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Bank ownership and lending pattern during 2008 - 2009 financial crisis

Evidence from China

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Abstract

This Master's thesis investigates the different impact on bank lending in China from banks with different ownership during the recent financial crisis in 2008 to 2009. This paper finds that foreign banks in China were generally lending less comparing to banks with joint ownership in non-crisis years, but they did not completely contract their credit supply when the recent financial crisis struck. Government banks were quite supportive during the financial crisis by increasing lending in corporate loans and in construction industry specifically. On the other hand, domestic private banks were the most supportive in the crisis as they have increased their credit supply significantly throughout the 2008 to 2009 financial crisis.

This paper also studies how banks' financial performance affected the bank lending in China during the 2008 to 2009 financial crisis. Banks with considerable assets were more supportive in the latter year of the financial crisis and banks with high capitalization were generally lending more in real estate, construction and manufacture industries in 2008 but less in corporate loans in 2009. Banks with high profitability changed their lending strategy during the financial crisis by curtailing lending in corporate loans as well as construction industry. In addition, banks with high solvency became stricter and more careful with their lending and banks with sufficient funding also became more selective in the credit supply in the second year of the recent financial crisis.

Keywords bank ownership, bank lending, financial crisis, China

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1. Introduction

During the past decade, there is significant change of ownership structure in banks in developing countries. According to Cull & Martinez Peria (2013), the foreign share of aggregate assets in developing countries' banking industry has increased by twenty percentage points from 26% to 46% and the government ownership in banks has decreased by nine percentage points from 28% to 19% during the period of 1999 to 2009. From their study in the East Europe and South America, banks' ownership structure has a significant influence on their lending patterns, especially during the time of crisis.

Over the past two decades, China's economy has been growing at a rapid pace. China is the second largest economy in the world in terms of GDP and the annual growth rate is still above 7%. (The World Bank, 2015) As a result of the fast economic growth, there are four Chinese banks that are among the ten biggest banks in the world by market capitalization (Jiang et al, 2013). Along with the fast growth in these two decades, China's banking industry has undergone tremendous privatization and several reforms, which leads to big changes in banks' ownership structure. Therefore, it is very interesting to study whether banks' different ownership structure would have different impact on their lending patterns in the period of the recent financial crisis.

Previous literature has suggested that foreign ownership enables banks in developing countries to become more efficient and more profitable. But during the time of crisis, they would also contract their lending earlier and decrease their lending more compared to the government-owned and domestic private banks. For example, In De Haas & Van Lelyveld (2014), they discovered that foreign subsidiaries of multinational banks worldwide (excl. China) had to curtail its credit supply three times as fast as domestic banks in the 2008 to 2009 crisis. In addition, in Cull & Martinez Peria (2013), domestic private banks in both Latin America and Eastern Europe have contracted their credit supply; Moreover, foreign banks in Eastern Europe have declined even more in the lending than that of domestic private banks. Whereas in Latin America, government banks are giving out more loans than foreign banks and domestic private banks. Similar evidence was also found in Russia, where Fungacova et al. (2013) has uncovered that foreign banks in Russia have decreased more in the lending growth and Russian government banks have increased the growth of the credit supply during the 2008 to 2009 financial crisis relative to domestic private banks.

With respect to the contribution of this paper to the existing literature on this topic, to the author's knowledge, this thesis is the first study about bank ownership and bank lending during the recent financial crisis in China. In addition, this thesis is the first to use loans by industries to study the differences of banks' credit supply to the four major industries in China.

In this thesis, how banks' ownership structure affects their lending patterns during the non-crisis years and crisis years in the recent financial crisis for an extended period from 2005 to 2012 is examined. The lending patterns are characterized as the growth of total gross loans, growth of corporate as well as private loans and growth of loans to the four major industries (real estate, construction, wholesale & retail, manufacture industries). The sample data is constructed of 176 foreign and domestic commercial banks in China from year 2005 to 2012.

The results of this thesis suggest that foreign banks in China were generally lending less in non-crisis years than domestic banks, but they did not completely contract their credit supply when the recent financial crisis struck. On the other hand, government-owned banks were found to be supportive during the period of financial crisis by increasing their lending in corporate loans. In addition, domestic private banks are shown to be more supportive than government banks by increasing their credit supply in total gross loans throughout the 2008 to 2009 financial crisis. Additionally, this paper also studies how banks' financial performance affected the bank lending during the 2008 to 2009 financial crisis. Banks with considerable assets were more supportive in the latter year of the financial crisis and banks with high capitalization were generally lending more in real estate, construction and manufacture industries in 2008 but less in corporate loans in 2009. Banks with high profitability changed their lending strategy during the financial crisis by curtailing lending in both corporate loans and construction industry. Moreover, banks with high solvency became stricter and more careful with their lending and banks with sufficient funding also became more selective in the credit supply in the latter year of the recent financial crisis.

1.1 Review of Chinese banking history

In order to study this topic in depth, it is imperative to understand the current structure of the banking industry in China. Therefore, a brief review of the development of Chinese banking system is presented below.

China's banking reform started in 1978. Before that, the central bank (People's Bank of China) was the only bank in China, which is known as the mono-bank model. The People's Bank of China administered the financial system as well as performed all financial service duties. (Lin & Zhang, 2009) The initial reform in 1978 aimed at making the banking system more profitable and more efficient by devolving the People's Bank of China into several banks with specializations. This reform has created the "Big Four" state-owned banks, which are the Bank of China (BOC), the Agricultural Bank of China (ABC), the Construction Bank of China (CBC) and the Industrial and Commercial Bank of China (ICBC). The "Big Four" are the largest commercial banks in China till today and they also compete with each other in raising and allocating capital. While the People's Bank of China concentrates on its duties as the central bank of China, which are mainly being in charge of controlling monetary supply as well as issuing currency. (Lin & Zhang, 2009)

The second reform was an ownership reform from the latter half of 1980s till early 1990s. Chinese-foreign joint ownership in commercial banks was introduced and domestic joint equity banks started to appear in the same period. In the meanwhile, another state-owned bank, Bank of Communication (this was a bank with long history but was consolidated after 1949) was restructured and became the fifth biggest state-owned commercial bank in China. Additionally, with the booming of stock market, in 1991, a domestic joint equity bank, Shenzhen Development Bank (later changed its name to Pingan Bank in 2012), was the first bank that became listed and partially publicly owned. Also, three policy banks were created during this time because of the need of reducing the burden of financing trade at state level as well as development projects from the commercial banks. (Lin & Zhang, 2009)

The third reform was to solve the large amount of non-performing loans because of government-directed lending and also the need to improve the internal control of the banks. In the late 1990s, the government injected 27 billion RMB into the "Big Four" state-owned

banks and four new asset management companies were established to transfer and repackage the non-performing loans. (Lin & Zhang, 2009)

Due to implementation of the new regulations (the Central Bank Law and the Commercial Bank Law), many urban and rural cooperatives started to merge into city or rural commercial banks. In 2000s, the "Big Four" state-owned banks and more joint equity banks became listed and more foreign shares as well as foreign management were accepted in the commercial banks. After 2006, city commercial banks were allowed to expand their operations outside of their municipal regions and this has increased the competition as the city commercial banks try to attract and take in more customers that were out of their reach before.

As of now, the first tier commercial banks are the five state-owned banks, which include the "Big Four" and the Bank of Communication. They are still the largest commercial banks in China. The second tier commercial banks are the twelve joint equity banks. Then the third tier commercial banks are more than a hundred of city commercial banks and large rural commercial banks. There are still many rural cooperatives in rural regions of China and many of them are also financed or started by bigger city or rural commercial banks. These smaller cooperatives are not included in the sample for this Master's thesis because of the difficulty of retrieving their information and also the scope of the rural cooperatives is comparatively trivial.

Foreign banks have had a long history in China as they entered China as early as nineteenth century when the Opium War opened the gate of trade in China, who was still governed by Qing Dynasty at that time. Many of foreign banks from that period are still active in the Chinese banking industry today, such as Standard Chartered, HSBC, Deutsche Bank (China), Credit Agricole CIB (China), and Citibank. But after 1949, their participation in Mainland China was very limited; many of them moved their offices to Hong Kong or Taiwan. As mentioned earlier, started in the 1980s, some Chinese-foreign joint equity banks were created and many more banks also accepted foreign shares injection as well as foreign management. Starting in the end of 2006, the China Banking Regulatory Commission (CBRC) has begun the approvals of foreign banks' registrations of incorporating locally in Mainland China. This gesture made China more open and attractive to foreign banks. By 2012, there were at least 15 foreign banks locally incorporated. Moreover, many more foreign banks are opening their branches and representative offices in China.

The rest of the thesis is organized as follows: in Section 2, previous academic literatures related to this thesis topic are discussed. In Section 3, the hypotheses of this study are explained. In Section 4, the process of data collection and method used for analyzing the data are introduced. In Section 5, the empirical results are explained and robustness check of the model is performed. In the final section, conclusions are drawn and potential extensions are considered.

2. Literature Review

Many previous researches on bank ownership during non-crisis years suggest that in developing countries, state-owned banks are less efficient comparing to domestic private banks and foreign banks. During non-crisis time, it is generally believed that foreign banks and domestic private banks tend to perform better than that of state-owned banks. For example, Jiang et al. (2013) has studied that city commercial banks and joint-equity commercial banks outperform state-owned banks significantly in China. The privatization reform has enabled many banks to be more efficient in terms of revenue inflows. In addition, the commercial banks that have minority foreign ownership also have a significant positive long-term effect. What's more, Bonin et al. (2005) studied 11 transition countries from 1996 to 2000, and they found out that foreign banks are more cost-efficient and they also provide better services compare to other banks. Another research by De Haas & Van Lelyveld (2010) also showed that if the host country has a domestic crisis, the foreign banks' credit supply in the host country is not necessarily affected.

However, more recent researches after the 2008-2009 financial crisis have discovered that government banks and domestic private banks supported the local economy more by sustaining or even increasing their credit supply growth; Because of the vast scope of this financial crisis, foreign banks tended to contract their credit supply very early during the crisis for self-protection. The explanation of the credit supply decrease by foreign banks are mainly due to funding decrease from parent banks, more prudent and careful lending during crisis and it was also affected by the proximity between the foreign subsidiaries and parent multinational banks. Some of these researches are discussed in the following sessions.

2.1 Global level evidence

De Haas & Van Lelyveld (2014) discovered that during the recent 2008 to 2009 financial crisis, 48 largest multinational banks' 199 foreign subsidiaries all around the world (excl. China) had to reduce credit supply three times as fast comparing to domestic banks. When the crisis is domestic, the parent banks can provide sufficient funding to their foreign subsidiaries to ease with the pressure from the crisis. (De Haas & Van Lelyveld, 2010) However, when the scope of the crisis becomes global and the multinational parent banks are also under the influences of the financial crisis, then the foreign subsidiaries cannot get sufficient strong

support from the parent multinational banks during the economic downturn. In conclusion of their latest and previous researches, they believe that the multinational banks subsidiaries support and stabilize the local economies when there are domestic crises. However, with the presence of a global financial crisis, the multinational banks transmit the shocks to the local markets and contract their credit supply aggressively.

Micco & Panizza (2006) has studied whether state banks' state ownership would correlate with the lending patterns over business cycle and the scope of this research is worldwide. They found out that government banks' lending tends to be less responding to macroeconomic shocks comparing to domestic and foreign private banks. This behavior is mainly due to government banks play a credit smoothing role, which suggests that state-owned banks have credit stabilization as their objective function and depositors view government banks as more reliable choices during a crisis and therefore state-owned banks are better at supplying smooth credit. In the meanwhile, it is also considered that state-owned banks' management lack the incentive to react to the shocks and they tend to have "lazy" behavior and politicians may use the credit supply to ensure re-election.

2.2 Regional level evidence

On the regional level, recent research by The World Bank has shown that in Eastern Europe and Latin America, the financial crisis in 2008 – 2009 has incurred significant decline in the growth rate of bank lending. In this crisis, the two regions also demonstrated differences of how banks' different ownership structures affect the bank lending in the financial crisis. Firstly, the domestic private banks have decreased their loan supply in both regions during the financial crisis in 2008-2009. In Eastern Europe, the foreign banks contracted more on their credit supply relative to domestic private banks during that period, as there is conspicuous reduction in corporate loans. Whereas in Latin America, the government-owned banks supplied comparatively more loans than that of domestic private banks and foreign banks, which is shown by the higher growth in the credit supply during the period of crisis. (Cull & Martinez Peria, 2013) In the same article, they also explained the differences in bank behavior across different regions to some extent. They believed that in both Eastern Europe and Latin America, the distance or proximity between the foreign subsidiaries and their parent banks play an important role in the regional different results.

There is also a relevant research that studies foreign banks' credit supply in Latin America and the Caribbean (LAC) during the financial crisis. (Kamil & Rai, 2010) They have discovered that the foreign banks in LAC region were more resilient than that of foreign banks in other regions during the 2008 to 2009 financial crisis. And this is due to that foreign banks' lending is more resilient when their lending in LAC is by the local currency in the host country. In addition, foreign banks deposit funding in LAC also originated from the domestic market. Moreover, the lending itself was carried out by the domestic subsidiaries.

De Haas et al. (2013) has also done a relevant research in Eastern Europe regarding the banks that have joined the Vienna Initiative. Vienna Initiative is an agreement signed by multinational banks from Western Europe that binds the multinational parent banks' commitment to their foreign subsidiaries in Eastern Europe. Therefore, even during crisis, the parent banks would still be a strengthening source for the foreign subsidiaries in Eastern Europe. As a result, they found that both foreign banks and domestic banks have decreased their credit supply aggressively during the 2008 to 2009 financial crisis. However, the foreign subsidiary banks that were under protection of Vienna Initiative had no significant negative lending in the period of crisis. Hence, it also proves that the credit supply from foreign banks' subsidiaries can be affected negatively by their parent multinational banks when the crisis also reaches their home market.

Another research is from Cetorelli & Goldberg (2011), it has uncovered that during the recent financial crisis, the credit supply in emerging markets was affected significantly by foreign banks. These markets include emerging Asia, emerging Europe and Latin America. There were contractions in direct and cross-border lending as well as local lending from foreign banks and foreign banks that are affiliated in the local emerging markets. At the same time, due to a decrease in interbank and cross-border lending, domestic banks also reduced their credit supply because of funding shock.

Additionally, Mihaljek (2010) has studied how the recent financial crisis affected banks that operate in emerging market by using survey data of 21 countries from Asia, Latin America, Central and Eastern Europe as well as other emerging market economies. The bank operations are measured in terms of funding, lending and liquidity adjustments. As a result, the research has discovered that the domestic and foreign banks behaved similarly in a broad sense. The author found that the banks adjusted their funding operations by decreasing their reliance on

wholesale market and increasing their effort in absorbing retail deposits. For liquidity adjustment, banks reduced interbank activities and the maturity of the bank lending. In the meanwhile, they also increased business with central banks. As respect to the lending operations, the banks decreased their credit supply to corporate as well as consumer loans; instead, they shifted their lending focus towards loans that are less risky and government bonds. Starting from August 2007, most banks' total assets and loans growth were slowing down and growth of total loans declined sharply thereafter. Corporate loans growth decreased sharply in all emerging market whereas consumer loans' decrease was relatively moderate in Asia but worse in other emerging market regions. Public sector lending, on the other hand, was increased in Latin America and was decreased in other emerging market regions. Many central banks in these regions that have both low and high presence of foreign banks reported that there was no conspicuous difference in how domestic and foreign banks react to the financial crisis. Minor differences exist in some particular countries. In Thailand, foreign banks reduced their consumer loans and increased secured lending whereas domestic banks increased their household loans and remained secured lending unchanged. In Singapore, some foreign banks reduced their credit supply to "non-core customers". In Saudi Arabia, as some foreign banks encountered liquidity problem from the headquarters, the local lending operation was limited to certain industries. However, countries with moderate foreign banks presence exhibit lending policy differences of how domestic and foreign banks react to the recent financial crisis. In general, foreign banks in these countries decreased their lending faster than the private domestic banks. On the other hand, government banks increased their lending and it partially offset the decrease from the foreign banks and domestic private banks.

2.3 Country level evidence

On the country level, relevant literature has found that foreign banks tend to be "lack of loyalty" by studies conducted in Czech Republic and Poland. Thus, it is easier for them to pull back from the lending during economic difficulties in the host countries compared to the domestic banks. (Weill, 2003) This theory is confirmed by Fungacova et al. (2013). They used quarterly banking data from the beginning of 2007 to the end of 2009 from Russia; where there is a banking system consists of many state-owned banks, foreign banks and also domestic private banks. The results have shown that the credit supply has reduced during that period in an overall level. Nevertheless, they found that the state-owned banks tend to support

the economy more during the 2008-2009 financial downturn as the decline in their credit supply is significantly less comparing to domestic private banks and foreign banks.

Coleman & Feler (2014) studied how bank ownership affects the bank lending during the recent financial crisis in Brazil. They have found that private banks have changed their operation strategy to be more conservative during the recent financial crisis in 2008 to 2009. Firstly, the private banks experienced sharp decrease in their deposit funding. Secondly, the private banks also reduced the portion of deposit funding that they would use for credit supply. As a result, the drop in credit supply by the private banks were quite aggressive. However, government banks actually helped to mitigate the negative impact from the financial crisis shocks. During the recent financial crisis, government banks provided more credit even though they also experienced decline in their deposits. The difference between government bank lending and private bank lending has helped offsetting the aggregate decline in bank lending in Brazil during the financial crisis. The credit increase has been disproportionally helpful in various areas of Brazilian economy throughout the crisis, relative to areas with less lending from government banks. The areas that benefited from the government lending includes local employment, production, incomes and local establishments etc. The estimated economic growth, incomes and number of establishments would be much lower if it was not for the increased credit supply from the government banks. However, the paper also finds it to be uncertain and it has a critical view that whether the government banks' intervention would be positive and beneficial for the Brazilian economy in the long term.

There is also a study from Israel about the bank owernship's effect on bank lending during the recent financial crisis. According to their findings, local Israeli banks were not affected by the finanical crisis. As the financial crisis was spread from international investments and international financial institutions, Israeli domestic banks do not have much shares from international parties. Therefore, they kept through the crisis stably. Foreign banks in Israel is still during infancy period, the operations in the Israeli market is through opening up representative offices, branches or subsidiaries, which is similar to the situation in China before the end of year 2006. Because of the financial crisis, the foreign banks in Israel have altered their operating strategy in the local market. For example, CitiBank and HSBC curtailed their credit supply to Israeli's corporate borrowers in the first half of year 2009. However, there are also foreign banks that actually expanded their credit supply during the

crisis. For example, Citibank started lending to personal loans and BNP Paribas opened up a new subsidiary in Israel. (Marzuk, 2009)

In conclusion of all the prior researches that are relevant to this topic, most of them found government banks to be supportive and have an effect of stablizing the economy during the crisis. On the other hand, foreign banks are less supportive during the recent financial crisis in general and they tend to contract their lending faster. For domestic private banks, there are mixed results as in some cases they are supportive, whereas in other cases, they are not.

3. Hypotheses

Based on all researches discussed in the previous section, it is very interesting to extend the research of whether the banks' ownership can have impact on banks' lending pattern during the recent financial crisis from 2008 to 2009 in China. As suggested in the literature review, foreign banks tended to contract their lending during a crisis with big scope similar to the financial crisis in 2008-2009. On the other hand, government-owned banks would increase their lending to support the economy during the crisis period. Domestic private banks should be supplying loans somewhere in between government-owned banks and foreign banks. Therefore, the hypotheses of this thesis are that foreign banks in China reduced the growth rate of their credit supply and government-owned banks as well as domestic private banks reduced less or even increased their credit supply growth during the 2008 to 2009 financial crisis.

4. Methodology and Data

This section describes the research method and data collection process in detail. First, the research method is presented. Then there is an introduction of how the data is retrieved, followed by definition and description of the variables used in the model.

4.1 Method

Similar to Cull & Martinez Peria (2013), the empirical model in this thesis includes ownership variables, crisis year variables and banks' financial variables. The equation below describes the baseline empirical model used to examine the impact of banks' ownership on their lending patterns:

$$\begin{aligned}\Delta L_{i,t} = \beta_0 + \beta_1 Foreign_{i,t} + \beta_2 Government_{i,t} + \beta_3 DomesticPrivate_{i,t} + \beta_4 Crisis\_2008_t \\ + \beta_5 Crisis\_2009_t + \beta_6 Crisis\_2008_t \times Foreign_i + \beta_7 Crisis\_2008_t \\ \times Government_i + \beta_8 Crisis\_2008_t \times DomesticPrivate_i + \beta_9 Crisis\_2009_t \\ \times Foreign_i + \beta_{10} Crisis\_2009_t \times Government_i + \beta_{11} Crisis\_2009_t \\ \times DomesticPrivate_i + \beta_k X_{i,t-1} + c_t + c_b + u_{i,t}\end{aligned}$$

where

- $\Delta L_{i,t}$ represents the annual change in percentage growth of total gross loans, or one of corporate loans, private loans, real estate loans, construction loans, wholesale & retail loans or manufacture loans) for bank i at time t.
- β_0 is the constant in the model. β_1 ... $\beta_{11}$are the coefficients. $\beta_k$is the coefficient vector.
- *Foreign*, *Government* and *DomesticPrivate* are dummy variables that have a value of 1 if the banks are foreign-owned, government-owned or private-owned by domestic parties. If all of them are 0, it means the bank does not have a majority share from any of the three above-stated ownership and these banks would be banks with "joint ownership".
- *Crisis_2008* and *Crisis_2009* are dummy variables that equal to 1 if the year is 2008 or 2009. Other years would have a value of 0.

- $X_{i,t-1}$ is a matrix variable that contains all the other factors that affect banks' lending pattern and it is lagged one period. These factors include bank size, equity ratio, profitability, liquidity ratio and deposit funding ratio.
- c_t represents time fixed effects and $c_b$represents bank fixed effects. Inclusion of the fixed effects would help to capture or control for time specific effects (such as differences between years) and bank specific effects (variations among different banks).
- $u_{i,t}$ is the error term of the regression.
- i = 1,…, n, where n is the number of banks in the sample.
- t = 1,…, T_i, where $T_i$is the number of year for bank i in the sample.

There is possibility that the banks' financial variables have different impact on the growth of credit supply instead of ownership variables during crisis years and non-crisis year. Therefore, the model is estimated in several specifications with robust standard errors in order to control for both macro effects on the growth of bank lending by including fixed effects and the interactions between the crisis dummy variables and the financial data variables. Thus, for each loan growth variable, there would be six specifications, which are

I. Baseline estimation that is without bank or time fixed effects, nor interactions between crisis dummy variables and financial data variables.
II. Year fixed effects are included in the baseline estimation.
III. Specification II and inclusion of interaction between crisis dummy variables and financial data variables.
IV. Baseline estimation and the interaction between crisis dummy variables and financial data variables.
V. Specification IV with bank fixed effects.
VI. Specification IV with both bank fixed effects and time fixed effects.

4.2 Data[1]

The sample consists of 176 commercial banks operating in China between year 2005 and 2012. The main source of the data is Bankscope database and banks' annual reports. Bankscope is a database that provides banks' financial statements, ratings and intelligence information by the Bureau Van Dijk. Banks' annual reports were downloaded from banks' homepages or from the newspaper where the banks' annual reports were published. The data sources are mixed because Bankscope does not have complete data for every commercial bank in China. For example, for city commercial banks in China, much of the data is not available in Bankscope. Therefore, the data of many city commercial banks was manually collected from the banks' annual reports. In addition, not every bank publishes their annual reports online and many banks only provide the latest annual report from recent two or three years. Moreover, a small part of the data also comes from the Chinese Almanac of Finance. Nevertheless, the author exhausted all kinds of effort to make sure to obtain as much data as possible to ensure the accuracy of the sample. Nonetheless, the panel data is unbalanced as not every year's data is available.

All financial data collected, such as loans, assets, profits, equity and deposit funding data were collected in unit of millions of CNY. In cases where the data were reported in other currencies, they were converted to the Chinese currency CNY by using Bankscope's annual currency conversion rates to ensure the consistency.

The explanatory variable used in the model is the bank lending variable, which includes the annual growth in percentages of total gross loans, corporate loans, consumer loans, loans to real estate, loans to construction, loans to retail & wholesale and loans to manufacture industries. The data of loans by industries and the data of banks' ownership are only available from banks' annual reports, thus these data were entirely manually collected. Unlike Cull & Martinez Peria (2013), in this paper, the banks' ownership is categorized into state-owned banks, foreign banks, domestic private banks and also joint-ownership banks[2], based on whether the majority share (50% or more) is owned by the government, foreign parties,

[1] The data was collected for research purpose for The Bank of Finland Institute for Economies in Transition. All rights belong to The Bank of Finland.

[2] Joint-ownership bank here refers to the bank without majority ownership from foreign, government or domestic private parties

domestic private parties or none of the three types of shares has majority control of the bank, respectively. Detail definitions and description of the variables are presented in Table 1.

Table 1

Variables by definition and unit:

Variables	Definitions	Main source	Unit
Growth rate of gross loans	Annual change in total gross loans	Bankscope	%
Growth rate of corporate loans	Annual change in corporate loans	Bankscope	%
Growth rate of private loans	Annual change in private loans	Bankscope	%
Growth rate of real estate loans	Annual change in real estate loans	Annual reports	%
Growth rate of construction loans	Annual change in construction loans	Annual reports	%
Growth rate of retail loans	Annual change in retail loans	Annual reports	%
Growth rate of manufacture loans	Annual change in manufacure loans	Annual reports	%
Foreign	Dummy equals to 1 if foreign ownership > 50%	Annual reports	
Government	Dummy equals to 1 if government ownership > 50%	Annual reports	
Domestic private	Dummy equals to 1 if domestic private ownership > 50%	Annual reports	
Size	Log of total assets	Bankscope	
Equity ratio	Equity to assets ratio	Bankscope	
Profitability	Return on assets	Bankscope	
Liquidity ratio	Liquid assets to total assets	Bankscope	
Deposit funding ratio	Customer deposits, money market and short-term funding to assets	Annual reports	

As shown in Table 1, all bank lending variables were measured as annual growth rate in percentage in order to capture the annual change of credit supply. Ownership variables are dummy variables in comparison to the banks without a majority holding from foreign, government or private domestic parties. Besides ownership, other financial variables that may affect lending growth were also controlled. Bank size is measured by log of assets. The equity ratio measures the capitalization of the banks. Bank profitability is measured by return on assets; Liquidity is measured by liquid assets to total assets. And deposit funding ratio is measured by total deposits and short-term funding to assets. All financial variables are lagged one year so that they can better explain the bank lending change in the following year. Next, the descriptive statistics of the variables used in the analysis is presented in Table 2.

Table 2

Descriptive statistics of variables:

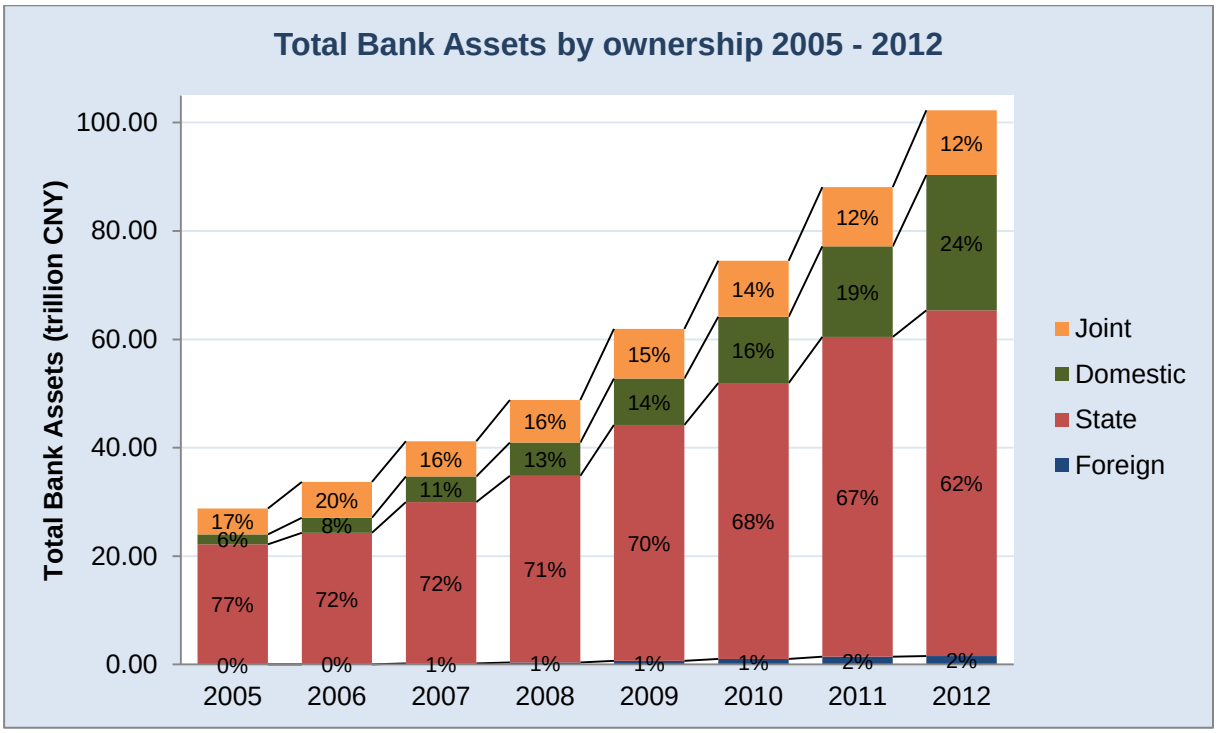
Variables	N	Mean	Std. Dev	Minimum	Median	Maximum
Growth rate of gross loans	852	29.60	97.05	-78.13	21.40	2463.89
Growth rate of corporate loans	492	29.66	127.48	-42.84	19.54	2634.83
Growth rate of private loans	459	69.56	408.56	-99.31	26.03	6138.71
Growth rate of real estate loans	399	31.07	107.02	-100.00	13.12	1213.82
Growth rate of construction loans	392	49.92	124.75	-100.00	28.78	1425.00
Growth rate of retail loans	442	73.51	472.89	-98.57	35.49	9683.33
Growth rate of manufacture loans	452	30.68	97.00	-100.00	20.59	1491.00
Foreign	950	0.15	0.36	0.00	0.00	1.00
Government	950	0.15	0.36	0.00	0.00	1.00
Domestic private	950	0.39	0.49	0.00	0.00	1.00
Size	1047	10.88	1.79	4.85	10.66	16.68
Equity ratio	1047	0.09	0.09	-0.06	0.06	0.95
Profitability	1039	0.01	0.01	-0.04	0.01	0.14
Liquidity ratio	996	0.30	0.18	0.00	0.27	4.21
Deposit funding ratio	1044	0.86	0.13	0.00	0.90	1.18

The total gross loan shows an annual growth of 29.60% on average and the average annual growth rate of corporate loans is quite similar to that of the total gross loan. However, other types of loans exhibit higher growth, especially private loans and retail & wholesale loans, which are 69.56% and 73.51% annually, respectively. Then they are followed by growth rates of construction loans at 49.92% and real estate loans at 31.07%. The manufacture loans are the industry that is growing slowest among the four chosen industries and it is growing at a rate of 31.07% annually on average.

Based on ownership observations, 15% are foreign banks, 15% are government banks, 39% are domestic private banks and the remaining are observations of banks that are joint ownership without majority share from foreign, government or domestic private parties. In addition, the bank size is measured by log of assets and it is averaged as 10.88. The average equity ratio is 9%, return on assets is 1%, liquidity ratio is 30% and the deposit funding ratio is 86% on average over from year 2005 to 2012.

In this dataset, the total banking assets were around 29 trillion CNY in 2005 and over seven years, it reached at around 102 trillion CNY. The assets CAGR between 2005 and 2012 is approximately 20%. Graph 1 below shows the total bank assets by different ownerships.

Graph 1
Total Bank Assets by ownership 2005 - 2012



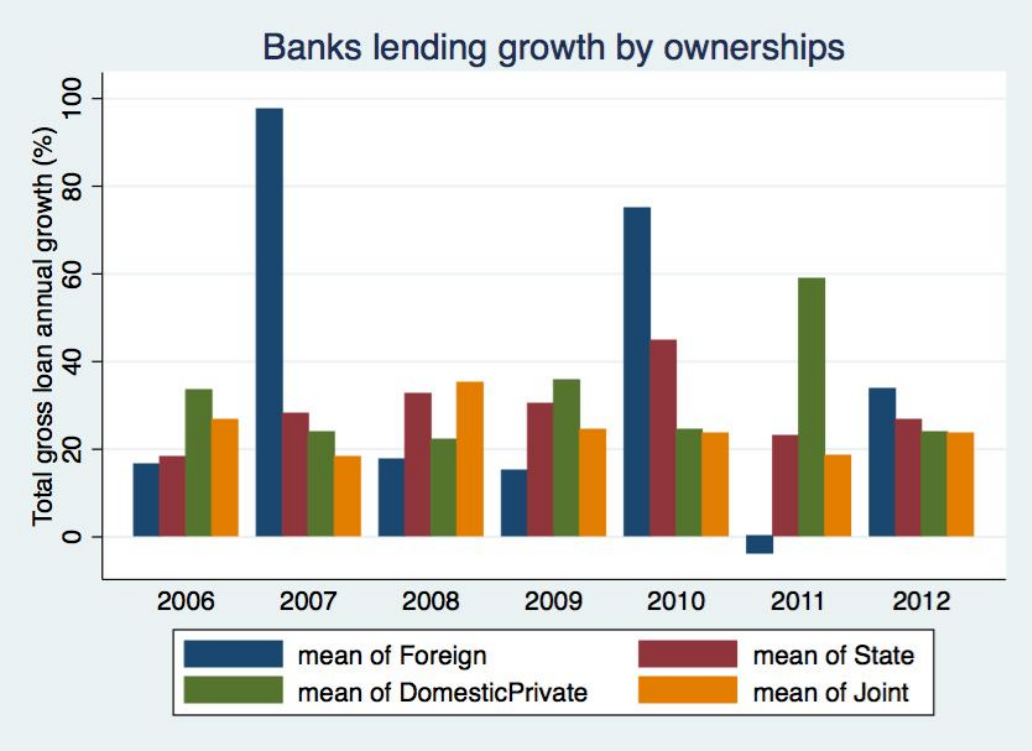
As can been seen from the graph, state ownership is still the dominant power in the banking industry even after the privatization reform. But its asset proportion in the industry has been gradually declining over the years. Domestic-ownership banks assets are seen with steady growth year by year. Foreign banks' assets are comparatively small as to the whole Chinese banking industry, but their assets have been increasing since 2007 after the CBRC regulation change.

To see how the total gross loans have been growing over the sample years by different ownership types, Graph 2 displays the trend below:

Graph 2

Bank lending growth by ownerships

The graph shows the annual growth of total gross loans from year 2006 to 2012. The credit supply growth is presented in average percentage increase. For each year's observation, from left to right, the bars of ownership represent foreign ownership, government ownership, domestic private ownership and joint ownership, respectively.



As depicted in the graph, the growth of total gross loan of foreign banks rocketed in 2007 when the China Banking Regulatory Commission opened up the Chinese market completely to foreign banks' registrations in Mainland China in December 2006, but the growth then plummeted in 2008 because of the global financial crisis. In 2009, the decrease in the total gross loans growth of foreign banks has slowed down. However, it was still less than the growth of the total gross loans from domestic banks (both government-owned and private). After the financial crisis, foreign banks' lending has recovered and it has shown a big increase in 2010. In 2011, the growth of gross loans from foreign banks was negative and it was

mainly due to the macro-control policy from the China Banking Regulatory Commission (CBRC). The CBRC requires all commercial banks operating in China to meet certain criteria. Loan-deposit ratio requirement is one of them. The required loan-deposit ratio should be at maximum 75% and all foreign banks operating in China were required to meet that standard in five years when the CBRC started allowing foreign banks local incorporation in China (meaning all foreign banks has to meet the loan-deposit ratio criteria by the end of 2011). As recorded in the end of 2010, the aggregate loan-deposit ratio of all foreign banks was 86%. (Nie, 2012) Therefore, in 2011, many foreign banks suppressed their lending and made an effort to attract more deposits. Nevertheless, based on the graph, foreign banks' credit supply growth was indeed less than domestic banks during the financial crisis in both 2008 and 2009.

In addition, it is noteworthy that the government banks had higher credit supply growth than both domestic private banks and foreign banks in 2008, whereas in 2009 the domestic private banks had higher growth than the other three ownership categories. Relative to the growth before 2008, government banks had higher growth in both 2008 and 2009, whereas domestic banks had slower growth in 2008 but higher growth in 2009. Moreover, throughout the whole observation period, joint ownership banks tend to be quite consistent over the years and they have sustained their credit supply during the financial crisis or even lent more than other years in 2008 according to the graph.

5. Analysis and Results

In this section, the model estimation results are presented and analyzed. Table 4 to Table 11 present the regression results from the six bank lending estimations with six specifications of the model with robust standard error and they are followed by interpretations of the results.

Before running the regressions, it is essential to check the correlation of the financial variables that are included in the model to make sure that they are not highly correlated with each other, or else it might affect the regression's results. A Pearson's correlation table listed as follows in Table 3:

Table 3

Correlations of financial variables in the model:

Correlations of banks' financial variables

	Size	Equity ratio	Profitability	Liquidity ratio	Deposit funding ratio
Size	1.00				
Equity ratio	-0.42	1.00			
Profitability	-0.03	0.09	1.00		
Liquidity ratio	-0.10	0.25	0.14	1.00	
Deposit funding ratio	0.31	-0.74	-0.03	-0.20	1.00

The correlations between the financial variables are all smaller than 0.5, thus, it is not likely that the financial variables would intervene with each other in the regression model.

5.1 The growth of total gross loans

As the financial variables are not highly correlated with each other, the first estimation regarding the growth of the total gross loans can be conducted. The estimation results are listed in Table 4 as follows:

Table 4

Determinants of total gross loans:

The explanatory variable is the annual change in total gross loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Standard errors are listed within brackets.

Variables	Growth of total gross loans					
	I	II	III	IV	V	VI
Foreign	-62.115 ***	-63.333 ***	-71.178 ***	-71.174 ***		
	[23.487]	[24.175]	[24.219]	[24.136]		
Government	5.177	3.871	6.538	6.480		
	[8.599]	[8.647]	[9.174]	[9.252]		
Domestic private	-3.085	-4.434	-3.959	-3.876		
	[6.221]	[6.305]	[6.619]	[6.619]		
Size	-2.195	-2.181	-3.174 *	-3.078	-1.546	-1.850
	[1.557]	[1.558]	[1.875]	[2.017]	[1.943]	[1.808]
Equity ratio	187.406	186.464	208.351	208.841	115.890	111.772
	[142.857]	[142.582]	[166.236]	[168.323]	[169.849]	[167.945]
Profitability	-2225.640 **	-2200.014 **	-1797.346 **	-1807.229 **	-1517.070 *	-1520.680 *
	[914.798]	[904.953]	[881.808]	[876.317]	[794.759]	[799.427]
Liquidity ratio	387.770 ***	387.751 ***	405.500 ***	405.610 ***	393.115 **	392.742 ***
	[142.443]	[142.194]	[137.778]	[138.015]	[145.975]	[145.743]
Deposit funding ratio	64.463 **	63.955 **	47.600	46.992	80.404 **	79.185 **
	[31.204]	[30.971]	[31.053]	[31.561]	[39.028]	[37.864]
Crisis_2008	-3.698			-60.283	-16.936	
	[9.441]			[89.969]	[89.792]	
Crisis_2009	10.699			33.192	57.558	
	[9.343]			[46.660]	[48.056]	
Foreign*Crisis_2008	28.839	25.161	64.683 **	64.916 **	-2.869	-3.019
	[31.864]	[32.210]	[25.729]	[25.814]	[16.488]	[16.327]
Foreign*Crisis_2009	-18.980	-8.352	38.746 *	39.621 *	-27.870 *	-29.466 *
	[23.083]	[21.857]	[22.421]	[22.666]	[14.500]	[15.099]
Government*Crisis_2008	24.859	21.063	23.506	22.044	26.827 **	27.374 **
	[16.039]	[13.816]	[16.549]	[16.414]	[12.113]	[12.232]
Government*Crisis_2009	1.659	12.316	-9.568	-8.296	-0.350	-2.355
	[16.244]	[14.178]	[14.015]	[14.396]	[10.924]	[10.919]
Domesticprivate*Crisis_2008	16.088	12.413 *	8.881	8.816	4.735	4.760
	[10.219]	[6.657]	[9.099]	[9.087]	[6.865]	[6.855]
Domesticprivate*Crisis_2009	6.420	17.105 ***	4.007	4.009	1.693	1.536
	[10.396]	[5.599]	[10.211]	[10.257]	[8.282]	[8.272]
Size*Crisis_2008			-1.237	-0.542	-1.727	-1.699
			[2.687]	[2.816]	[2.767]	[2.560]
Size*Crisis_2009			5.478 **	4.278	3.012	5.150 **
			[2.533]	[3.058]	[2.947]	[2.567]
Equity ratio*Crisis_2008			-66.529	-11.128	77.180	61.567
			[189.155]	[208.182]	[217.123]	[204.779]
Equity ratio*Crisis_2009			-27.821	-60.794	43.757	101.188
			[163.432]	[182.046]	[184.124]	[170.757]
Profitability* Crisis_2008			465.863	554.003	424.652	394.976
			[851.475]	[850.125]	[782.586]	[777.014]
Profitability*Crisis_2009			1836.791 *	1789.908 *	1444.547 *	1536.353 *
			[944.919]	[922.160]	[803.558]	[836.428]
Liquidity*Crisis_2008			-231.341 **	-221.776 *	-222.164 *	-225.066 *
			[114.903]	[119.248]	[121.827]	[116.748]
Liquidity*Crisis_2009			-297.651 ***	-303.185 ***	-310.146 **	-300.555 ***
			[105.748]	[106.855]	[113.475]	[111.263]
Deposit funding ratio*Crisis_2008			81.810	133.484	103.378	85.945 **
			[43.869]	[84.024]	[80.047]	[43.676]
Deposit funding ratio*Crisis_2009			15.144	-2.572	-8.500	21.377
			[34.723]	[34.482]	[31.181]	[36.084]
Constant	-103.719 **	-102.266 **	-87.079 *	-87.653 *	-136.177 **	-131.182 **
	[50.309]	[49.333]	[46.111]	[49.884]	[64.133]	[59.456]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	749	749	742	742	742	742
R-squared	0.547	0.547	0.582	0.582	0.549	0.549

Based on the results of the regressions, it is noteworthy to see that foreign ownership has significant negative effect on the growth of total gross loans during non-crisis years. Comparing to banks without majority control from any of foreign, government or domestic private ownership, foreign banks show 62% to 72% less growth in total gross loans. In the meanwhile, government banks show 3% to 7% higher growth in total gross loans than joint ownership banks and domestic private banks show 3% to 5% less growth than banks with joint ownership during non-crisis years, however, these two results are insignificant. The banks' logged assets from the year before also seem to have a negative impact of around -3% on the growth of the total gross loans and it is slightly significant when year fixed effect and interactions between crisis variables and financial variables are controlled. Banks' capitalization, profitability, liquidity that are lagged one year all show significant impact on the growth of total gross loans. Banks' capitalization that is measured by equity ratio has more than 100% positive effect and liquidity has three to four times positive effect on the growth of total gross loans. However, profitability has around 15 to 23 times negative effects on the growth of total gross loans.

As of the years during the financial crisis, year 2008 seems to have negative effect on the growth of the total gross loans and year 2009 has a positive effect on the growth of the total gross loans. Nevertheless, the effects are insignificant. In 2008, comparing to joint ownership banks, foreign ownership has mixed results; government banks tend to have 26% to 27% higher significant growth and domestic private banks have 12% higher significant growth in total gross loans. In year 2009, comparing to joint ownership, foreign ownership and government ownership have mixed results; domestic private banks have 17% higher significant growth in total gross loans.

For the financial variables, in 2008, bank size has negative effect on the growth of the total gross loan, which is consistent with the effect during non-crisis years; Equity ratio tends to have mixed effect and profitability has positive effect. Liquidity in 2007 has a significant negative impact of twice as less on the growth of total gross loans in 2008. Deposit funding in 2007 tend to have positive effect on the growth of total gross loans in 2008 and it is significant in one of the specifications. In 2009, on contrary to year 2008, bank size has positive effect on the growth of the total gross loan, and it is significant in one of the specifications. The regression results suggest that bank size in 2008 has a positive influence on the growth of the total gross loans in 2009. From the same year, equity ratio tends to have

mixed effect as the results from year 2008. Profitability in 2008 has positive effect on the growth of total gross loans in 2009 and the result is significant in one of the specifications. Similar to the results from year 2008, Liquidity in 2008 has a significant negative impact of two to three times less on the growth of total gross loans in 2009. Deposit funding in 2008 tend to have mixed results on the growth of total gross loans in 2009.

Based on the regression results that are significant, it is possible to infer that foreign ownership tends to have a significant negative effect on the growth of the total gross loans during non-crisis years by comparing to joint ownership, whether year fixed effect is included or not. Other financial data, such as equity ratio, liquidity ratio and deposit funding ratio, they all have significant positive impact on the growth of total gross loans. However, bank size and profitability have significant negative impact on the growth of the total gross loans. In 2008, domestic private banks have significant higher growth of total gross loans than joint ownership banks. In the same year, Liquidity has significant negative impact and deposit funding has significant positive impact on the growth of total gross loans. In 2009, domestic private banks have significant higher growth of total gross loans than joint ownership banks. In the same year, size and profitability have significant positive impact on the growth of the total gross loans, whereas liquidity has significant negative impact on the growth of total gross loans. Constants from the regressions are all significant and R-squared values range from 55% to 58%.

In order to check the robustness of the estimation model above, another estimation with robust standard deviation is conducted and the estimation results are presented in Table 5:

Table 5

Determinants of total gross loans with robust standard errors:

The explanatory variable is the annual change in total gross loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of total gross loans					
	I	II	III	IV	V	VI
Foreign	-62.115 ***	-63.333 ***	-71.178 ***	-71.174 ***		
	[10.921]	[10.177]	[10.833]	[10.856]		
Government	5.177	3.871	6.538	6.480		
	[10.112]	[9.343]	[9.966]	[9.986]		
Domestic private	-3.085	-4.434	-3.959	-3.876		
	[7.841]	[6.776]	[7.676]	[7.689]		
Size	-2.195	-2.181	-3.174 *	-3.078	-1.546	-1.850
	[1.630]	[1.629]	[1.794]	[1.887]	[1.849]	[1.761]
Equity ratio	187.406 ***	186.464 ***	208.351 ***	208.841 ***	115.890 **	111.772 **
	[46.631]	[46.577]	[48.551]	[49.384]	[49.070]	[48.125]
Profitability	-2225.640 ***	-2200.014 ***	-1797.346 ***	-1807.229 ***	-1517.070 ***	-1520.680 ***
	[347.829]	[345.878]	[360.774]	[362.713]	[368.884]	[366.884]
Liquidity ratio	387.770 ***	387.751 ***	405.500 ***	405.610 ***	393.115 ***	392.742 ***
	[13.605]	[13.590]	[13.538]	[13.564]	[13.893]	[13.863]
Deposit funding ratio	64.463 **	63.955 **	47.600	46.992	80.404 **	79.185 **
	[32.029]	[31.999]	[33.129]	[33.495]	[34.379]	[34.031]
Crisis_2008	-3.698			-60.283	-16.936	
	[13.449]			[143.692]	[148.719]	
Crisis_2009	10.699			33.192	57.558	
	[13.496]			[81.366]	[84.058]	
Foreign*Crisis_2008	28.839	25.161	64.683 **	64.916 **	-2.869	-3.019
	[24.960]	[21.027]	[26.518]	[26.560]	[25.246]	[25.215]
Foreign*Crisis_2009	-18.980	-8.352	38.746	39.621	-27.870	-29.466
	[21.883]	[17.285]	[25.322]	[25.423]	[23.986]	[23.846]
Government*Crisis_2008	24.859	21.063	23.506	22.044	26.827	27.374
	[21.892]	[17.311]	[22.474]	[22.793]	[21.218]	[20.896]
Government*Crisis_2009	1.659	12.316	-9.568	-8.296	-0.350	-2.355
	[21.854]	[17.228]	[22.126]	[22.373]	[20.748]	[20.523]
Domesticprivate*Crisis_2008	16.088	12.413 *	8.881	8.816	4.735	4.760
	[18.020]	[12.008]	[17.834]	[17.857]	[16.756]	[16.738]
Domesticprivate*Crisis_2009	6.420	17.105 ***	4.007	4.009	1.693	1.536
	[17.107]	[10.544]	[17.160]	[17.180]	[15.900]	[15.881]
Size*Crisis_2008			-1.237	-0.542	-1.727	-1.699
			[4.278]	[4.775]	[4.907]	[4.399]
Size*Crisis_2009			5.478	4.278	3.012	5.150 **
			[3.489]	[4.646]	[4.772]	[3.583]
Equity ratio*Crisis_2008			-66.529	-11.128	77.180	61.567
			[116.481]	[175.584]	[181.456]	[119.361]
Equity ratio*Crisis_2009			-27.821	-60.794	43.757	101.188
			[136.410]	[158.505]	[163.516]	[140.175]
Profitability* Crisis_2008			465.863	554.003	424.652	394.976
			[1247.049]	[1264.488]	[1309.968]	[1292.047]
Profitability*Crisis_2009			1836.791	1789.908	1444.547	1536.353 *
			[1138.453]	[1147.400]	[1187.052]	[1177.745]
Liquidity*Crisis_2008			-231.341 ***	-221.776 ***	-222.164 ***	-225.066 ***
			[67.068]	[70.725]	[73.241]	[69.437]
Liquidity*Crisis_2009			-297.651 ***	-303.185 ***	-310.146 ***	-300.555 ***
			[64.671]	[66.109]	[68.453]	[66.941]
Deposit funding ratio*Crisis_2008			81.810	133.484	103.378	85.945 **
			[54.083]	[129.700]	[134.303]	[55.830]
Deposit funding ratio*Crisis_2009			15.144	-2.572	-8.500	21.377
			[46.575]	[62.572]	[64.830]	[48.183]
Constant	-103.719 ***	-102.266 ***	-87.079 **	-87.653 **	-136.177 ***	-131.182 ***
	[37.209]	[36.943]	[38.245]	[39.984]	[40.534]	[38.897]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	749	749	742	742	742	742
R-squared	0.547	0.547	0.582	0.582	0.549	0.549

Similar as the first estimation, most significant coefficients from the first estimation are still significant with robust standard errors and the results indicate similar interpretations. Therefore, the estimation model seems to be quite reliable. During non-crisis years, banks with foreign ownership have significant less growth in the total gross loans comparing to banks with joint ownership. For financial variables, profitability has significant negative impact and liquidity has significant positive impact on the growth of the total gross loans. In 2008, higher liquidity in 2007 has negative impact in the growth of total gross loans in 2008. In 2009, higher profitability in 2009 would lead to higher growth in the total gross loans in 2009 and higher liquidity in 2008 has negative impact on the growth of the total gross loans.

There are several inferences based on the estimation results on the growth of total gross loans. Firstly, banks with foreign ownership have had slower growth that ranges from -71% to -62% in total gross loans than banks with joint ownership banks in non-crisis years at 1% statistical significance level. This result is consistent with Cull & Martinez Peria (2013)'s finding from Latin America, where the foreign banks were lending 9% to 11% less than that of domestic private banks before the crisis. During crisis years, there is no clear evidence that foreign banks have either higher or lower growth in the total gross loans.

Secondly, banks with government ownership had 27% significant higher growth in the total gross loans at 5% statistical significance level than banks with joint ownership in 2008. Again, this result is also consistent with Cull & Martinez Peria (2013)'s finding in the Latin America, where the government banks were lending around 28% more than domestic private banks in year 2008. Thirdly, banks with domestic private ownership tended to show a higher growth in the total gross loans than the banks with joint ownership during the crisis.

Additionally, during non-crisis years, big banks as measured by log of assets tended to have three times less significant growth of total gross loans during non-crisis years but increased the growth of the total gross loans to 5% in 2009. Similar results are uncovered in Cull & Martinez Peria (2013)'s finding in the Latin America, where the big banks were lending less before crisis but then increased their credit supply significantly in both year 2008 and 2009. Also, banks with higher profitability from the year before would have lower growth in the total credit supply during non-crisis years. However, in 2009, banks with higher profitability also had higher growth in the total gross loans. It indicates that profitable banks were increasing their credit supply more in 2009 than in other years. On the other hand, banks with

higher solvency tended to lend more during non-crisis years but less during the financial crisis. Moreover, banks with higher capitalization were lending at the same growth rate throughout the observation duration. There is no clear evidence that the growth of the total gross lending has decreased during the crisis years.

5.2 The growth of corporate and private loans

After the investigation of the growth of total gross loans, it is also interesting to see whether there are lending differences in corporate and private loans separately. It enables us to see the origins of the differences in the estimations of total gross loans model as well. By using the same equation as before, regressions on the growth of corporate loans and also private loans were conducted and the regression results are listed as in Table 6 and Table 7.

5.2.1 The growth of corporate loans

During non-crisis years, it can be seen that banks with foreign ownership tend to have a lower growth of the corporate loans than the banks with joint ownership during non-crisis years. Banks with government ownership tend to have a higher growth of corporate loans than the banks with joint ownership during non-crisis years. Banks with domestic private ownership tend to have around 18% less growth in corporate loans comparing to the banks with joint ownership and the coefficient is significant at 10% statistical significance level in one of the specifications.

Banks size and deposit funding has mixed results, thus, it is unable to infer from these coefficients. Equity ratio has around three times more positive impact on the growth of corporate loans and it is significant at 10% statistical significance level in one of the specifications. Profitability has around 100 times more positive effect on the growth of corporate loans and most of the coefficients are significant at 5% statistical significance level. Liquidity is shown to have a negative impact on the growth of corporate loans.

Table 6

Determinants of corporate loans with robust standard errors:

The explanatory variable is the annual change in corporate loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of corporate loans					
	I	II	III	IV	V	VI
Foreign	-6.875	5.161	-4.562	-9.759		
	[22.047]	[25.204]	[21.288]	[19.845]		
Government	4.749	15.775	4.762	3.992		
	[8.653]	[10.456]	[8.858]	[8.449]		
Domestic private	-22.375	-10.577	-15.289	-17.660 *		
	[16.256]	[11.358]	[10.842]	[10.579]		
Size	-2.952	-2.483	1.398	-0.494	1.419	2.911
	[2.906]	[2.820]	[2.665]	[2.396]	[2.456]	[2.602]
Equity ratio	299.563	303.969	368.572	328.686	341.656	383.257 *
	[261.585]	[260.697]	[245.213]	[252.622]	[230.337]	[220.348]
Profitability	10181.200	10096.400	10115.250 **	9705.678 **	9586.238 **	9977.588 **
	[6403.697]	[6365.88]	[4439.794]	[4198.285]	[4076.556]	[4318.91]
Liquidity ratio	-6.202	-4.600	-12.962	-15.530	-16.329	-13.703
	[21.145]	[21.837]	[17.468]	[17.315]	[17.631]	[17.875]
Deposit funding ratio	22.363	25.901	0.981	-24.354	-28.601	-6.254
	[33.233]	[34.820]	[39.073]	[37.206]	[38.926]	[39.505]
Crisis_2008	-7.481			-890.229	-868.031	
	[10.319]			[571.025]	[578.506]	
Crisis_2009	-42.274			71.546	99.543	
	[27.523]			[150.789]	[148.047]	
Foreign*Crisis_2008	42.495	35.140	-94.305	-110.092	-121.484	-101.131
	[32.562]	[32.540]	[92.797]	[115.597]	[112.145]	[86.340]
Foreign*Crisis_2009	-40.405	-82.235	51.863	56.751	46.086	46.239
	[58.099]	[61.675]	[36.297]	[34.785]	[36.045]	[37.876]
Government*Crisis_2008	130.671 *	124.025	183.040 **	162.484 **	167.988 **	189.111 **
	[75.833]	[77.100]	[82.086]	[70.596]	[71.960]	[84.057]
Government*Crisis_2009	39.259	-2.620	-7.571	-2.535	1.604	-3.289
	[27.593]	[21.265]	[24.347]	[22.615]	[20.742]	[22.507]
Domesticprivate*Crisis_2008	16.750	9.463	67.205	67.772	50.797	52.572
	[17.689]	[14.595]	[42.467]	[43.433]	[41.048]	[40.213]
Domesticprivate*Crisis_2009	51.464 *	9.485	56.517 **	59.967 **	42.189 **	40.720 **
	[27.613]	[12.590]	[24.714]	[24.839]	[17.539]	[17.738]
Size*Crisis_2008			-32.997 **	-19.479 *	-21.536 *	-34.487 **
			[15.862]	[11.320]	[11.526]	[16.085]
Size*Crisis_2009			0.690	0.816	-1.132	-0.560
			[4.396]	[4.820]	[4.811]	[4.291]
Equity ratio*Crisis_2008			1139.438	2241.824	2245.831	1159.178
			[897.653]	[1545.765]	[1546.322]	[875.872]
Equity ratio*Crisis_2009			-733.115 *	-786.057 *	-791.451 *	-722.801 *
			[399.844]	[475.077]	[470.392]	[391.878]
Profitability* Crisis_2008			-9153.507 *	-6764.275	-6679.669	-9017.782 *
			[5091.701]	[4382.109]	[4317.191]	[5043.692]
Profitability*Crisis_2009			-12195.070 **	-11718.130 **	-11598.340 **	-12057.640 **
			[5390.995]	[5108.076]	[4978.495]	[5260.002]
Liquidity*Crisis_2008			1123.633 **	1290.920 **	1301.310 **	1137.554 **
			[446.955]	[506.660]	[516.297]	[455.635]
Liquidity*Crisis_2009			-375.910 **	-386.082 *	-380.600 **	-365.010 **
			[190.190]	[198.564]	[191.455]	[184.237]
Deposit funding ratio*Crisis_2008			87.064	757.233 *	766.051 *	108.233
			[155.259]	[448.534]	[456.392]	[155.432]
Deposit funding ratio*Crisis_2009			238.618 **	154.899	158.536	259.319 **
			[113.190]	[104.528]	[103.748]	[116.561]
Constant	-64.565	-84.833	-103.863	-49.441	-77.438	-122.328 *
	[63.895]	[71.430]	[68.638]	[59.241]	[60.895]	[66.632]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	470	470	466	466	466	466
R-squared	0.400	0.397	0.571	0.585	0.582	0.568

In crisis years, year 2008 seems to have negative influence on the growth of corporate loans, whereas year 2009 has mixed results. In addition, foreign ownership shows mixed results in both crisis years and government ownership show mixed results in 2009. However, banks with government ownership have 1.3 to 1.9 times of higher growth of corporate loans than joint ownership banks in 2008. Domestic private banks show higher growth in corporate loans in both years and the difference is significant in 2009 with 40% to 60% higher growth.

Bank size has 20% to 34% significant negative impact on the growth of corporate loans in 2008. In 2009, bank size has mixed results. Equity ratio has positive impact on the growth of corporate loans in 2008 but negative impact in 2009. The negative impact in 2009 is shown by more than seven times less growth of corporate loans and it is significant at 10% statistical significance level. Profitability has significant negative influence on the growth of corporate loans in both crisis years, which is 90 times less and 120 times less in 2008 and 2009, respectively. In 2008, liquidity has around 11 to 13 times higher significant effect on the growth of corporate loans. Whereas in 2009, liquidity has more than 3 times less significant effect on the growth of corporate loans. In terms of deposit funding ratio, it has positive impact on the growth of corporate loans in both crisis years. The values of R-squared range from 40% to 59%.

In conclusion, banks with government ownership had 1.3 to 1.9 times higher significant growth of corporate loans than banks with joint ownership in 2008. This result is consistent with Cull & Martinez Peria (2013)'s finding in the Latin America, where government banks are lending more than domestic private banks in year 2008. Additionally, banks with domestic private ownership had 41% to 60% higher significant growth of corporate loans than banks with joint ownership in 2009.

In 2008, big banks decreased the growth of their lending to corporations and companies by 20% to 34%. Same with Cull & Martinez Peria (2013)'s finding in the Eastern Europe, where big banks with more assets were lending about 6% to 7% less than smaller banks in year 2008. In the same year, banks with high liquidity lent 11 to 13 times more to corporations; Banks with higher deposit funding ratio also supplied more than twice more credit to corporations in 2008. Banks with high profitability had 90 times less growth in corporate lending.

In 2009, banks with higher capitalization had 7 to 8 times lower growth of corporate loans. Similar to year 2008, banks with higher profitability showed even larger decline in the growth of corporate loans in 2009, which was about 120 times less. In the same year, banks with higher deposit funding also had more than twice higher growth of corporate loans.

Taken into account of the regression results from both the total gross loans and corporate loans, it is conspicuous that the significant positive growth in total gross loans from government banks can be partially explained by the significant positive growth in corporate loans from government banks in year 2008. Similarly, the significant positive growth in total gross loans from domestic private banks can also be partially explained by the significant positive growth in corporate loans from domestic private banks in year 2009.

5.2.2 The growth of private loans

Similar method is applied on the regression analysis on the growth of private loans. The estimation results are presented in Table 7.

During non-crisis years, it can be seen that banks with foreign ownership tend to have two to three times significant slower growth of private loans than that of banks with joint ownership during non-crisis years. Banks with government ownership also tend to have a slower growth of private loans than the banks with joint ownership during non-crisis years. Similarly, banks with domestic private ownership tend to have less growth in private loans comparing to the banks with joint ownership as well. As for banks' financial variables during non-crisis years, bank size has a negative influence on the growth of private loans; Equity ratio has a positive impact on the growth of private loans; Profitability has negative effect on the growth of private loans the coefficients in the first two specifications are significant at 10% statistical significance level; Liquidity and deposit funding ratio have negative influences on the growth of private loans.

In crisis years, year 2008 seems to have negative influence on the growth of private loans, whereas year 2009 has mixed results. In 2008, foreign ownership has a negative impact on the growth of private loans; government ownership and domestic private ownership have mixed results. In 2009, foreign ownership has mixed results; government ownership and domestic private ownership have positive influences on the growth of private loans.

As for banks' financial variables in the recent financial crisis, in 2008, bank size, equity ratio and liquidity exhibit positive effect on the growth of private loans; Profitability and deposit funding ratio came with mixed results. In 2009, bank size, profitability and liquidity have positive impact on the growth of private loans; Equity ratio has mixed results from the regressions and deposit funding ratio have negative influences on the growth of private loans. The regressions have values of R-squared range from 9% to 17%.

In conclusion, in non-crisis years, banks with foreign ownership already tended to have a significant growth rate of private loans that is approximately two times less compare to the banks with joint ownership. This matches with the phenomenon in China as foreign banks' business in China is mainly focused on corporate lending for the time being. In addition, banks with high profit tended to lend less to households and individuals during non-crisis years.

Table 7
Determinants of private loans with robust standard errors:
The explanatory variable is the annual change in private loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of consumer loans					
	I	II	III	IV	V	VI
Foreign	-283.135 *	-208.503 *	-265.703 *	-279.494 *		
	[161.814]	[106.534]	[158.912]	[164.292]		
Government	-116.063	-49.822	-108.170	-109.715		
	[126.855]	[70.766]	[125.499]	[126.198]		
Domestic private	-133.465	-63.156	-117.717	-125.665		
	[138.628]	[78.826]	[142.821]	[145.101]		
Size	-10.919	-8.075	-13.822	-19.823	-11.753	-7.393
	[9.645]	[7.780]	[12.835]	[12.942]	[7.959]	[8.874]
Equity ratio	920.439	922.760	766.651	564.201	143.105	332.162
	[832.059]	[828.903]	[587.077]	[503.388]	[508.345]	[577.373]
Profitability	-3720.670 *	-3880.548 *	-8280.454	-8819.781	-8436.803	-7939.994
	[2184.297]	[2174.015]	[5650.561]	[5899.129]	[5703.315]	[5435.580]
Liquidity ratio	-65.586	-56.331	-88.431	-94.591	-86.699	-81.830
	[40.277]	[39.408]	[55.620]	[59.195]	[60.994]	[57.483]
Deposit funding ratio	-186.853	-168.402	-98.767	-227.528	-158.155	-49.069
	[220.399]	[201.994]	[238.802]	[245.371]	[237.907]	[254.924]
Crisis_2008	-175.091			-2737.102	-2502.931	
	[143.284]			[1870.444]	[1826.905]	
Crisis_2009	-156.593			-114.089	124.706	
	[144.724]			[608.414]	[479.550]	
Foreign*Crisis_2008	1003.206	830.340	693.966	683.410	419.115	441.487
	[801.614]	[782.672]	[479.234]	[461.761]	[401.745]	[429.020]
Foreign*Crisis_2009	162.039	7.401	210.605	226.294	-48.536	-44.588
	[151.767]	[44.815]	[169.241]	[186.383]	[70.623]	[61.851]
Government*Crisis_2008	169.670	-2.740	266.224	210.238	90.793	144.057
	[138.312]	[25.820]	[184.524]	[161.715]	[112.577]	[133.870]
Government*Crisis_2009	189.656	34.934	173.393	178.150	71.622	63.934
	[147.880]	[44.362]	[142.018]	[137.350]	[52.908]	[48.361]
Domesticprivate*Crisis_2008	129.341	-44.478 ***	263.947	273.524	147.288	145.734
	[141.387]	[12.436]	[190.202]	[195.129]	[140.527]	[140.673]
Domesticprivate*Crisis_2009	156.616	1.760	133.569	142.512	20.969	18.284
	[142.613]	[14.759]	[154.651]	[153.953]	[30.973]	[29.560]
Size*Crisis_2008			6.097	42.890	36.049	3.216
			[26.310]	[29.230]	[27.578]	[24.566]
Size*Crisis_2009			7.518	13.248	5.225	3.120
			[11.051]	[16.036]	[12.134]	[8.958]
Equity ratio*Crisis_2008			3835.999	7029.601	7424.923	4468.829
			[3921.333]	[5476.177]	[5570.272]	[3956.054]
Equity ratio*Crisis_2009			-505.300	-386.242	-32.197	30.613
			[517.626]	[487.971]	[490.265]	[416.498]
Profitability* Crisis_2008			-2840.677	458.626	-377.163	-3400.462
			[13716.390]	[14383.93]	[14466.17]	[13882.710]
Profitability*Crisis_2009			4621.146	5200.386	4786.456	4255.623
			[9183.534]	[9353.123]	[9141.755]	[9013.343]
Liquidity*Crisis_2008			2944.598	3126.994	3040.882	2874.841
			[2141.919]	[2213.667]	[2195.449]	[2118.817]
Liquidity*Crisis_2009			131.148	150.638	86.058	80.743
			[377.700]	[388.830]	[370.392]	[358.721]
Deposit funding ratio*Crisis_2008			-1463.306	801.666	770.284	-1315.836
			[1016.456]	[1078.284]	[1066.588]	[999.907]
Deposit funding ratio*Crisis_2009			-295.625	-274.652	-305.493	-132.055
			[286.700]	[385.187]	[355.793]	[204.586]
Constant	472.630	351.724	476.672	689.495	435.327	267.248
	[437.715]	[343.17]	[482.575]	[503.340]	[336.704]	[355.638]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	444	444	440	440	440	440
R-squared	0.095	0.088	0.160	0.170	0.153	0.145

5.3 Loan growth by different industries

Besides separate studies on corporate and private loans, a more detailed study on loan growths by industry categorization is carried out. The industries studied are the four major industries in China that attract most credit supply and also of prime importance in the country's economic development. These four industries are real estate, construction, wholesale & retail and manufacture industries. The regression analysis is illustrated as follows:

5.3.1 The growth of real estate loans

Real estate industry is one of the most important industries that contribute to the high growth of Chinese GDP in the recent years. The regression results on the growth of loans to real estate industry are presented in Table 8.

During non-crisis years, banks with foreign ownership tend to have slower growth of real estate loans comparing to banks with joint ownership; Banks with government ownership and banks with domestic private ownership have mixed results from the regressions. As for banks' financial variables during non-crisis years, bank size, equity ratio and liquidity have negative influence on the growth of real estate loans and bank size has a negative coefficient of around -5% that is significant at 10% statistical significance level; Profitability has a positive impact on the growth of real estate loans; Deposit funding ratio comes with mixed results.

Table 8

Determinants of real estate loans with robust standard errors:

The explanatory variable is the annual change in real estate loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of real estate loans					
	I	II	III	IV	V	VI
Foreign	-16.682	-44.736	-14.875	-15.274		
	[18.292]	[27.548]	[18.582]	[18.248]		
Government	3.635	-25.778	3.267	3.282		
	[6.649]	[23.594]	[6.401]	[6.255]		
Domestic private	6.597	-23.608	12.341	12.411		
	[9.377]	[25.575]	[9.207]	[8.889]		
Size	-5.073	-5.507 *	-2.205	-1.889	-2.598	-2.883
	[3.230]	[3.206]	[3.598]	[3.649]	[4.134]	[4.048]
Equity ratio	-84.858	-91.790	-61.243	-41.811	-141.947	-158.153
	[224.938]	[224.290]	[249.638]	[257.559]	[224.495]	[215.625]
Profitability	1806.503	2154.097	710.013	689.476	1079.571	1090.547
	[1302.625]	[1434.798]	[1672.363]	[1630.269]	[1507.233]	[1546.417]
Liquidity ratio	-11.956	-22.392	-21.793	-10.589	-12.098	-23.031
	[50.364]	[56.411]	[51.959]	[49.720]	[49.460]	[51.643]
Deposit funding ratio	-3.354	-2.178	-10.165	3.645	14.417	0.937
	[39.001]	[45.250]	[36.627]	[31.490]	[32.011]	[37.659]
Crisis_2008	9.178			-467.683	-500.441	
	[7.554]			[832.793]	[825.450]	
Crisis_2009	159.403			1447.819	1416.880	
	[121.117]			[1814.595]	[1807.601]	
Foreign*Crisis_2008	68.955 ***	74.381 ***	16.895	23.091	13.656	7.290
	[16.527]	[16.323]	[35.033]	[36.831]	[36.436]	[33.502]
Foreign*Crisis_2009	-149.687	8.970	-187.062	-196.556	-212.363	-202.659
	[123.814]	[14.758]	[151.559]	[159.562]	[154.760]	[146.560]
Government*Crisis_2008	32.737	39.195	-0.563	2.691	2.992	-0.469
	[37.198]	[36.688]	[27.375]	[28.126]	[27.001]	[26.060]
Government*Crisis_2009	-121.956	36.440	-136.966	-112.185	-107.947	-132.256
	[124.988]	[22.797]	[132.888]	[108.784]	[108.309]	[132.648]
Domesticprivate*Crisis_2008	27.503	36.516	-14.913	1.108	14.143	-3.083
	[42.198]	[41.548]	[45.568]	[70.692]	[69.410]	[45.117]
Domesticprivate*Crisis_2009	-130.982	27.953	-145.043	-138.690	-124.583	-130.914
	[125.056]	[27.780]	[122.136]	[114.804]	[115.094]	[123.308]
Size*Crisis_2008			-14.694 *	-11.448	-9.946	-13.474
			[8.350]	[8.124]	[8.254]	[8.404]
Size*Crisis_2009			-5.422	-11.651	-10.595	-4.529
			[9.652]	[11.231]	[11.407]	[9.751]
Equity ratio*Crisis_2008			1121.234	1450.288 *	1439.516 *	1089.047
			[850.395]	[807.800]	[803.990]	[848.741]
Equity ratio*Crisis_2009			432.211	-736.705	-606.685	534.532
			[589.764]	[1267.312]	[1260.779]	[551.384]
Profitability* Crisis_2008			-7056.466	-5923.781	-6132.526	-7343.182
			[5994.636]	[6890.496]	[7199.990]	[6295.760]
Profitability*Crisis_2009			-5175.354	-5541.560	-5881.447	-5514.601
			[5158.988]	[5666.633]	[5600.098]	[5100.686]
Liquidity*Crisis_2008			222.557	204.660	146.095	165.420
			[228.063]	[232.807]	[217.935]	[212.608]
Liquidity*Crisis_2009			-196.653	-269.606	-270.031	198.599
			[271.424]	[324.683]	[322.224]	[269.245]
Deposit funding ratio*Crisis_2008			189.473	628.445	656.005	186.942
			[171.099]	[827.665]	[818.038]	[178.716]
Deposit funding ratio*Crisis_2009			339.681	-1082.487	-1076.474	315.856
			[214.934]	[1712.139]	[1703.649]	[219.932]
Constant	73.296	107.435	53.251	32.891	41.239	60.703
	[74.455]	[83.606]	[83.488]	[83.731]	[91.549]	[89.958]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	392	392	389	389	389	389
R-squared	0.096	0.056	0.119	0.128	0.124	0.115

In crisis years, year 2008 has mixed results from the regressions and year 2009 has a positive effect on the growth of real estate loans. For banks with different ownerships during the financial crisis, in 2008, foreign ownership has a significant positive 69% to 74% impact on the growth of real estate loans; government ownership and domestic private ownership have mixed results. In 2009, all three types of bank ownerships come with mixed results on the growth of real estate loans. As for banks' financial variables in the recent financial crisis, in 2008, bank size and profitability exhibit positive effect on the growth of real estate loans, where bank size has significant negative impact of 15% less on growth of real estate loans at 10% statistical significance level; Equity ratio, liquidity and deposit funding ratio show positive impact on the growth of real estate loans, where equity ratio has 15 times more significant positive impact on the growth of real estate loans. In 2009, bank size and profitability tend to have negative impact on the growth of real estate loans; Equity ratio, liquidity and deposit funding ratio have mixed results from the regressions. Moreover, the regressions have values of R-squared range from 6% to 13%.

In conclusion, in non-crisis years, big banks with larger assets were lending at about 5% less growth rate of real estate loans. During the financial crisis, big banks even decreased more till around 15% growth rate of lending in real estate loans in 2008. In the same year, banks with foreign ownership had 69% to 74% higher growth rate than that of banks with joint ownership. In addition, banks with high equity ratio were lending at approximately 15 times more growth rate of real estate loans in 2008.

5.3.2 The growth of construction loans

Next, the regressions on the growth of construction loans are presented in Table 9.

Table 9

Determinants of construction loans with robust standard errors:

The explanatory variable is the annual change in construction loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of construction loans					
	I	II	III	IV	V	VI
Foreign	43.366	52.605	47.981	47.313		
	[44.203]	[44.492]	[43.533]	[43.613]		
Government	1.239	10.660	1.166	0.884		
	[10.209]	[10.029]	[9.840]	[9.845]		
Domestic private	-31.669 **	-21.883 **	-21.886 **	-22.720 **		
	[12.373]	[11.144]	[11.118]	[11.114]		
Size	-9.573 ***	-9.467 ***	-8.033 ***	-8.343 ***	-6.541 **	-6.342 **
	[2.455]	[2.457]	[2.966]	[2.961]	[2.988]	[2.989]
Equity ratio	-31.469	-36.587	-87.142	-97.870	78.460	87.690
	[296.564]	[296.029]	[311.436]	[314.178]	[349.709]	[347.493]
Profitability	7230.924 **	7124.272 **	4957.439 ***	4999.479 ***	4329.867 ***	4301.429 ***
	[2899.919]	[2924.939]	[1442.403]	[1472.352]	[1484.289]	[1457.586]
Liquidity ratio	97.610	99.868	84.054	84.819	103.811	102.954
	[76.363]	[76.222]	[80.839]	[81.574]	[81.372]	[80.619]
Deposit funding ratio	23.878	20.056	20.783	16.745	-13.497	-9.958
	[71.559]	[73.600]	[73.260]	[71.598]	[57.395]	[58.962]
Crisis_2008	3.591			-619.137	-566.653	
	[12.580]			[959.944]	[974.369]	
Crisis_2009	-57.412 ***			-108.810	-25.899	
	[17.149]			[479.988]	[478.580]	
Foreign*Crisis_2008	-61.517	-57.105	-290.803 **	-282.473 **	-256.962 **	-263.704
	[62.169]	[60.761]	[119.241]	[121.341]	[127.227]	[125.144]
Foreign*Crisis_2009	-45.489	-102.540	-92.392	-90.298	-44.421	-44.618 *
	[67.906]	[66.408]	[66.096]	[65.609]	[50.512]	[51.615]
Government*Crisis_2008	44.010	48.510	-4.101	-6.654	0.272	2.825 **
	[31.680]	[30.279]	[31.240]	[30.729]	[30.542]	[31.214]
Government*Crisis_2009	49.367 **	-7.628	31.449	30.869	30.622 *	30.754
	[23.544]	[20.223]	[19.097]	[20.240]	[17.786]	[16.396]
Domesticprivate*Crisis_2008	42.280	45.892	-14.154	-2.875	-27.498	-37.067
	[44.037]	[42.451]	[44.837]	[59.030]	[58.747]	[45.306]
Domesticprivate*Crisis_2009	75.216 ***	17.908	65.043 ***	66.593 ***	40.820 **	40.630 **
	[23.727]	[16.135]	[19.960]	[20.353]	[16.623]	[16.164]
Size*Crisis_2008			-12.300 **	-7.111	-10.062	-14.727 **
			[6.205]	[8.540]	[8.791]	[6.487]
Size*Crisis_2009			-3.712	-2.960	-5.549	-5.841
			[5.492]	[5.801]	[5.762]	[5.457]
Equity ratio*Crisis_2008			2328.510 ***	2876.551 ***	2844.473 **	2339.519 ***
			[780.321]	[1079.048]	[1134.178]	[857.294]
Equity ratio*Crisis_2009			240.263	-111.390	93.921	67.640 **
			[408.659]	[169.149]	[661.368]	[440.837]
Profitability* Crisis_2008			-8707.777 **	-8410.160 **	-7982.458 **	-8258.765 ***
			[3480.287]	[3696.003]	[3721.212]	[3496.307]
Profitability*Crisis_2009			-10626.370 ***	-10694.390 ***	-10033.970 ***	-9999.985
			[2727.454]	[2816.840]	[2838.159]	[2758.909]
Liquidity*Crisis_2008			602.029 **	567.323 **	647.397 **	678.388 ***
			[240.706]	[264.816]	[281.060]	[258.5139]
Liquidity*Crisis_2009			-113.352	-111.390	-120.322	-120.115
			[167.586]	[169.149]	[173.309]	[171.511]
Deposit funding ratio*Crisis_2008			-9.819	571.873	540.465	6.817
			[130.742]	[961.116]	[974.466]	[134.989]
Deposit funding ratio*Crisis_2009			123.161	225.938	195.140	171.996
			[112.989]	[490.604]	[487.854]	[114.582]
Constant	57.019	50.200	65.368	73.400	59.436	53.780
	[87.129]	[89.183]	[89.749]	[87.724]	[80.124]	[81.415]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	385	385	382	382	382	382
R-squared	0.214	0.210	0.275	0.276	0.259	0.258

During non-crisis years, banks with foreign ownership tend to have higher growth of construction loans comparing to banks with joint ownership; Banks with government ownership also seem to have higher growth rate than joint ownership banks, but the coefficients are smaller than that of foreign ownership banks. It is noteworthy that banks with domestic private ownership have 22% to 32% significant less growth of construction loans than that of banks with joint ownership at 5% significant level.

As for banks' financial variables during non-crisis years, bank size is 6% to 10% significant negative impact on the growth of construction loans at 5% statistical significance level; equity ratio and deposit funding ratio have mixed results from the regressions on the growth of construction loans; Profitability has a positive significant impact that ranges from 43 to 72 times more on the growth of construction loans at 5% statistical significance level.

In crisis years, year 2008 has mixed results from the regressions and year 2009 has a negative effect on the growth of construction loans. The significant coefficient suggests that in 2009 the growth of construction loans has decreased by about 57%. For banks with different ownerships during the financial crisis, in 2008, foreign ownership has a significant negative 2.6 to 2.8 times impact on the growth of construction loans at 5% statistical significance level; government ownership and domestic private ownership have mixed results from the regressions. In 2009, banks with foreign ownership still have negative growth about -45% of construction loans comparing to banks with joint ownership at 10% statistical significance level. On the other hand, government ownership has mixed results from the regressions. In the same year, banks with domestic private ownership show a significant positive growth at around 41% to 75% of real estate loans comparing to banks with joint ownership.

As for banks' financial variables in the recent financial crisis, in 2008, bank size has negative effect on the growth of construction loans at a significant range of -15% to -12% at 5% statistical significance level; Equity ratio has positive significant impact on the growth of construction loans at a range of 23 to 29 times at 5% statistical significance level. Moreover, profitability exhibit significant negative effect on the growth of construction loans at -87 to -80 times at 5% statistical significance level. On the other hand, liquidity show positive impact on the growth of construction loans and it is at a significant range of six to seven times at 5% statistical significance level. Additionally, deposit funding ratio has mixed results from the regressions. In year 2009, bank size still has negative impact on the growth of construction

loans; Equity ratio has mixed results from the regression; Profitability has even higher significant negative impact on the growth of construction at a range of -107 to -100 times. Moreover, liquidity still exhibits negative impact on the growth of construction loans and deposit funding ratio tends to have positive impact on the growth of construction loans. Besides, the regressions on the growth of construction loans have values of R-squared range from 21% to 28%.

In conclusion, in non-crisis years, domestic private banks had 22% to 32% less growth than that of joint ownership banks. Moreover, big banks with larger assets were lending at about 6% to 10% less growth rate of real estate loans than banks with less assets. In addition, profitable banks were lending 43 to 72 times more construction loans than less profitable banks. During the financial crisis, crisis year 2009 caused a decrease in the growth of construction loans to all banks at a rate of 57%. In 2008, foreign banks were lending 2.6 to 2.8 times less in construction industry than banks with joint ownership. In 2009, foreign banks were lending around 45% less in the construction industry than banks with joint ownership; domestic banks were lending around 41% to 75% more in the construction industry than banks with joint ownership. This also indicates that domestic private banks were lending more in construction industry than that of foreign banks in crisis year 2009. In 2008, big banks with larger assets were lending 12% to 15% less in construction industry compared to year 2007. However, banks with high equity were lending 23 to 29 times more in construction industry than that of year 2007. In addition, banks with high profit in 2007 were lending 80 to 87 times less in construction industry in year 2008. However, banks with high liquidity in 2007 were lending six to seven times more in construction loans in crisis year 2008. In 2009, banks with high equity in 2008 were lending 100 to 107 times less in construction loans in crisis year 2009.

5.3.3 The growth of wholesale & retail loans

Wholesale & retail industry is the industry that is growing the fastest on average among the four major industries that were studied in this thesis during 2006 to 2012. The regressions on the growth of wholesale & retail loans are presented below in Table 10.

Table 10

Determinants of wholesale & retail loans with robust standard errors:

The explanatory variable is the annual change in wholesale & retail loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of wholesale & retail loans					
	I	II	III	IV	V	VI
Foreign	-87.040 **	-77.932 *	-106.700 **	-109.076 **		
	[42.341]	[42.523]	[48.422]	[48.369]		
Government	9.419	18.887	8.567	7.444		
	[14.372]	[13.487]	[14.783]	[14.841]		
Domestic private	24.641	34.220	13.939	12.224		
	[38.781]	[41.782]	[30.538]	[30.052]		
Size	-15.067	-15.023	-20.691	-21.395	-19.612	-19.023
	[9.520]	[9.474]	[14.869]	[15.093]	[17.110]	[16.873]
Equity ratio	694.402	690.276	815.911 *	795.455	490.195	513.005
	[438.557]	[437.864]	[487.476]	[490.079]	[433.811]	[429.344]
Profitability	1146.190	1110.676	2863.569	2761.235	3560.248	3651.365
	[2750.779]	[2719.557]	[4391.605]	[4449.674]	[4947.028]	[4882.998]
Liquidity ratio	32.251	-30.652	-39.148	-37.615	-78.927	-79.763
	[62.454]	[62.031]	[74.075]	[74.882]	[94.062]	[93.352]
Deposit funding ratio	41.414	36.579	48.557	40.322	116.920	124.918
	[92.697]	[91.921]	[117.279]	[114.200]	[143.558]	[146.773]
Crisis_2008	-36.412 ***			-1478.728	-1405.384	
	[9.909]			[1593.660]	[1586.623]	
Crisis_2009	-29.171			-129.641	-207.194	
	[21.217]			[573.386]	[653.317]	
Foreign*Crisis_2008	-17.821	-53.590	-47.678	131.758	54.708	37.493
	[35.566]	[36.241]	[54.330]	[140.689]	[155.360]	[149.618]
Foreign*Crisis_2009	-49.582	-78.213 *	2.383	108.893	13.518	9.860
	[37.155]	[41.871]	[18.567]	[80.541]	[70.225]	[56.941]
Government*Crisis_2008	-14.802	-50.900 **	-15.998	-12.644	-10.551	-12.638
	[24.244]	[25.177]	[24.166]	[27.334]	[30.241]	[26.181]
Government*Crisis_2009	2.858	-26.146	11.309	11.388	21.547	23.230
	[29.034]	[24.326]	[25.973]	[24.244]	[17.728]	[19.579]
Domesticprivate*Crisis_2008	27.564	-8.797	46.452	70.988	83.662	61.926
	[96.285]	[97.465]	[72.964]	[95.677]	[90.585]	[67.823]
Domesticprivate*Crisis_2009	-40.795	-69.875	0.854	2.917	20.253	19.304
	[48.205]	[62.145]	[23.459]	[21.637]	[25.097]	[21.837]
Size*Crisis_2008			10.902	20.511	18.852	9.783
			[16.575]	[18.023]	[19.992]	[18.598]
Size*Crisis_2009			20.388	21.641	20.361	18.832
			[14.963]	[17.390]	[19.785]	[16.841]
Equity ratio*Crisis_2008			-1094.391	189.271	207.372	-1015.269
			[1118.270]	[1626.785]	[1676.545]	[1202.863]
Equity ratio*Crisis_2009			-1034.452 **	-918.287 *	-625.714	-808.206 *
			[520.263]	[526.288]	[473.555]	[459.617]
Profitability* Crisis_2008			-2578.111	-2349.961	-3147.980	-3359.595
			[4549.375]	[4444.796]	[4828.399]	[4955.026]
Profitability*Crisis_2009			-129.551	-38.382	-717.432	-796.196
			[4203.944]	[4273.521]	[4687.472]	[4603.808]
Liquidity*Crisis_2008			-176.748	-192.070	-266.391	-251.590
			[426.488]	[439.927]	[483.691]	[470.441]
Liquidity*Crisis_2009			37.115	46.831	49.300	33.629
			[165.424]	[139.145]	[157.133]	[188.145]
Deposit funding ratio*Crisis_2008			-44.464	1372.253	1340.183	-8.521
			[177.987]	[1637.816]	[1632.637]	[178.153]
Deposit funding ratio*Crisis_2009			-277.787 *	-164.502	-80.022	-270.431
			[162.611]	[461.696]	[497.309]	[193.273]
Constant	168.197 **	162.593 **	215.000 *	234.056 **	166.449	150.150
	[81.215]	[80.975]	[119.682]	[118.366]	[136.543]	[135.748]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	436	436	431	431	431	431
R-squared	0.012	0.012	0.014	0.014	0.010	0.010

During non-crisis years, banks with foreign ownership tend to have 77% to 109% less growth in wholesale & retail loans comparing to banks with joint ownership and all foreign ownership coefficients are significant; Banks with government ownership have higher growth rate than joint ownership banks in wholesale & retail loans; Banks with domestic private ownership also have higher growth rate than banks with joint ownership in wholesale & retail loans.

As for banks' financial variables during non-crisis years, bank size has negative effect on the growth of wholesale & retail loans; equity ratio has approximately eight times positive impact on the growth of wholesale & retail loans and the coefficient is significant at 10% statistical significance level. Both Profitability and deposit funding ratio have positive effect on the growth of wholesale & retail loans. However, liquidity ratio has mixed results from the regressions.

In crisis years, year 2008 has -36% negative impact on the growth of wholesale & retail loans and the coefficient is significant at 1% level; year 2009 also has a negative effect on the growth of wholesale & retail loans. For banks with different ownerships during the financial crisis, in 2008, banks with foreign ownership and domestic private ownership have mixed results from the regressions; banks with government ownership has significant -51% impact on the growth of wholesale & retail loans at 5% statistical significance level comparing to banks with joint ownership. In crisis year 2009, banks with foreign ownership, government ownership and domestic private ownership all derived mixed results from the regressions.

As for banks' financial variables in the recent financial crisis, in 2008, bank size has positive effect on the growth of wholesale & retail loans; Equity ratio and deposit funding ratio have mixed results from the regressions; Profitability exhibit negative effect on the growth of wholesale & retail loans; Moreover, liquidity also show negative impact on the growth of wholesale & retail loans. In crisis year 2009, bank size still has positive impact on the growth of wholesale & retail loans; Equity ratio has significant negative impact on the growth of wholesale & retail loans at a range between -10 and -8 times and the coefficients are significant at 10% statistical significance level; Profitability also has negative impact on the growth of wholesale & retail loans. Moreover, liquidity in 2009 exhibits positive impact on the growth of wholesale & retail loans on contrary to the situation in 2008. In addition, deposit funding ratio has significant negative impact of -278% on the growth of construction

loans and the coefficient is significant at 10% statistical significance level. As for the whole model, the regressions on the growth of wholesale & retail loans have values of R-squared at around 1%.

In conclusion, in non-crisis years, foreign banks lent about 77% to 109% less in wholesale & retail industry than that of banks with joint ownership. Moreover, banks with high equity ratio were lending about 8 times more of the growth rate of wholesale & retail loans than banks with lower equity ratio. In addition, crisis year 2008 caused 36% decrease in the credit supply to wholesale & retail industry comparing the year before. Moreover, government banks were lending 51% less to wholesale & retail industry in 2008 than that of banks with joint ownership. What's more, in year 2009, banks with high equity ratio in 2008 were lending eight to ten times less in wholesale & retail industry than that of banks with low equity ratio; Also, banks with high deposit funding ratio in 2008 were lending about 2.8 times less in wholesale & retail industry than that of banks with deposit funding ratio.

5.3.4 The growth of manufacture loans

Last but not the least is the regression on the growth of manufacture loans. The results are presented below in Table 11.

During non-crisis years, banks with foreign ownership tended to have 26% to 31% less growth in manufacture loans comparing to banks with joint ownership and all foreign ownership coefficients are significant at 1% statistical significance level; Banks with government ownership have higher growth rate in manufacture loans than that of joint ownership banks; Banks with domestic private ownership also have higher growth rate than banks with joint ownership in manufacture loans.

As for banks' financial variables during non-crisis years, bank size has 7% to 8% negative effect on the growth of manufacture loans at 10% statistical significance level; equity ratio has negative impact on the growth of manufacture loans; Profitability has mixed results from the regressions; Liquidity ratio has negative effect on the growth of manufacture loans; Deposit funding ratio has 42% to 46% positive effect on the growth of manufacture loans and the coefficients are significant at 10% statistical significance level.

Table 11

Determinants of manufacture loans with robust standard errors:

The explanatory variable is the annual change in manufacture loans in percentage. Variable definitions and descriptive statistics are presented in Table 1 and Table 2. * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level. Robust standard errors are listed within brackets.

Variables	Growth of manufacture loans					
	I	II	III	IV	V	VI
Foreign	-29.829 ***	-26.250 ***	-29.227 ***	-31.134 ***		
	[8.002]	[8.273]	[8.204]	[7.752]		
Government	0.401	4.122	1.679	0.783		
	[4.431]	[4.493]	[4.548]	[4.495]		
Domestic private	0.772	4.571	3.058	1.379		
	[8.778]	[8.829]	[8.498]	[8.298]		
Size	-6.794 **	-6.763 **	-7.426 *	-8.084 *	-7.498	-6.960
	[3.184]	[3.175]	[4.450]	[4.518]	[5.083]	[5.004]
Equity ratio	-103.111	-104.003	-100.594	-115.125	-197.144	-181.076
	[106.190]	[105.908]	[138.518]	[142.320]	[151.661]	[147.600]
Profitability	101.982	80.539	-296.491	-332.104	-124.191	-83.080
	[872.684]	[872.881]	[988.764]	[992.061]	[895.825]	[896.711]
Liquidity ratio	-23.528	-22.590	-29.724	-28.201	-38.875	-39.911
	[40.553]	[40.454]	[46.567]	[47.477]	[47.936]	[47.025]
Deposit funding ratio	16.167	14.829	24.943	21.567	42.195 *	45.667 *
	[22.678]	[22.660]	[24.951]	[25.921]	[24.368]	[23.750]
Crisis_2008	-10.540			-793.697	-782.748	
	[5.111]			[764.345]	[759.396]	
Crisis_2009	-14.152 *			-11.380	-23.742	
	[7.287]			[764.345]	[220.911]	
Foreign*Crisis_2008	7.119	-3.127	-47.678	-22.969	-45.868	-68.298
	[13.887]	[11.538]	[54.330]	[58.462]	[54.448]	[49.415]
Foreign*Crisis_2009	-7.860	-21.754 *	2.383	4.090	-23.723	-23.701
	[12.067]	[11.318]	[18.567]	[17.571]	[16.522]	[17.309]
Government*Crisis_2008	5.996	-4.359	-16.651	-7.642	-8.324	-16.361
	[13.534]	[11.082]	[18.050]	[13.495]	[12.791]	[16.587]
Government*Crisis_2009	11.110	-2.951	10.492	11.445	12.881	13.045
	[11.454]	[9.241]	[11.511]	[12.140]	[11.322]	[10.771]
Domesticprivate*Crisis_2008	31.786	21.289	16.235	40.332	41.929	19.745
	[51.591]	[50.787]	[41.951]	[62.001]	[60.423]	[41.139]
Domesticprivate*Crisis_2009	13.516	-0.587	14.684	16.254	18.824 **	18.961 **
	[15.752]	[14.358]	[12.988]	[13.035]	[9.400]	[9.442]
Size*Crisis_2008			0.739	7.038	6.531	0.414
			[5.334]	[6.294]	[6.682]	[5.683]
Size*Crisis_2009			2.958	3.619	3.130	2.522
			[4.689]	[5.167]	[5.700]	[5.137]
Equity ratio*Crisis_2008			565.962	1147.650 *	1166.051 **	588.015
			[420.925]	[601.641]	[587.666]	[400.630]
Equity ratio*Crisis_2009			-115.467	-101.165	-26.738	-54.417
			[131.204]	[244.350]	[250.417]	[127.851]
Profitability* Crisis_2008			-2662.242	-1831.984	-2030.683	-2854.699
			[2699.167]	[2385.440]	[2394.670]	[2707.838]
Profitability*Crisis_2009			260.806	295.469	126.848	82.036
			[1558.350]	[1565.394]	[1521.423]	[1514.476]
Liquidity*Crisis_2008			106.881	87.649	68.059	86.309
			[166.982]	[183.097]	[175.453]	[158.961]
Liquidity*Crisis_2009			55.414	54.653	55.024	53.929
			[70.460]	[80.471]	[79.934]	[68.972]
Deposit funding ratio*Crisis_2008			-43.546	697.245	699.635	-33.026
			[146.109]	[805.423]	[799.517]	[149.629]
Deposit funding ratio*Crisis_2009			-65.732	-64.563	-47.203	-62.743
			[88.243]	[189.016]	[191.032]	[97.346]
Constant	113.039	110.072	116.629	129.705	108.688	97.973
	[70.313]	[70.148]	[95.662]	[96.415]	[104.330]	[102.877]
Bank fixed effects	No	No	No	No	Yes	Yes
Year fixed effects	No	Yes	Yes	No	No	Yes
Observations	445	445	440	440	440	440
R-squared	0.036	0.036	0.042	0.048	0.041	0.035

In crisis years, year 2008 had negative impact on the growth of manufacture loans; Year 2009 also had a -14% negative effect on the growth of manufacture loans and the coefficient is significant at 10% statistical significance level. For banks with different ownerships during the financial crisis, in 2008, banks with foreign ownership and government ownership had mixed results from the regressions; banks with domestic private ownership had higher growth of manufacture loans comparing to banks with joint ownership. In crisis year 2009, banks with foreign ownership, government ownership and domestic private ownership all derived mixed results from the regressions.

As for banks' financial variables in the recent financial crisis, in 2008, bank size had positive effect on the growth of manufacture loans; Equity ratio also had 11 to 12 times positive effect on the growth of manufacture loans; Profitability had negative effect on the growth of manufacture loans; Moreover, liquidity also showed positive impact on the growth of manufacture loans; Deposit funding ratio had mixed results from the regressions. In crisis year 2009, bank size still had positive impact on the growth of manufacture loans; Equity ratio had negative impact on the growth of manufacture loans; Profitability and liquidity ratio also had positive impact on the growth of manufacture loans; On the other hand, the deposit funding ratio had negative effect on the growth of manufacture loans. As for the whole model, the regressions on the growth of manufacture loans have values of R-squared at around 4% to 5%.

In conclusion, in non-crisis years, foreign banks lent about 26% to 31% less in manufacture industry than that of banks with joint ownership; Moreover, big banks with large assets were lending 7% to 8% less in manufacture industry than that of smaller banks with less assets; In addition, banks with more sufficient funding were lending 42% to 46% more than banks with less sufficient funding. Moreover, crisis year 2009 caused 14% decrease in the credit supply to manufacture industry comparing the year before. Also, banks with high equity in year 2007 were lending 11 times more in manufacture industry in year 2008.

6. Summary and conclusions

In conclusion of the previous sections, the financial crisis in 2008 to 2009 did not have significant negative impact on the aggregate bank lending in China (measured by the total gross loans). This might be due to 4 trillion RMB economic stimulus program injected by the government during the financial crisis and also the strong momentum of Chinese economic growth from the past decade. However, significant negative influence of the financial crisis in bank lending was found in wholesale & retail industry in year 2008 and construction industry as well as manufacture industry in year 2009.

As for the different influences on the bank lending from banks with different ownerships during crisis and non-crisis years, it is noteworthy that foreign banks were lending less in total gross loans, private loans, wholesale & retail loans and manufacture loans during non-crisis years. Moreover, in 2008, foreign banks were lending less in construction industry. However, the regression results also suggest that the foreign banks were lending more in real estate industry in the same year. Thus, foreign banks were generally lending less in non-crisis years, but they did not completely contract their credit supply when the financial crisis struck.

For government banks, there is no significant evidence that they had higher or lower credit supply in non-crisis years. Nevertheless, in 2008, government banks were lending 1.2 to 1.8 times more in corporate loans. This situation is also found in credit supply in construction loans, where government banks lent more in both year 2008 and 2009. However, in 2008, government banks were lending less in wholesale & retail industry. Therefore, government banks were generally supportive during the financial crisis by increasing its credit supply in corporate loans, in which they also increased their lending construction industry.

For domestic private banks, they lent significantly less in corporate loans and also construction loans during non-crisis years. On the contrary, in both crisis years, domestic private banks supplied more credit in total gross loans; in 2009, domestic private banks lent more in corporate loans and construction loans. Therefore, it is quite evidential that domestic private banks were extremely supportive during the recent financial crisis.

To conclude, domestic private banks and government banks were indeed playing a strengthening and stabilizing role during the financial crisis. Foreign banks did not contract their lending aggressively in general during the crisis.

This thesis also studied how the banks' balance sheet items had influences on the bank lending between year 2005 and 2012. Interestingly, during non-crisis years, big banks with a lot of assets tended to lend less in total gross loans and this difference is also shown in real estate loans, construction loans and manufacture loans. In the period of financial crisis, big banks increased their lending in total gross loans in year 2009 but decreased their lending in corporate loans, real estate loans and construction loans in 2008. Therefore, big banks became more supportive in the second year of the recent financial crisis.

For banks with high equity ratio, which are also the banks with more capitalization, they lent significantly more in total gross loans, corporate loans and wholesale & retail loans in non-crisis years. During the financial crisis, banks with high capitalization were lending more in real estate industry, construction industry and manufacture industry in 2008 but less in corporate loans in 2009. This finding suggests that banks with high capitalization are generally lending more in the first year of the financial crisis but less in the second year.

For banks with high profitability, they were lending significantly less in total gross loans as well as private loans but supplied more in corporate loans and construction loans in non-crisis years; In 2008 and 2009, banks with high profitability decreased their lending significantly in corporate loans and construction loans. It indicates that banks with high profitability changed their credit supply focus in construction industry during the recent financial crisis.

With respect to banks with high solvency, they were supplying more credit in total gross loans during non-crisis years. Nonetheless, banks with high solvency had significant decrease in total gross loans in both 2008 and 2009. In 2008, they had supplied more in corporate lending and construction industry. In 2009, banks with high solvency were lending less in corporate loans instead. Therefore, banks with high solvency were not strict with their credit supply during non-crisis years, but became stricter and more careful with their loans during the period of the financial crisis.

For banks with sufficient funding, they tended to have more credit supply in total gross loans and manufacture industry during non-crisis time. In 2008, banks with sufficient funding supplied more in total gross loans and corporate loans. In 2009, they had more lending in corporate loans but less in wholesale & retail industry. Hence, banks with sufficient funding were rather generous with their loans during non-crisis years and the first year of the financial crisis. However, they have become more selective on their credit supply in the second year of the recent financial crisis.

As discussed in detail in the previous section, the main results and conclusions of this paper are in line with the previous researches. Some differences do exist but it is due to country specific context.

Many previous researches also tried to explain the reasons behind the differences of bank ownership's impact on bank lending, such as the proximity between the foreign subsidiaries and the parent multinational banks, etc. This can be the possible extension of this topic for further researches.

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