ones. Other businesses like intermediate businesses just take a small part in banks' day-to-day operation. According to the report from central bank in China, in 2011, profit

from interest income takes 80.7% in China's domestic banking system while the other forms of revenue only takes 19.3%. Despite such a high ratio declares the unwillingness or inability to develop new business growth opportunities, in such a market where the intermediate businesses development is still in primary level and customer market for intermediate business is still immature, to focus on the traditional lending activities is likely to be an effective way for commercial banks to maintain a certain profit. Apart from this, since loan takes the majority of a bank's asset, a higher ratio of loan-to-asset represents a comparative advantage when managing credit risk which is one of the most important risks banks are destined to suffer all the time.

For the ratio of customer funding, it plays an important role for both the profitability and overhead cost of local banks. Based on the test results, when ratio of customer funding increases a unit, the profitability will increase 3.5% at the significance level of 5% while the overhead cost of local banks will decrease 3% at the significance level of 10%. Combining with the national conditions in China, because the funding source for commercial banks is relatively simple, a large volume of all short-term and long-term deposits, plus non-deposit short-term funding is necessary to support the growth of loans since the loan plays the most crucial role for the banking system. Have a larger volume of deposit means the bank has a competitive power to capture market share so this power can help lessen the cost to access to needed resources.

The test result for the variable loan loss provision is interesting for it both shows significantly negative impacts on banks' profitability and cost. On one hand, an increasing volume of loan loss provision will give rise to the increase in banks' credit cost. The outcome of increasing credit cost will lead to quite obvious decrease in banks' profit especially in countries where the income from loans takes the main part in banks' profit resources. On the other hand, a high ratio of loan loss provision demonstrates a strong ability to resist risk. Since the ability to resist risk is a guarantee for banks smoothly running, this ability can reduce the cost for acquiring needed resources. From the test results in this paper, a one unit change of this ratio will induce the change of 0.202 units for profitability and 0.196 units for total cost in opposite direction.

Last but not least, the ratio of market share does not show any obvious effect on banks profitability, but it greatly affects the banks overhead expenses with the test result 5.645 with a negative sign. As an effective indicator for bank's market power, at the significance level of 10%, if the market increases a unit, the total expenses of local banks will obviously decline 5.645 units. In China, it is a common sense that larger commercial banks tend to hold stronger competitiveness. On one hand, this reflects the operating characteristics of the financial industry; on the other hand, from the perspective of asset security consideration, larger banks are more likely to obtain the trust of the public, so some cost can be saved to get more resources. This suggests larger banks in China are enjoying cost efficiency which confirms there existing economies of scope and scale in local banking system while the smaller banks are harder to get access to product diversification and loans.

4. Conclusion

In each two previously main part, there are two models dominate this paper. The combination analysis of these two models from two aspects can be utilized to explore the impact of foreign banks' entry to China's local banking system.

The first model investigates several variables which have been tested in previous literatures to have significant impact on the dependent variable-FDI inflows in host country's banking sector. But this paper explores this problem from three broad aspects: the first category aims at measuring the host country's international trade linkage to the rest of the world; the second category represents the attractiveness of host country's banking sector and the third category is trying to investigate the relationship between uncertainties faced by foreign investors and the FDI inflows in China's banking system. Apart from these variables, this paper overlooks the location choice by foreign investors and other geographical factors which are included and considered to have significant effect in some of the previous literatures.

The outcome of this model is highly corresponding with expectation, despite the outcome of some variables are somewhat unsatisfactory because they did not show any meaningful impact, but the majority has turned out to be quite obvious determinants. The variables utilized in this part are manually divided into three categories: LINKAGE, MARKET and RISK. Both of the two variables in the first category are quite strong influencing factors for the dependent variable, which shows the extremely important status of international trade linkage.

As the biggest exporter in this world, consumption, investment and foreign trade are described as the "Troika of the Chinese economy". In these troikas, foreign trade is a confined horse with arduous task which is always plays the most important role in these three carriages. The highlight of the second category arises in financial concentrate. Bigger market capitalization and International financial centers are deemed as attractive driving forces and their definite impacts have been verified by many papers. Apart from this, the variable GDP per capita has to be noted, GDP is a comprehensive reflection of the domestic economic environment. From a simple point of view, the economy's pace of development can determine the income level of the average market, faster development of GDP will attract more investment, just like the historical data of stock market will influence the expectation of investors and investors' decision-making. GDP and FDI should have causal relationship in some degree. Finally, since this paper did not discuss the impact of country risk, the increasing uncertainty in both macro and micro economy would decrease foreign investors' investment enthusiasm. This opinion is tested by the last variable M2/RES.

The GLS estimation at the second part studies the economic effect of the penetration of foreign banks with data from 13 commercial banks within which 5 are state-owned banks during the period from 2000 to 2011. Although the presence may induce two exactly opposite impacts, the test results prove strong evidence for the main role of cost efficiency effect. The finding, which illustrate the impact of both increasing profitability and decreasing overhead expenses, imply that the entry of foreign banks has acted as an effective driving force to push domestic banks move on. This result is consistent with the hypothesis, in the long run, the competition pressure will certainly force local banks to give up quite life and search for operation efficiency. The opinion is quite explained by Table 7 and Table 8. If taken to broader perspective, this test not only can be used to highlight the achievement of China to open its financial market, but also can be regarded as a reference to the other developing countries particularly for those where the banking sector are still being protected.

Considering about the bank-specific variables, combining with the specific macroeconomic situation in China, the results are not surprising. For example, despite the market share does not show obvious effect on banks' profitability, there is a notably negative effect on banks overhead expenses. It proves that larger banks in China enjoy more cost efficiency with economies of scope and scale. The interesting result arises with the variable loan loss provision. It

shows an extremely obvious sensitivity of banks expenses to the changes of loan loss provision and unlike the opinion in former literature, this relationship is negative.

From the policy aspect, these results give the entry of foreign banks a fair treatment and justify the policy to open the financial market in China. The findings in this paper illustrate that the goal to increase efficiency by inducing foreign banks works well. But from another perspective, since the bank-specific variables also play an extremely important role in banks performance, to continue promoting the local banks profitability should not only rely on the incentives given by these foreigners, but also depend on the macroeconomic environment and supervision on the local banking system.

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