Local Finance and Local Growth:

Macro and Micro Evidence from China

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Abstract

The invention of city commercial banks (CCB) in some Chinese cities provides a unique opportunity to study the finance and growth nexus at the city level. Using 2001-2010 panel data for all the cities in China (excluding Lhasa), we find that surprisingly, the establishment of CCB significantly reduced local city's economic growth, which is contrary to the traditional banking theory that these smaller banks serve the local economy better by having advantages of lending to SMEs. Using 206,771 firms which appeared at least four consecutive years from 1999-2007, we find that the establishment of CCB significantly decreased firms' growth rates in that city, small firms in particular, which provides a channel of lowered growth rate for that city. Using traditional bank efficiency measures, we find averagely, CCB even has lower efficiency than Big Four. We conjecture that local government's sole power presence in CCB rather than a balance of power between local and central government in branches of big four might explain its low efficiency.

Keywords: City Commercial Bank; Growth; China

1 Introduction

China's current banking system is mainly composed of, nationwide state-owned banks, nationwide joint-stock bank, and city commercial banks (CCBs). City commercial bank with its first appearance in 1995, as the name indicates, operated only within its own located city before 2006 to meet regulatory requirement, which provides a unique opportunity to study the relation of banking and growth,[1,2] while nationwide state-owned banks mainly "big four", i.e., Bank of China, China Construction Bank, Industrial and Commerce Bank of China, Agricultural Bank of China, almost operated in every city in China.

Firstly showing up in 1995, current 144 CCBs were founded by merging and restructuring more than 5000 urban credit cooperatives. These CCBs are banks, which differentiated sharply from cooperatives. Up to the end of 2012, even though only 161 out of 288 cities established their own CCB, the total asset of all CCBs made up 9.24% of all the domestic banks' asset. The influence of CCB in its located city is much higher considering they only exist in a partial list of cities.

There is a large number of literature studying the effect of financial development on economic or firm growth, but provided mixed results, as well as using Chinese data. Some research findes that the development of financial sector including banking sector is significantly positively correlated with economic growth in China (Ljungwall and Li, 2007, Zhang et al., 2012), while others find that there is no significant relation, or even negative between Chinese financial sector and economic growth (Boyreau-Debray, 2003, Chang et al., 2010). The seemly puzzling negative relation in these papers is explained by the distorted state owned banking system which is unwilling to lend to small and medium enterprises (SMEs), though SMEs are the key driver of current economic growth. For firm level data, Ayyagari et al. (2010) and Allen et al. (2010) also have different findings regarding the importance of formal or

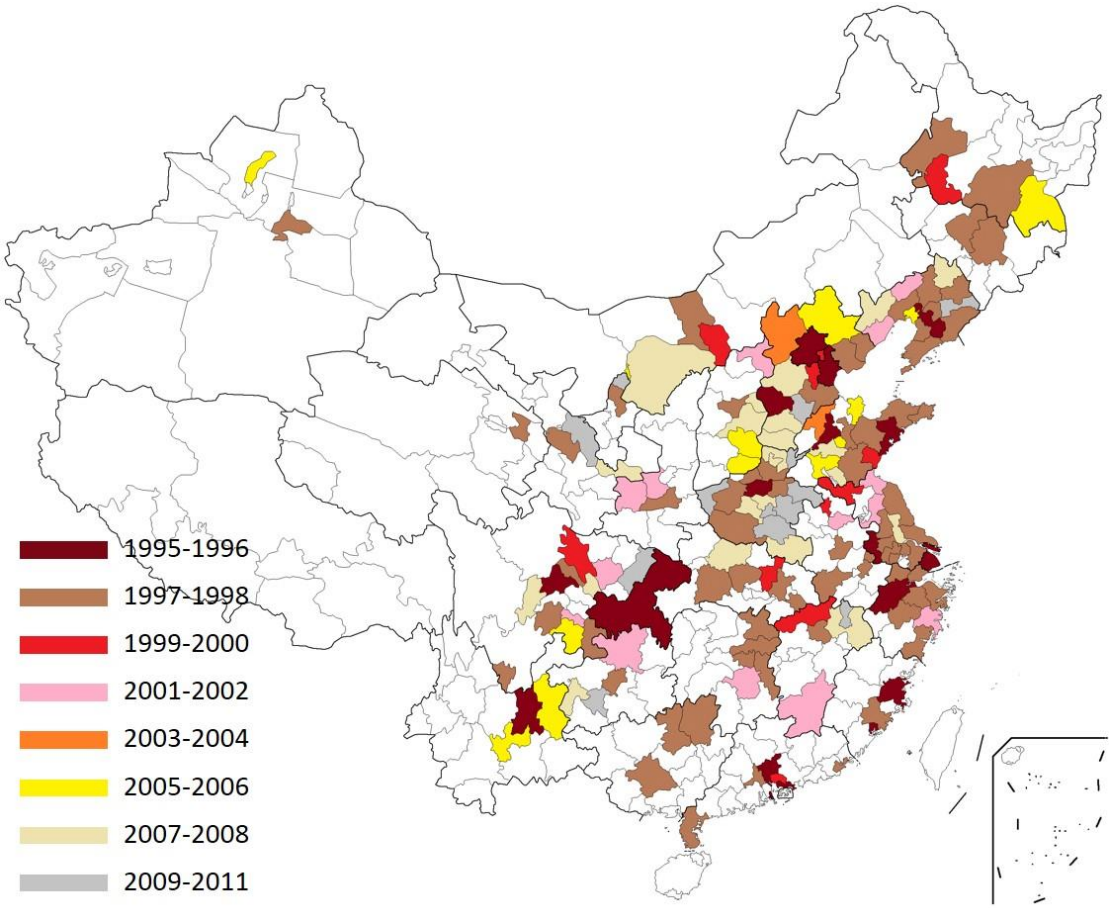
[1] For a few years after 2006, operation outside CCB's located city was rare. Only a few banks had out of city operation, which makes our subsequent analysis robust.

[2] Feldstein-Horioka (1980) test shows that capital mobility among Chinese cities is low, which is good for our city-level finance growth analysis.

bank finance in China. According to China Banking Regulatory Commission, CCBs were designed to lend to SMEs because of small bank advantage in lending to small firms and CCBs only operating in their own cities for our studied period provides a natural experiment to study whether these newly established have positive effect on local city's economic growth. Moreover, from the bank competition viewpoint, entries of CCBs in the local banking sector would introduce more competition between banks, which would generate higher growth rate.

Using a balanced panel data of all the cities except Lhasa from 2001 to 2011 for difference-in-difference estimation, this paper finds that setup of CCB reduced city's economic growth significantly. Moreover, there is also no positive effect on city's industrial enterprise numbers and real gross industrial output.

Figure 1: Geographic Distribution of CCB according to years of establishment



We then apply the same estimation methodology to a firm level dataset which includes all the SOEs and all the non-SOEs with sales above 5 million yuan. After keeping firms with four consecutive years of appearance and controlling firms' characteristics, we find that for the 206,771 firms, establishment of CCB in firm's located city significantly reduced firm's growth rate and the negative effect is stronger for smaller firms.

For possible endogeneity concern, we use the percentage of city's neighboring cities having established CCB as instrumental variable (IV) for our CCB establishment probability in that city. All of the initial CCBs were established in politically important cities, which are either all the province capital cities for each province or the four municipalities or the five sub-provincial status cities. So we take the initial CCB establishments as exogenously determined. We adopt this IV by following from the policy diffusion literature, such as Simmons and Elkins (2004), who argue that neighboring regions are likely to adopt the same policy due to factors including altered payoff, reputation concern, and learning. We can see from Figure 1 that the sequential establishment of CCBs demonstrates this policy diffusion pattern quite obviously. The first stage regression which will be shown below presents a very significant relation which validates our IV choice. We find that both the macro and micro regression still demonstrate that establishment of CCBs reduced growth significantly.

We then explore why CCB presence lowered city's growth rate. Applying traditional bank efficiency measures to a subset of CCBs due to data availability, we find that averagely, CCBs even have lower efficiency score than the nationwide traditional state-owned "big four", which we conjecture is because local city government has its sole power in CCB but for branches of "big four", there is a balance of power among local city government, headquarters in Beijing, and provincial level branch.

The rest of this paper will proceed as follows. Section 2 will briefly introduce China's banking sector, especially CCBs. Section 3 is literature review. Section 4 will introduce data and methodology. Section 5 will present results. Section 6 will present

further discussion of the result. Section 7 concludes.

2 Introduction to City Commercial Banks

The predecessor of CCB is urban credit cooperative, which was firstly established at the city of Zhumadian in Henan Province in 1979. Table 1 shows the number of urban cooperatives from 1987 to 1998. We can see that there were 1615 urban credit cooperatives in China at the end of 1987, and this number increased dramatically to 5229 at the end of 1994[3], as shown in Table 1.

Table 1: Number of Urban Credit Cooperatives in China, 1987-1998

Year	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*
Number of urban credit cooperatives	1615	3265	3409	3421	3518	4001
Year	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*
Number of urban credit cooperatives	4957	5229	5104	4630	3716	3190

Data source: Almanac of China's Finance and Banking, 1990-1999.

However, many of these urban credit cooperatives faced various serious problems on their balance sheet such as large amount of nonperforming loans. In 1995, the State Council released a document to set up city cooperative banks, the name of which was later changed to city commercial bank, in 35 major cities by merging and reorganizing urban credit cooperatives. In the same year, the first city cooperative bank was set up in Shenzhen. In 1996, 60 cities established their own CCBs, and 58 in 1997.[4] More than 80 cities had set up their CCBs by the end of 1998. For instance, government of Shanghai merged 98 urban credit cooperatives into City Cooperative Bank of Shanghai (now called Bank of Shanghai) in 1995[5]. People's Bank of China changed the names of all these city cooperative banks into CCBs in 1998[6]. Up to the end of 2012, there were 157 out of 284 prefectural-level cities, 4 out of 4 municipalities having their own CCBs set up.

[3] Data source: Almanac of China's Finance and Banking, 1990-1999.
[4] "Announcement about setting up of city commercial banks in 58 cities", People's Bank of China, 1997.
[5] Almanac of Shanghai, 1996.
[6] "Announcement about changing name of city cooperative banks", People's Bank of China, 1998.

China Banking Regulatory Commission forbade CCBs to operate outside its own located city until 2006. Bank of Shanghai set up its first other city branch in Ningbo in 2006, which is the first cross-city operation among all CCBs. A large number of CCBs began to operate outside their original cities only after 2008. Therefore, our study period to 2007 is quite robust. We consider city economic growth after 2007 because we want to check out the lagged growth effect of CCB establishment. So cross-city operation won't affect our main results.

Table 2: Total assets: CCB among all banks in China, 2003-2012 (billion RMB)

Year	*2003*	*2004*	*2005*	*2006*	*2007*
All banks	27658	31599	37470	43950	53116
SOBs	16051	17982	21005	24236	28500
Shares	58%	57%	56%	55%	54%
YoY		12%	17%	15%	18%
CCBs	1462	1706	2037	2594	3341
Shares	5%	5%	5%	6%	6%
YoY		17%	19%	27%	29%
CCBs/GDP	11%	11%	11%	12%	13%
Year	*2008*	*2009*	*2010*	*2011*	*2012*
All banks	63152	79515	95305	113287	133622
SOBs	32575	40800	46894	53634	60040
Shares	52%	51%	49%	47%	45%
YoY	14%	25%	15%	14%	12%
CCBs	4132	5680	7853	9985	12347
Shares	7%	7%	8%	9%	9%
YoY	24%	37%	38%	27%	24%
CCBs/GDP	13%	17%	20%	21%	24%

Data source: CBRC 2006-2012 annual report, SOB stands for state-owned large commercial bank.

CCBs starkly differentiate from urban credit cooperatives. First, urban credit cooperatives were cooperative financial organizations instead of banks, which are under different regulations. They are under the regulation of Urban Credit Cooperatives. For example, cooperatives have very strict deposit taking and loan issuing limit. According to Regulation of Urban Credit Cooperatives,[7] "Deposits from non-cooperative members should not exceed 40% of all deposits, and deposits

[7] Document 54, Regulation of Urban Credit Cooperatives, 1997.

from any single individual non-cooperative members could not exceed 150,000 RMB. Loans to any single clients could not exceed 500,000 RMB, and loans to non-cooperative members could not exceed 40% of all loans." Other regulations include no access to interbank market, no license to government bonds and financial bonds etc. All these limited urban credit cooperatives' function in local banking system.

Second, there is significant increase of balance sheet size after being reorganized into CCB. For example, Bank of Shanghai was founded by merging 98 urban credit cooperatives at the end of 1995. In just one year after Bank of Shanghai was built, total asset increased by 89.3% and total loan increased by 82.8%.

Therefore, we can conclude that CCB is in stark difference with urban credit cooperatives.

3 Literature review

There is a large literature on finance and growth nexus. Theoretically, the study dates back to Schumpeter (1912), who argues that finance contributes to growth because banks can identify and loan to the most innovative and promising firms. Financing to these firms can provide funds for technological innovation and consequently for economic growth. Levine (2005) in the survey article lists channels of finance in contributing to economic growth, which include specifically producing information and allocating capital, monitoring firms and exerting corporate governance, diversifying and managing risk, mobilizing and pooling savings, and easing the exchange of goods and services. However, Robinson (1952) argues that financial sector development follows economic growth. Lucas (1988) points out that the role of finance in economic growth is over-stressed.

Goldsmith (1969) finds a higher financial development level is associated with high growth by investigating 35 countries from 1860 to 1963. The finding is furthermore confirmed by King and Levine (1993), who use four different financial development indicators and expand the number of countries to 77 for the period of 1960-1989. For the concern regarding reverse causality of finance and growth, Levine, Loayza and Beck (2000) use a country's legal and accounting system as instrumental variable and still find financial development led to economic growth by using 71 countries' data for the period of 1960-1995. Jayaratne and Strahan (1996) use difference-in-difference estimation same as ours to study a wave of bank deregulation in the US and find it positively affects state's economic growth.

However, research on China finds mixed results. Some studies find a positive relation between financial sector development and economic growth such as Ljungwall and Li (2007), Zhang et al. (2012). But another strand of literature finds no significant relation or even significant negative relation between financial sector development and economic growth in China such as Boyreau-Debray (2003), and Chang et al. (2010). In particular, Boyreau-Debray (2003) finds that financial development measured as deposits divided by GDP is insignificantly related to

economic performance by using data from 26 provinces during 1990-1999 and suggests that the negative effect appears to be attributable to the burden of supporting the state-owned corporate sector.

For the studies of CCBs in China, Ferri (2009) finds that the efficiency of CCB strongly depends on provincial economic growth level but unfortunately, the obvious endogeneity problem is not addressed. Zhang, Wang, and Qu (2012) find that the performance and risk taking of CCBs are positively related to the provincial level of law enforcement, which motivates our study on whether CCBs contribute to local city growth considering China's poor law enforcement.

4 Data and Methodology

We mainly use difference-in-difference model to estimate the effect of CCB establishment on city and firm growth. Besides some manually collected data as detailed below, the data we use are mainly from CEIC China premium database for city level data, China Annual Census of Enterprises for firm level data, and various Statistical Yearbooks.

4.1 Macro: City Level Growth

4.1.1 Model and Variables

In this paper, we estimate the following difference-in-difference model,

$$Economic\ Growth_{i,t} = c + \gamma \cdot CCB_{i,t} + \Phi \cdot X_{i,t} + \alpha_t + \beta_i + \epsilon_{i,t} \qquad (1)$$

where i and t denote city and year, α_t and β_i control time and city fixed effects. The dependent variable $Economic\ Growth_{i,t}$ will be specified into two measures. One is $GRGDP_{i,t}$, which measures GDP growth rate for city i at time t. The other one is $GRGDPPC_{i,t}$, which measures GDP per capita growth rate. Alternative dependent variables include $GR\#EN_{i,t}$, which measures growth rate of number of enterprises above designated size in city i at year t, and $GRIP_{i,t}$, which measures growth rate of total industrial output in city i at year t. The key explanatory variable, $CCB_{i,t}$, is a dummy indicating whether city i at year t owns a CCB or not, which is equal to 1 if

yes, 0 otherwise. Moreover, following Berger et al. (2005), a dynamic time variable $CCBYEAR_{i,t}$ is introduced to indicate how many years CCB has been presence in that city, which measures the long term impact of CCB establishment. Control variables $X_{i,t}$ are as follows. $LOAN_{i,t}$ is the ratio of total loans in all local financial institutions to GDP. $LnGDP(PC)_{i,t-1}$ is the logarithm of real local GDP (per capita) in previous year in order to control economic convergence effect. $FAI_{i,t}$ is fixed asset investment divided by GDP. $FDI_{i,t}$ is total utilized foreign direct investment divided by GDP. $FISCAL_{i,t}$ is the ratio of local government expenditure to GDP. $GRPOP_{i,t}$ is population growth rate. $EDU_{i,t}$ is percentage of population with secondary schools education and above. Variables used are summarized in Table 3.

Table 3: Variables in macro growth regression model

Symbol	Definition
Dependent variables	
GRGDP	Real growth rate of local GDP
GRGDPPC	Real growth rate of local GDP per capita
CCB variables	
CCB	Dummy indicating whether a city has its own CCB set up or not, equals to 0 before and in the year of setup, 1 since the following year and equals to 0 in all periods for cities that do not have their own CCBs.
CCBYEAR	Number of years since CCB of the city setup, equals to 0 before and in the year of setup, 1 the following year, 2 the second following year etc. and equals to 0 in all periods for cities without their own CCB
Control variables	
LOAN	Ratio of total loans in all financial institutions to GDP
LnGDP(PC)	Logarithm of real local GDP (per capita)
FAI	Ratio of fixed asset investment to GDP
FDI	Ratio of utilized foreign direct investment to GDP
FISCAL	Ratio of government expenditure to GDP
GRPOP	Population growth rate
EDU	Percentage of students in secondary schools in total population.
Alternative Dependent Variables	
GR#EN	Growth rate of number of industrial enterprises above designated size
GRIP	Real growth rate of gross output of industrial enterprises above designed size

4.1.2 Data

The administrative division in China has 4 levels, from upper to lower level,

including provincial level, prefectural level, county level and village level. The provincial level division includes 23 provinces, 5 autonomous regions, 4 municipalities and 2 Special Administrative Regions (SARs). 4 municipalities are Beijing, Shanghai, Tianjin and Chongqing. Provinces and autonomous regions are made up of prefectures. There are 284 prefectural-level cities in China by the end of 2011[8]. Excluding Lhasa[9], we have 283 prefectural-level cities and 4 municipalities used in our sample. For convenience, cities are referred to both prefectural-level cities and municipalities. The prefectural-level city economic data is limited before 2001 as data for some of our key control variables are missing. So the sample period chosen begins in 2001 and ends in 2011, the latest year of available statistical data. After 2006, CCBs start to operate nationwide, which are mostly relatively large CCBs established on the first wave. There are only a few CCB operating outside their own cities before 2008, and even after that their main operation is still in their own city. Plus we study the lagged effect of CCB, so it's reasonable to extend our study period to 2011.

Table 4: Municipalities and number of prefectural-level cities in China (up to end of 2011)

Municipalities					
Beijing		Shanghai		Chongqing	
Tianjin					
Provinces and # of prefectural cities					
Hebei	11	Shanxi	11	Liaoning	14
Jilin	8	Heilongjiang	12	Jiangsu	13
Zhejiang	11	Anhui	16	Fujian	9
Jiangxi	11	Shandong	17	Henan	17
Hubei	12	Hunan	13	Guangdong	21
Hainan	2	Sichuan	18	Guizhou	6
Yunnan	8	Shaanxi	10	Gansu	12
Qinghai	1				
Autonomous regions and # of prefectural cities					
Inner Mongolia	9	Guangxi	14	Tibet	1
Ningxia	5	Xinjiang	2		
Total # of prefectural cities					284

[8] China Statistical Yearbook, 2011.
[9] Lhasa is dropped because of limited statistical data.

Sample size	283 prefectural cities + 4 municipalities

Data source: China Statistical Yearbook, 2011; sample is selected as all but Lhasa.

Data for prefectural-level cities are from CEIC China premium database. Missing values are manually filled up from *China Statistical Yearbook for Regional Economy* and statistical yearbooks of provinces and prefectural-level cities. The descriptive statistics of macro variables are summarized in Table 5.

157 out of 284 prefectural-level cities and 4 out of 4 municipalities have their CCBs established by the end of 2011. After merging and acquisition, there are 144 CCBs in total. The establishment year of CCBs is manually collected from public information, including local yearbooks, official websites and annual reports of CCBs. Dummy variable *CCB* is set to be 1 since the next year of CCBs setup because of the possible lag-effect. CCB's establishment time information is summarized in Table 6.

Table 5: Descriptive statistics of macro variables

	GRGDP	*GRGDPPC*	*CCB*	*CCBYEAR*	*LOAN*
Mean	0.1318	0.1260	0.4387	3.3392	0.7733
Std	0.0344	0.0409	0.4963	4.5331	0.4301
Median	0.1320	0.1250	0	0	0.6430
Min	-0.0780	-0.0904	0	0	0.0753
Max	0.3700	0.4760	1	16	4.6126
Obs	3157	3157	3157	3157	3153
	LnGDP	*LnGDPPC*	*FAI*	*FDI*	*FISCAL*
Mean	3.6412	9.3338	0.4913	0.0030	0.1308
Std	1.0225	0.7699	0.2269	0.0038	0.0755
Median	3.5771	9.2949	0.4598	0.0017	0.1130
Min	0.5839	7.0309	0.0629	0	0.0206
Max	7.2619	11.6194	1.7467	0.0577	1.0268
Obs	3157	3135	3154	3059	3154
	GRPOP	*EDU*	*GR#EN*	*GRIP*	
Mean	0.0086	0.0629	0.0782	0.2280	
Std	0.0147	0.0133	0.1889	0.1647	
Median	0.0065	0.0625	0.0719	0.2222	
Min	-0.0961	0.0099	-0.7366	-0.6735	
Max	0.1840	0.1235	1.7164	3.2694	
Obs	3150	3143	3151	3153	

Data source: CEIC China Premium Database, China Statistical Yearbook for Regional Economy, statistical yearbooks of provinces and prefectural-level cities.

Table 6 Cities with city commercial banks setup each year (1995-2011)

1995					*2*
Shanghai	Shenzhen				
1996					*16*
Anshan	Beijing	Chengdu	Chongqing	Fuzhou	Guangzhou
Hangzhou	Shijiazhuang	Kunming	Nanjing	Qingdao	Jinan
Tianjin	Xiamen	Zhuhai	Zhengzhou		
1997					*50*
Anqing	Changsha	Dandong	Foshan	Fushun	Guilin
Guiyang	Harbin	Hefei	Huzhou	Huangshi	Jilin
Jiaxing	Jinhua	Jinzhou	Jingzhou	Kaifeng	Lanzhou
Leshan	Liaoyang	Liuzhou	Luzhou	Luoyang	Maanshan
Nanchang	Nanning	Nantong	Ningbo	Panzhihua	Qiqihar
Quanzhou	Shantou	Shaoxing	Shenyang	Suzhou	Urumqi
Weifang	Weihai	Wuhan	Wuhu	Xi'an	Xining
Xiangtan	Xinxiang	Yantai	Yangzhou	Yingkou	Yueyang
Zhuzhou	Zibo				
1998					*19*
Baotou	Cangzhou	Changchun	Changzhou	Dalian	Deyang
Jiaozuo	Qinhuangdao	Linyi	Nanyang	Taiyuan	Tangshan
Wenzhou	Wuxi	Yancheng	Yichang	Yinchuan	Zhanjiang
Zhenjiang					
1999					*3*
Dongguan	Hohhot	Xiaogan			
2000					*7*
Daqing	Huaibei	Jiujiang	Langfang	Mianyang	Rizhao
Xuzhou					
2001					*11*
Baoji	Bengbu	Datong	Fuxin	Ganzhou	Huludao
Huaian	Lianyungang	Nanchong	Zigong	Zunyi	
2002					*3*
Hengyang	Taizhou	Xianyang			
2003					*1*
Zhangjiakou					
2004					*1*
Dezhou					
2005					*4*
Changzhi	Dongying	Laiwu	Panjin		
2006					*9*
Chengde	Jining	Jincheng	Karamay	Mudanjiang	Qujing
Wuhai	Yibin	Yuxi			
2007					*10*
Erdos	Jinzhong	Shangrao	Taian	Tieling	Xiangyang

Xingtai	Xuchang	Yangquan	Zaozhuang		
2008					*12*
Anyang	Baoding	Chaoyang	Handan	Hebi	Liupanshui
Pingliang	Pingdingshan	Suining	Taizhou	Xinyang	Ya'an
2009					*9*
Anshun	Dazhou	Hengshui	Luohe	Sanmenxia	Shangqiu
Shizuishan	Zhoukou	Zhumadian			
2010					*3*
Baiyin	Benxi	Puyang			
2011					*1*
Jingdezhen					

Data source: City Yearbooks, Annual reports and official websites of CCBs.

4.2 Micro: Firm Level Growth

4.2.1 Model and Variables

A similar model to equation (1) is estimated to test the effect of establishment of CCB on firm growth,

$$Firm\ Growth_{i,j,t} = c + \gamma \cdot CCB_{j,t} + \Phi \cdot X_{i,j,t} + \alpha_t + \beta_i + \epsilon_{i,t} \qquad (2)$$

where i, j, t, denote firm, located city, and year, respectively, α_t, and β_i control year and firm fixed effects. Firm growth can be measured by $GRSALES_{i,j,t}$ and $GRASSET_{i,j,t}$. $GRSALES_{i,j,t}$ is annual growth rate of sales of firm *i*, located in city *j* in year *t*. $GRASSET_{i,j,t}$ is annual growth rate of asset of firm i in city j at year t. The key variable, dummy $CCB_{j,t}$, indicates whether CCB has already been established or not in the city *j* at year t, which is equal to 1 if yes, 0 otherwise.

Table 7: Variables used in firm growth regression model

Variables	Definition
Dependent variables	
GRSALES	Sales growth rate of firms
GRASSET	Total asset growth rate of firms
CCB variables	
CCB	Dummy indicating whether the city where firm is located has its CCB set up or not, equals to 0 before and in the year of setup, 1 since the following year and equals to 0 in all periods for firms located in cities without their own CCBs.
Control variables	

STATECAP	Percentage of state-owned paid-up capital
SOE	Dummy indicating whether the firm is state-owned (equals to 1) or not
ASSET	Logarithm of firms' total asset
SME	A set of two dummies (*MEDIUM, SMALL*) indicating whether the firm is large, medium or small.
AGE	A set of two dummies (*GROWTH, MATURE*) indicating ages of firms (<=5, 6-20, >21)

Control variables $X_{i,j,t}$ are listed as follows. *STATECAP* is the percentage of state-owned paid-up capital. In addition, *SOE* is a dummy variable to indicate whether the firm is an SOE or not. It equals to 1 if a firm has more than 50% shares as state-owned. The size of firm is controlled by $ASSET_{i,j,t}$ and $SME_{i,j,t}$. *ASSET* is the logarithm of firms' total asset. *SME* is a set of two dummies classifying firms into three groups, small firms (employees less than 300 or sales below 30 million RMB or total asset below 40 million RMB), medium firms (employees less than 2000 or sales below 300 million RMB or total asset below 400 million RMB) and large firms. In addition, years since firms' establishment is also used as control variables. Firms are divided into three groups according to their growth stages, which are start-up (established less than or equal to 5 years), growth (6-20 years) and mature (21 years and more).

4.2.2 Data

The data used for firm-level analysis is from the Annual Census of Enterprises by the Chinese National Bureau of Statistics from 1999 to 2007. It includes all the SOEs, and non-SOEs with sales over 5 million RMB. The number of firms included in 1999 is 160,733, which rises to 335,076 in 2007. The data contains all the information from the three accounting statements (balance sheet, profit and loss, and cash flow). Only firms with four consecutive years' presence are kept.

Firms whose total asset, total output, fixed asset, paid-in capital are 0 and total staff less than 8 (lack of credible accounting system) are dropped, and observations with sales growth rate and asset growth rate ranked in top and bottom 0.5% of the sample (16,231 out of 223,002) are dropped. Finally, the sample contains 206,771

firms from 40 industries[10] (mainly manufacturing) and 947,536 observations. The summary statistics of the sample is reported in Table 8.

Table 8: Summary Statistics of firm level data

		Number of firms	*Percentage*
CCB			
	Located in cities with CCB	156230	75.6%
	Located in cities without CCB	50541	24.4%
Ownership			
	SOE	18182	8.8%
	Non-SOE	188589	91.2%
Size			
	Large	1829	0.9%
	Medium	26526	12.8%
	Small	178416	86.3%
Age			
	<6 years	50172	24.3%
	5-20 years	126977	61.4%
	>20 years	29621	14.3%
Total number of firms			206771
Sample period			1999-2007
Total observations			947536

Data source: China Annual Census of Enterprises.

As shown above, around 3/4 of firms are located in cities with CCBs. More than 90% of firms are non-SOEs and SMEs. As for ages, majority of firms are in the growth development phase. The descriptive statistics of variables employed in firm-level regression is summarized in Table 9.

[10] The 40 industries are Coal Mining and Dressing, Petroleum and Natural Gas Extraction, Ferrous Metals Mining and Dressing, Nonferrous Metals Mining and Dressing, Nonmetal Minerals Mining and Dressing, Other Mining and Dressing, Processing of Agricultural and Sideline Products, Food Manufacturing, Beverage Manufacturing, Tobacco Manufacturing, Textile Industry, Manufacturing of Textile Garments, Footwear and Headgear, Leather, Furs, Down and Related Products, Timber Processing, Wood, Bamboo, Cane, Palm Fiber and Straw Products, Furniture Manufacturing, Papermaking and Paper Products, Printing and Record Medium Reproduction, Manufacturing of Cultural, Educational and Sports Goods, Petroleum Processing, Coking, and Nuclear Fuel Processing, Raw Chemical Materials and Chemical Products, Medical and Pharmaceutical Products, Chemical Fiber Manufacturing, Rubber Products, Plastic Products, Nonmetal Mineral Products, Smelting and Pressing of Ferrous Metals, Smelting and Pressing of Nonferrous Metals, Metal Products, Manufacturing of General Purpose Equipment, Manufacturing of Special Purpose Equipment, Manufacturing of Transport Equipment, Manufacturing of Electric Machinery and Equipment, Manufacturing of Telecommunications Equipment, Computers and Other Electronic Equipment, Manufacturing of Instruments, Meters, Cultural and Office Machinery, Manufacturing of Handicrafts and Others, Recycling Processing of Deserted Resources and Wastes, Production and Supply of Electric Power and Heat Power, Production and Supply of Gas and Production and Supply of Water.

Table 9: Descriptive Statistics for firm level data

	GRSALES	*GRASSET*	*CCB*	*STATECAP*	*SOE*
Mean	0.2650	0.1977	0.7556	0.0880	0.0879
Std	0.5857	0.4977	0.4298	0.2682	0.2832
Median	0.1476	0.0754	1	0	0
Min	-0.7588	-0.7421	0	0	0
Max	5.5839	5.0869	1	1	1
Obs.	947536	947536	947536	947536	947536
	ASSET	*Medium*	*Small*	*Growth*	*Mature*
Mean	10.1037	0.1283	0.8629	0.6141	0.1433
Std	1.4135	0.3344	0.3440	0.4868	0.3503
Median	9.9115	0	1	1	0
Min	4.7791	0	0	0	0
Max	20.1506	1	1	1	1
Obs.	947536	947536	947536	947536	947536

Data source: China Annual Census of Enterprises

4.3 Endogeneity

The endogeneity problem of CCB used in the above equation is not severe, as it's hard to think the purpose for city government to establish CCB is to lower city's growth rate. But maybe CCB is established to mitigate the potential city growth slowdown, or there might be some omitted variables affecting growth rate and establishment of CCB simultaneously, such as city governance, all of which contribute to endogeneity problem for the above equations we will estimate.

In this paper, we adopt IV method to solve the potential endogeneity problem. From Figure 1, we see that there is obvious clustering among CCBs. We find that almost for every province,[11] CCB was first established at its capital cities. Based on the clustering observation and policy diffusion argument detailed by Simmons and Elkins (2004), we use the percentage of neighboring cities in the same province established CCB to instrument for the CCB dummy in our regressions. The reason we use the neighboring cities in the same province is that we group cities according to their province and cities in the same province are more likely to share the same

[11] Exceptions like Shenzhen, which established its CCB earliest, because of its one of the five Special Economic Zone status.

financial and economic policy.

We run the two stage regression for our endogeneity problem. The first stage takes the following form while the second stage is the main equation we described above.

$$CCB_{i,t} = c + \gamma \cdot Neighbor_{i,t} + \Phi \cdot X_{i,t} + \alpha_t + \beta_i + \epsilon_{i,t}$$

where i and t denote city and year respectively. $CCB_{i,t}$ is what we used in regression (1), the key explanatory variable. $Neighbor_{i,t}$ is the percentage of neighboring cities in the same province having established CCB by year t. Alternatively, we use the percentage of cities having established CCB by year t.

5 Empirical results

5.1 City commercial bank and city macro performance: city level data

5.1.1 City commercial bank establishment and city GDP growth

Table 10 reports the DID estimation results. Regression 1 only includes key independent variable *CCB* and the constant. Regression 2 adds logarithm of real GDP from previous year to control convergence effect, i.e., rich cities are expected to grow slower. Other control variables except *LOAN* are added in regression 3. Regression 4 includes all control variables. City and year fixed effects are included in all regressions. Coefficients before the key independent variable *CCB* are significantly negative for all the regressions, which indicate that the establishment of CCB significantly reduced city's economic growth. After CCB establishment, growth rate was reduced by 0.546 to 0.676 percentage point. So the result is economically large as well. Other coefficients have the expected signs. $LnRGDP_{-1}$ negatively affects grow rate, showing strong convergence effect. *LOAN* is negatively associated with growth rate, consistent with the finding by Boyreau-Debray (2003), who attribute the negative sign to China's distorted financial system. *FAI* strongly contributes to economic growth rates, but *FDI* is insignificant, possibly because FDI goes to

developed regions which have high $LnRGDP_{-1}$. Government spending or intervention *FISCAL* is negatively related to growth rate which might reflect China's inefficient government institution. *GRPOP* and EDU_{-1} are insignificant, possibly because of relation with $LnRGDP_{-1}$, i.e., highly developed cities usually have a large percentage of higher education group and also attracts a large amount of immigrants. The results on control variables are consistent with findings in the existing literature, such as Cai et al. (2002) on the existence of convergence in China, Guariglia and Poncet (2008) and Boyreau-Debray (2003) on insignificance of loans, Boyreau-Debray (2003) on insignificance of FDI, and Fleisher et al. (2010) on positive effect of education.

Table 10: City commercial bank establishment and city GDP growth rate

	Reg1	Reg2	Reg3	Reg4
Dependent Variable		*GRGDP*		
CCB	-0.00546*	-0.00563**	-0.00530**	-0.00676***
	(0.00263)	(0.00229)	(0.00202)	(0.00200)
$LnRGDP_{-1}$		-0.116***	-0.124***	-0.131***
		(0.0268)	(0.0212)	(0.0226)
LOAN				-0.0268***
				(0.00555)
FAI			0.0728***	0.0712***
			(0.00885)	(0.00915)
FDI			0.0608	0.0280
			(0.201)	(0.174)
FISCAL			-0.0796*	-0.0830**
			(0.0372)	(0.0327)
GRPOP			-0.0211	-0.0149
			(0.0399)	(0.0488)
EDU_{-1}			0.00366	0.0105
			(0.0420)	(0.0497)
Constant	0.0964***	0.450***	0.469***	0.515***
	(0.000890)	(0.0823)	(0.0657)	(0.0693)
City fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observations	3,157	3,157	3,042	3,042
Within R^2	0.316	0.387	0.463	0.484

Note: Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Table 11 shows the results when replacing dummy variable *CCB* with *CCBYEAR* to test the long term effect of CCB, as one might conjecture that there could be a learning curve for CCB to be effective. All the results show a significant negative effect by establishing CCB, indicating a negative long term effect of CCBs establishment on local GDP growth rate.

The possible lag-effect has already been taken into account when constructing dummy variable *CCB*. However, it may take more than one year for CCB to have an effect. We use lagged values of CCB to test this lag effect. Sample period is still kept from 2001 to 2011 and lagged *CCB* is obtained manually based on years of CCBs establishment.

Table 11: City commercial banks setup years and city GDP growth rate

	Reg1	Reg2	Reg3	Reg4
Dep. Var.		*GRGDP*		
CCBYEAR	-0.00312***	-0.00258***	-0.00232***	-0.00172***
	(0.000377)	(0.000332)	(0.000267)	(0.000329)
$LnRGDP_{-1}$		-0.109***	-0.122***	-0.128***
		(0.0285)	(0.0232)	(0.0238)
LOAN				-0.0224***
				(0.00537)
FAI			0.0700***	0.0694***
			(0.00883)	(0.00923)
FDI			0.151	0.0826
			(0.196)	(0.179)
GE			-0.103**	-0.0988***
			(0.0342)	(0.0308)
POPGR			-0.0186	-0.0145
			(0.0407)	(0.0475)
EDU_{-1}			-0.0176	-0.00404
			(0.0404)	(0.0454)
Constant	0.0985***	0.431***	0.470***	0.506***
	(0.000476)	(0.0873)	(0.0712)	(0.0722)
City fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observations	3,157	3,157	3,042	3,042
Within R^2	0.341	0.403	0.475	0.489

Note: Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Table 12 reports the results using first to fifth lagged *CCB* as key independent variable. Cities in the experimental group change correspondingly as a result of lagged *CCB* used. When first to fifth lagged *CCB* is used, 67, 61, 68, 108 and 115 cities with their CCBs setup during 2000-2009, 1999-2008, 1998-2007, 1997-2006 and 1996-2005 are composed of experimental group. As a result, nearly all cities with CCBs setup are covered in experimental group among these regressions, considering that all but CCBs are set up before 1996. The results still show a significant negative correlation between lagged *CCB* and local GDP growth rate, after changing the assumption of lagged-effects and experiment group members.

Table 12: City commercial bank establishment and city GDP growth rate: lagged effect

	Reg1	Reg2	Reg3	Reg4	Reg5
Dep. Var			*GRGDP*		
Lagged CCB	CCB_{-1}	CCB_{-2}	CCB_{-3}	CCB_{-4}	CCB_{-5}
	-0.00704***	-0.00667***	-0.00873***	-0.00546**	-0.00574**
	(0.00156)	(0.00157)	(0.00154)	(0.00211)	(0.00210)
$LnRGDP_{-1}$	-0.131***	-0.130***	-0.130***	-0.130***	-0.129***
	(0.0227)	(0.0228)	(0.0233)	(0.0231)	(0.0231)
LOAN	-0.0266***	-0.0264***	-0.0260***	-0.0256***	-0.0250***
	(0.00561)	(0.00566)	(0.00552)	(0.00555)	(0.00558)
FAI	0.0711***	0.0709***	0.0708***	0.0712***	0.0713***
	(0.00913)	(0.00922)	(0.00930)	(0.00941)	(0.00944)
FDI	0.0336	0.0283	0.0356	0.0360	0.0237
	(0.167)	(0.159)	(0.159)	(0.161)	(0.165)
Fiscal	-0.0832**	-0.0821**	-0.0808**	-0.0810**	-0.0818**
	(0.0332)	(0.0332)	(0.0320)	(0.0322)	(0.0321)
GRPOP	-0.0176	-0.0151	-0.0131	-0.0174	-0.0164
	(0.0500)	(0.0497)	(0.0496)	(0.0475)	(0.0474)
EDU_{-1}	0.0136	0.0203	0.0223	0.0152	0.00843
	(0.0480)	(0.0466)	(0.0464)	(0.0472)	(0.0461)
Constant	0.515***	0.513***	0.510***	0.508***	0.505***
	(0.0691)	(0.0692)	(0.0706)	(0.0698)	(0.0699)
City fixed effect	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Observations	3,042	3,042	3,042	3,042	3,042
Within R^2	0.484	0.484	0.485	0.484	0.484

Note: Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Now, we use GDP per capita growth rate instead of GDP growth rate as dependent variable. Table 13 shows the results. We can see that the establishment of CCBs (*CCB*), their lagged effects (*CCB_{-1}*, *CCB_{-2}*, *CCB_{-3})*, and their dynamic effect (*CCBYEAR)* are all significantly negative to city's GDP per capita growth rate.

Table 13: CCB establishment and city GDP per capita growth rate

	Reg1	Reg2	Reg3	Reg4	Reg5
Dependent Variable			*GRGDPPC*		
	CCB	-	*CCB_{-1}*	*CCB_{-2}*	*CCB_{-3}*
CCB or Lagged	-0.00419*		-0.00437*	-0.00575***	-0.00831***
	(0.00207)		(0.00215)	(0.00179)	(0.00182)
CCBYEAR		-0.00288***			
		(0.000597)			
$LnGDPPC_{-1}$	-0.113***	-0.114***	-0.113***	-0.113***	-0.113***
	(0.0216)	(0.0212)	(0.0218)	(0.0219)	(0.0219)
LOAN	-0.0310***	-0.0244***	-0.0309***	-0.0308***	-0.0304***
	(0.00573)	(0.00536)	(0.00573)	(0.00569)	(0.00563)
FAI	0.0839***	0.0811***	0.0838***	0.0836***	0.0835***
	(0.0124)	(0.0122)	(0.0124)	(0.0125)	(0.0126)
FDI	0.115	0.252	0.119	0.127	0.136
	(0.165)	(0.199)	(0.159)	(0.164)	(0.178)
FISCAL	0.0368	0.00264	0.0367	0.0369	0.0377
	(0.0618)	(0.0528)	(0.0616)	(0.0612)	(0.0607)
GRPOP	-0.241**	-0.239**	-0.243**	-0.241**	-0.239**
	(0.0997)	(0.0958)	(0.100)	(0.101)	(0.102)
EDU_{-1}	0.0987	0.0656	0.101	0.106*	0.108*
	(0.0596)	(0.0583)	(0.0572)	(0.0553)	(0.0552)
Constant	1.075***	1.087***	1.076***	1.075***	1.072***
	(0.198)	(0.193)	(0.199)	(0.200)	(0.200)
City fixed effect	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Observations	3,039	3,039	3,039	3,039	3,039
Within R^2	0.406	0.419	0.406	0.407	0.408

Note: Regression 1 contains all control variables and dummy variable CCB. Regression 2 replaces CCBYEAR with CCB. Regression 3 to 5 employ first year to third year lagged CCB. GDP per capita is also found significantly negatively correlated with CCBs setup, lagged CCBs setup and the years of CCBs setup. Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

5.1.2 CCB establishment and city industrial sector growth

We now change our dependent variable to the number and total output of industrial enterprises above designated size[12]. Most of the enterprises therein are still SME so that we can examine how CCB affects the number of SMEs. For example, more than 90% of industrial enterprises above designated size in 2007 are SMEs. We can see from Table 14 and 15 that the CCB effect is still insignificant and sometimes negative on the aggregate firm development.

Table 14: CCB and number of industrial enterprises above designated size

	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6
Dependent Variable				*GR#EN*		
Sample period	01-11	01-06	07-10	01-11	01-06	07-10
CCB	0.00541	0.00147	0.00688			
	(0.0110)	(0.0182)	(0.0189)			
CCBYEAR				-0.00741***	-0.00715*	-0.00877
				(0.00170)	(0.00350)	(0.00933)
LnRGDP	-0.0689	0.204	0.221	-0.0585	0.232*	0.190
	(0.0642)	(0.113)	(0.208)	(0.0659)	(0.110)	(0.238)
FAI	0.194***	0.240**	-0.00140	0.176***	0.229**	-0.0126
	(0.0403)	(0.0903)	(0.0516)	(0.0399)	(0.0868)	(0.0405)
FDI	0.638	0.822	3.157	1.110	1.036	3.609
	(0.846)	(1.495)	(5.279)	(0.911)	(1.545)	(4.878)
Constant	0.197	-0.684*	-0.760	0.178	-0.761*	-0.597
	(0.210)	(0.339)	(0.812)	(0.213)	(0.335)	(0.966)
City fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,056	1,663	1,107	3,056	1,663	1,107
Within R^2	0.339	0.147	0.0954	0.343	0.149	0.0968

Note: The dependent variable is number of industrial enterprises above designated size for each city. Regression 1 studies the period 2001-2011. Regression 2 covers observations from 2001 to 2006 and regression 3 covers 2007-2010. CCBYEAR substitutes CCB to estimate the long term effect of CCBs setup, which is shown in regression 4 to 6. Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

[12] The standard of industrial enterprises above designed size was changed twice during 2001 to 2011. So regressions are also done for different samples.

Table 15: CCB establishment and total output growth of industrial enterprises

	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6
Dependent Var.				*GRIP*		
Sample period	01-11	01-06	07-10	01-11	01-06	07-10
CCB	-0.00534	-0.0359***	-0.00293			
	(0.00847)	(0.00748)	(0.0134)			
CCBYEAR				-0.00597***	-0.00473*	-0.00910**
				(0.000636)	(0.00195)	(0.00240)
LnRGDP	-0.101**	-0.0504	0.255	-0.0926**	-0.0339	0.226
	(0.0350)	(0.0792)	(0.368)	(0.0372)	(0.0795)	(0.383)
FAI	0.272***	0.285***	0.294*	0.258***	0.281***	0.282*
	(0.0252)	(0.0578)	(0.0962)	(0.0245)	(0.0570)	(0.0968)
FDI	1.982**	-1.950	2.759	2.293**	-1.889	3.123
	(0.735)	(3.131)	(4.342)	(0.766)	(3.093)	(4.332)
Constant	0.358***	0.217	-0.900	0.340**	0.159	-0.747
	(0.111)	(0.249)	(1.426)	(0.117)	(0.249)	(1.499)
City Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,058	1,665	1,107	3,058	1,665	1,107
Within R^2	0.240	0.297	0.174	0.244	0.297	0.176

Note: The dependent variable is number of industrial enterprises above designated size for each city. Regression 1 studies the period 2001-2011. Regression 2 covers observations from 2001 to 2006 and regression 3 covers 2007-2010. CCBYEAR substitutes CCB to estimate the long term effect of CCBs setup, which is shown in regression 4 to 6. Standard errors robust to heteroskedasticity and autocorrelation are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

5.2 CCB and Firm Growth: Micro Level Evidence

Table 16-19 demonstrate establishment of CCB on firm's growth rate using the China Annual Census of Enterprises from 1999 to 2007, which include at least four years' consecutive observation of 206,771 firms. Hausman test strongly pros the fixed effect model, but we use pooled regression model as robustness check.

From Table 16, firm's growth rate significant declined after CCB establishment, which is robust to the commonly used controls including firm's characteristic variables and in all the regressions, year and firm fixed effect were both controlled. We can see that compared to firms in the cities without CCB, CCB establishment will lead firm's sales growth rate to decline by around 2 percentage, which is about one third of the sales' growth rate's standard deviation.

Other variables have the expected signs such as the negative signs of SOE and

STATECAP indicating government intervention has negative consequences. Both size dummy and logarithm of firms' asset indicate that larger firms enjoy a higher sales and asset growth rate, possibly because of more available capital and access to banking finance. Firms in start-up phase have a higher sales and asset growth rate than ones in growth and mature phases.

Table 16: CCB and Firm's Sales Growth Rate

	Reg1	Reg2	Reg3	Reg4
Dep. Var.		*GRSALES*		
CCB	-0.0154**	-0.0162**	-0.0218***	-0.0218***
	(0.00688)	(0.00687)	(0.00688)	(0.00688)
Medium		-0.0608***		
		(0.00901)		
Small		-0.0846***		
		(0.00935)		
SOE		-0.0266***	-0.0291***	
		(0.00423)	(0.00423)	
ASSET			0.0826***	0.0826***
			(0.00249)	(0.00249)
STATECAP				-0.0373***
				(0.00479)
Growth		-0.0633***	-0.0691***	-0.0690***
		(0.00235)	(0.00235)	(0.00235)
Mature		-0.0415***	-0.0467***	-0.0465***
		(0.00408)	(0.00408)	(0.00409)
Constant	0.370***	0.490***	-0.392***	-0.391***
	(0.00536)	(0.0107)	(0.0251)	(0.0251)
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	947,536	947,536	947,536	947,536
Within R^2	0.015	0.016	0.018	0.018

Note: Regression 1 only includes key variable CCB as explanatory variable. Firm size, ownership and age are added in regression 2. For robustness check, logarithm of firms' asset is used instead of size dummies in regression 3, and percentage of state-owned capital is used instead of ownership dummy in regression 4. Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Table 17 replaced sales growth rate with asset growth rate of firms as dependent variable and generates the same result from all the four regressions that CCB

establishment has a significant negative effect on firm asset growth rate.

Table 17: CCB and Firm's Asset Growth Rate

	Reg1	Reg2	Reg3	Reg4
Dep. Var.		*GRASSET*		
CCB	-0.00842	-0.0103*	-0.0537***	-0.0538***
	(0.00553)	(0.00552)	(0.00600)	(0.00600)
Medium		-0.0299***		
		(0.00734)		
Small		-0.0986***		
		(0.00760)		
SOE		-0.0248***	-0.0480***	
		(0.00337)	(0.00342)	
ASSET			0.641***	0.641***
			(0.00294)	(0.00294)
STATECAP				-0.0585***
				(0.00393)
Growth		-0.0520***	-0.0981***	-0.0980***
		(0.00208)	(0.00207)	(0.00207)
Mature		-0.0365***	-0.0787***	-0.0783***
		(0.00345)	(0.00367)	(0.00367)
Constant	0.253***	0.378***	-5.920***	-5.919***
	(0.00431)	(0.00869)	(0.0293)	(0.0293)
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	947,536	947,536	947,536	947,536
Within R^2	0.005	0.007	0.186	0.186

Note: Regression 1 only includes key variable CCB as explanatory variable. Firm size, ownership and age are added in regression 2. For robustness check, logarithm of firms' asset is used instead of size dummies in regression 3, and percentage of state-owned capital is used instead of ownership dummy in regression 4. Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

The effect of CCBs setup might vary for firms in different scales. The key proponent for the invention of CCB is that local bank which is small relative to the nationwide bank can contribute to SME growth better. So, observations are divided into four groups, one for SMEs and one for large firms. We further divide the SME group into small and medium sized group. We can see from Table 18 that SMEs as well as small firms experienced slower growth rates in the cities with CCB located in.

Table 18: CCB and sales growth rate of firms in different sizes

	Reg1	Reg2	Reg3	Reg4
Dep. Var.		*GRSALES*		
Sample	SME	Large	Medium	Small
CCB	-0.0208***	-0.0243	-0.00161	-0.0192**
	(0.00703)	(0.0362)	(0.0182)	(0.00780)
ASSET	0.0824***	0.111***	0.0315***	0.0907***
	(0.00252)	(0.0216)	(0.00765)	(0.00282)
STATECAP	-0.0378***	-0.0236	-0.0364***	-0.0325***
	(0.00496)	(0.0188)	(0.00892)	(0.00609)
Growth	-0.0681***	-0.170***	-0.134***	-0.0566***
	(0.00237)	(0.0277)	(0.00772)	(0.00253)
Mature	-0.0455***	-0.132***	-0.112***	-0.0325***
	(0.00415)	(0.0283)	(0.0101)	(0.00473)
Constant	-0.386***	-1.065***	0.133	-0.459***
	(0.0252)	(0.303)	(0.0897)	(0.0276)
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Observations	934,955	12,581	121,557	817,597
Within R^2	0.018	0.052	0.029	0.016

Note: Regression 1 only includes key variable CCB as explanatory variable. Firm size, ownership and age are added in regression 2. For robustness check, logarithm of firms' asset is used instead of size dummies in regression 3, and percentage of state-owned capital is used instead of ownership dummy in regression 4. Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

In order to check the robustness of results, regression using pooled OLS with same observations is estimated and similar results are obtained, as displayed in Table 19. Industry and regional (province) dummies are added to control the possible industrial and regional specification. We can see still our results are quite robust that CCB presence will lead growth rate to decline by around 2 percent for sales and 1 percent for asset.

Table 19: CCB and firm growth: Pooled OLS

	Reg1	Reg2	Reg3	Reg4
Dep. Var.	*GRSALES*		*GRASSET*	
CCB	-0.0168***	-0.0202***	-0.00865***	-0.0163***
	(0.00164)	(0.00164)	(0.00142)	(0.00144)

Medium	-0.0392***		-0.0249***	
	(0.00596)		(0.00482)	
Small	-0.0667***		-0.0620***	
	(0.00586)		(0.00473)	
SOE	-0.0654***		-0.0730***	
	(0.00209)		(0.00164)	
ASSET		0.0195***		0.0413***
		(0.000453)		(0.000408)
STATECAP		-0.0871***		-0.114***
		(0.00229)		(0.00191)
Growth	-0.165***	-0.169***	-0.108***	-0.115***
	(0.00166)	(0.00167)	(0.00139)	(0.00139)
Mature	-0.222***	-0.226***	-0.168***	-0.182***
	(0.00211)	(0.00212)	(0.00172)	(0.00175)
Constant	0.509***	0.254***	0.402***	-0.0624***
	(0.00898)	(0.00817)	(0.00804)	(0.00777)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Observations	947,536	947,536	947,536	947,536
R^2	0.044	0.046	0.027	0.038

Note: Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

5.3 Heterogeneous impact of CCB on firm growth

Table 20 shows CCB's heterogeneous impact on firm growth, where CCBASSET=CCB*log(Firm's Asset), CCBSMALL=CCB*(Dummy Small). We can see that the establishment of CCB will reduce small firm's growth rate more. We conjecture that CCB dictated by the city government intends to lend more to large firms for various reasons. SOEs are mostly large firms, which have political connection with the city government and therefore can get more loans from city government dictated CCB. City government also prefer to large firms even though they are private possibly because large firm has more resources to bribe the city government to get loans or because city government officials have their personal connections such as obtaining jobs for their family members in the large firm. Another reason might be that city government official can get their city more famous by having more brand name large firm to bring themselves more chances to be promoted.

Table 20: Heterogeneous impact of CCB on firm growth

	Reg1	Reg2	Reg3	Reg4
Dep. Var	*GRSALES*	*GRSALES*	*GRASSET*	*GRASSET*
CCB	-0.616***	-0.00478	-4.691***	0.0370***
	(0.0251)	(0.00759)	(0.0359)	(0.00610)
CCBASSET	0.0583***		0.455***	
	(0.00236)		(0.00363)	
CCBSMALL		-0.0139***		-0.0570***
		(0.00404)		(0.00337)
STATECAP	-0.0349***	-0.0336***	-0.0397***	-0.0298***
	(0.00480)	(0.00479)	(0.00406)	(0.00390)
Growth	-0.0660***	-0.0630***	-0.0752***	-0.0518***
	(0.00235)	(0.00235)	(0.00208)	(0.00208)
Mature	-0.0439***	-0.0410***	-0.0588***	-0.0361***
	(0.00408)	(0.00408)	(0.00360)	(0.00345)
Constant	0.433***	0.410***	0.478***	0.289***
	(0.00573)	(0.00561)	(0.00756)	(0.00454)
Firm fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observations	947,536	947,536	947,536	947,536
R-squared	0.017	0.016	0.097	0.007
Number of firms	206,771	206,771	206,771	206,771

Note: Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

5.4 Endogeneity

Though we cannot hardly image the purpose to establish a CCB is to lower its economic growth rate, as mentioned in the methodology part, there might be some endogeneity issue. We adopt the neighboring IV estimation as mentioned in the methodology section.

Table 21: First stage regression result

	(1)	(2)	(3)	(4)
Dep. Var.	CCB	CCB	CCB	CCB
Neighbor	0.3839***	0.3846***		
	(0.0549)	(0.0551)		
Prov_Percent			0.5402***	0.5401***
			(0.0633)	(0.0638)
LnRGDP(ER)-1	-0.0566	0.0256	-0.0640	0.0038
	(0.0722)	(0.0624)	(0.0735)	(0.0633)
LOAN	-0.0641***	-0.0605***	-0.0624***	-0.0597***
	(0.0191)	(0.0189)	(0.0183)	(0.0183)
FAI	-0.0147	-0.0228	-0.0154	-0.0211
	(0.0331)	(0.0336)	(0.0333)	(0.0340)
FDI	5.3816***	5.3965***	4.1892***	4.2600***
	(1.3977)	(1.4054)	(1.3303)	(1.3292)
Fiscal	-0.3940***	-0.2979**	-0.3727***	-0.2930**
	(0.1425)	(0.1370)	(0.1398)	(0.1352)

GRPOP	0.0549	0.0542	0.0016	0.0005
	(0.3196)	(0.3168)	(0.3436)	(0.3413)
EUD-1	-0.3191	-0.2701	-0.3165	-0.2815
	(0.5044)	(0.5044)	(0.5088)	(0.5100)
City fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observations	3041	3039	3041	3039
R-squared	0.1722	0.1720	0.1866	0.1863

Note: Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

The first stage regression displays strong predictive power of establishing CCB when there are more establishments located in the city's neighbors. We use the percentage of neighbors having established CCB, i.e., NEIGHBOR, in our first two regressions and alternatively we use the percentage of cities in a province has already established CCB, i.e., PROV_PERCENT, as another measure. Groups are at provincial level because the cities are under the administration of provincial government officials.

Table 22: Second stage regression results

	(1)	(2)	(3)	(4)
Dep. Var	GRGDP	GRGDPPC	GRGDP	GRGDPPC
IV.	Neighbor	Neighbor	Same Prov.	Same Prov.
CCB	-0.0751***	-0.0701***	-0.0777***	-0.0820***
	(0.0150)	(0.0181)	(0.0130)	(0.0171)
LnRGDP(PC)-1	-0.135***	-0.111***	-0.135***	-0.110***
	(0.0139)	(0.0138)	(0.0139)	(0.0141)
LOAN	-0.0319***	-0.0357***	-0.0321***	-0.0365***
	(0.00711)	(0.00719)	(0.00716)	(0.00733)
FAI	0.0691***	0.0814***	0.0691***	0.0810***
	(0.00533)	(0.00711)	(0.00538)	(0.00726)
FDI	0.493**	0.565**	0.511**	0.647***
	(0.236)	(0.245)	(0.231)	(0.236)
Fiscal	-0.111***	0.0161	-0.112***	0.0123

	(0.0282)	(0.0362)	(0.0277)	(0.0363)
GRPOP	-0.00360	-0.231***	-0.00316	-0.229***
	(0.0519)	(0.0631)	(0.0524)	(0.0650)
EDU-1	-0.0500	0.0436	-0.0524	0.0337
	(0.0665)	(0.0763)	(0.0673)	(0.0791)
City fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observations	3,041	3,039	3,041	3,039
R-squared	0.291	0.283	0.276	0.234

Note: Standard errors robust to heteroskedasticity are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

We can see from the second stage regression that CCB still has a negative impact on city's GDP and GDP per capita growth rate. We can therefore conclude that the negative effect of CCB establishment on economic performance is quite robust.

6 Potential sources of CCB's negative impact on growth

In this section, we discuss possible reasons about CCB's negative effect on local economic performance.

Established by merging and reorganizing local urban credit cooperatives, most of CCBs took over asset, employees and also problems from their predecessors. They faced problems of low quality asset, high non-performing loan ratio and poor corporate governance.

Bank run, acquisition, corruption and financial fraud occur in CCBs occasionally. For instance, City Commercial Bank of Zhuzhou experienced a bank run on March 26, 2000, 92.44 million RMB was withdrawn on that day[13]. On Jun 13, 2006, Bank of Hengyang experienced a bank run as well. More than 100 million RMB was withdrawn within 2 days[14]. Established in 1997, City Commercial Bank of Foshan suffered from continuous profit loss, high non-performing loan ratio and was took over by the nationwide bank fo Industrial and Commercial Bank in 2004. For similar

[13] Almanac of Zhuzhou, 2001
[14] *China Economic Weekly*, Jun. 26, 2006.

reasons, City Commercial Bank of Zhuhai was taken over by China Resources in 2009 and was renamed as Zhuhai China Resources Bank. Moreover, City Commercial Bank of Shantou violated a series of regulations and was suspended of bank licenses in August 2001.[15] Relatively large CCBs besides small CCBs also suffer from poor risk control system. Bank of Qilu, one of the top 1000 banks in the world since 2007 (*the Banker*) in total asset, was involved in a notorious financial fraud, which caused losses as high as 2.256 billion RMB.[16]

The negative effect of CCB on city economic growth and various case studies mentioned above motivate us to explore the efficiency of CCBs. Compared to big four, these CCBs were under solely control of local government. However, big four are headquartered in Beijing, and they are owned by central government as well. Albeit big four's city branches are affected by city government, there is a balance of power since the provincial branch and headquarter still have a large saying in their local city branch operation.

Using the method developed by Berger & Mester (1997) and Berger et al. (2009), we computed bank efficiency for 5 state-owned banks and 27 CCBs due to data availability during 2005-2012, as shown in Table 23.

Assuming banks maximize their profit, the bank efficiency index is calculated as the profit difference between the most profitable bank and the rest of the banks with input and output controlled. The details can be found in the two source papers mentioned above. We use data from Bankscope. Methodology is briefly described here. The logarithm profit function is specified as followed.

$$ln\left(\frac{\pi}{w_2 z_1}+\theta\right)_{i,t} = \delta_0 + \sum_j \delta_j ln\left(\frac{y_j}{z_1}\right)_{i,t} + \frac{1}{2}\sum_j \sum_k \delta_{jk} ln\left(\frac{y_j}{z_1}\right)_{i,t} ln\left(\frac{y_k}{z_1}\right)_{i,t} + \beta_1 ln\left(\frac{w_1}{w_2}\right)_{i,t} + \frac{1}{2}\beta_{11} ln\left(\frac{w_1}{w_2}\right)_{i,t} ln\left(\frac{w_1}{w_2}\right)_{i,t} + \sum_j \theta_j ln\left(\frac{y_j}{z_1}\right)_{i,t} ln\left(\frac{w_1}{w_2}\right)_{i,t} + lnu_{i,t} + lnv_{i,t} \quad (4)$$

where i denotes banks and t denotes years. $y_j, \mathrm{j} = 1, 2, 3, 4$, denote outputs of banks, including total loan, total deposit, liquid asset and other earning assets respectively. π is bank's net income. w_1 and w_2 are input prices for banks which

[15] *Security Times*, Aug. 26, 2001.
[16] Qilun Bank annual report, 2010.

are interest expenses divided by total deposit and non-interest expenses divided by fixed assets respectively. z_1 denotes total earning assets, which is used to exclude bank scale heteroskedasticity. θ is a constant to avoid logarithm of a negative number. u denotes profit efficiency and v is the error. Following Berger & Mester (1997) and Berger et al. (2009), both stochastic frontier and distribution free approaches are used here.

Profit efficiency of each bank is reported in Table 23, and further summarized in Table 24. The result shows that CCBs has a lower profit efficiency using both stochastic and distribution free methods than state-owned nationwide banks during 2005-2012, although the big four are commonly criticized for their inefficiency.

Table 23: Bank profit efficiency of 33 banks (2005-2012)

State-owned banks	*Stochastic frontier*	*Distribution free*
Industrial & Commercial Bank of China	0.3662	0.8310
China Construction Bank	0.3665	0.8987
Bank of Communications	0.3922	0.8124
Agricultural Bank of China	0.2861	0.6504
Bank of China	0.4500	0.8436
City commercial banks	*Stochastic frontier*	*Distribution free*
Baoshang Bank	0.4473	0.8377
Bank of Beijing	0.2423	0.6734
Bank of Chengdu	0.3782	0.8183
Bank of Chongqing	0.3490	0.7806
Bank of Dalian	0.2217	0.6044
Bank of Dongguan	0.2884	0.6513
Fujian Haixia Bank	0.3951	0.8084
Fudian Bank	0.2879	0.6966
Bank of Guiyang	0.3398	0.7527
Harbin Bank	0.4055	0.7831
Hankou Bank	0.3367	0.7601
Bank of Hangzhou	0.2486	0.6831
Huishang Bank	0.3243	0.8242
Bank of Jiangsu	0.2613	0.4128
Bank of Liuzhou	0.2471	0.6903
Bank of Nanchang	0.4603	1.0000
Bank of Nanjing	0.3734	0.8815
Bank of Ningbo	0.3762	0.8916
Ping An Bank	0.1327	0.3385

Qishang Bank	0.3220	0.7520
Bank of Qingdao	0.2529	0.6472
Bank of Rizhao	0.6200	0.8915
Bank of Shanghai	0.2441	0.5982
Bank of Shaoxing	0.3497	0.8781
Bank of Tianjin	0.2544	0.6690
Bank of Wenzhou	0.3348	0.8062
Bank of Xinxiang	0.4334	0.8342

Note: banks financial data is from Bankscope database.

Table 4: Banks profit efficiency summary of 33 banks (2005-2012)

	Profit efficiency	*State-owned*	*City commercial*	*All*
Stochastic frontier	Mean	0.3722	0.3306	0.3371
	Std	0.0590	0.0965	0.0921
Distribution free	Mean	0.8072	0.7394	0.7500
	Std	0.0934	0.1438	0.1382
	Observations	5	27	32

Note: Banks financial data is from Bankscope database and stochastic frontier approach is used here.

7 Conclusion

Using panel data of all cities (except Lhasa) in China from 2001 to 2011, the effect of CCBs setup on local economic growth is found to be negative, which is surprising considering the original motivation for the China Banking Regulatory Commission to invent CCB to promote local growth through its advantage in lending to local SMEs. Moreover, using firm-level data of more than 206 thousands firms from 1999 to 2007, we find CCB also has a negative effect on firm growth, especially to SMEs, small firms in particular. Both results are quite robust. Considering possible endogeneity problem, we borrow from policy diffusion literature by using percentage of neighbor cities having established CCB as instrument variable, and we still find the results are negative.

We then use a subset of banks to compute bank efficiency measure due to data availability and find that averagely, CCB even has lower efficiency than the nationwide state owned banks which are commonly criticized for their inefficiency.

By looking at top 10 borrowers from top 9 CCBs which have their lending information public, we find that most of the borrowers still are SOE or public institutes owned by local government. We conjecture the factor causing CCB inefficiency might be the following. Local city branches of big four with almost every city presence have a balance of power between their headquarter in Beijing, local city government, and provincial branches, while local government has its sole power on CCB's operation, which might provide a source for CCB's low inefficiency.

Reference

Allen, Franklin, Jun Qian, and Meijun Qian. (2005). Law, finance, and economic growth in China, Journal of Financial Economics, Volume 77, Issue 1, Pages 57-116.

Ayyagari, Meghana, Asli Demirgüç-Kunt, and Vojislav Maksimovic. (2010). Formal versus Informal Finance: Evidence from China, Review of Financial Studies, 23 (8): 3048-3097.

Ayyagari, M., Demirgüç-Kunt, A., and Maksimovic, V. (2011). Firm innovation in emerging markets: The role of finance, governance, and competition. *Journal of Financial and Quantitative Analysis*, *46*(6), 1545.

Beck, T., DEMIRGUC‐KUNT, A. S. L. I., Laeven, L., & Levine, R. (2008). Finance, firm size, and growth. *Journal of Money, Credit and Banking*, *40*(7), 1379-1405.

Berger, A. N., Clarke, G. R., Cull, R., Klapper, L., & Udell, G. F. (2005). Corporate governance and bank performance: A joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership. *Journal of Banking & Finance*, *29*(8), 2179-2221.

Berger, A. N., Hasan, I., & Zhou, M. (2009). Bank ownership and efficiency in China: What will happen in the world's largest nation?. *Journal of Banking & Finance*, *33*(1), 113-130.

Berger, A. N., & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions?. *Journal of Banking & Finance*, 21(7), 895-947.

Boyreau-Debray, G. (2003). Financial intermediation and growth: Chinese style (Vol. 3027). World Bank, Development Research Group, Investment Climate.

Cai, F., Wang, D., & Du, Y. (2002). Regional disparity and economic growth in China: The impact of labor market distortions. *China Economic Review*, 13(2), 197-212.

Chang, P. C., Jia, C., & Wang, Z. (2010). Bank fund reallocation and economic growth: Evidence from China. *Journal of Banking & Finance*, *34*(11), 2753-2766.

Chong, T. T. L., Lu, L., & Ongena, S. (2013). Does banking competition alleviate or worsen credit constraints faced by small-and medium-sized enterprises? Evidence from China. *Journal of Banking & Finance*, 37(9), 3412-3424.

Carkovic, M., & Levine, R. (2005). Does Foreign Direct Investment Accelerate Economic Growth?. *Does Foreign Direct Investment Promote Development?*, 195.

Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of economics and statistics*, 80(4), 549-560.

Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *Stata Journal*, 3(2), 168-177.

Escribano, A., Guasch, J. L., Orte, M. D., & Pena, J. (2008). Investment climate assessment based on demean Olley and Pakes decompositions: methodology and application to Turkey's investment climate survey.

Ferri, G. (2009). Are new tigers supplanting old mammoths in China's banking system? Evidence from a sample of city commercial banks. *Journal of Banking & Finance, 33*(1), 131-140.

Fleisher, B., Li, H., & Zhao, M. Q. (2010). Human capital, economic growth, and regional inequality in China. *Journal of Development Economics*, 92(2), 215-231.

Garc á-Herrero, A., Gavil á, S., & Santab árbara, D. (2009). What explains the low profitability of Chinese banks?. *Journal of Banking & Finance*, *33*(11), 2080-2092.

Goldsmith R. W. (1969), Financial Structure and Development, New Haven, CT: Yale University Press.

Greene W. H., *Econometric Analysis*. New York: Prentice-Hall. 2000.

Guariglia, A., & Poncet, S. (2008). Could financial distortions be no impediment to economic growth after all? Evidence from China. *Journal of Comparative Economics*, *36*(4), 633-657.

Guillaumont Jeanneney, S., Hua, P., & Liang, Z. (2006). Financial development, economic efficiency, and productivity growth: Evidence from China. *The*

Developing Economies, *44*(1), 27-52.

Hao, C. (2006). Development of financial intermediation and economic growth: The Chinese experience. *China Economic Review*, 17(4), 347-362.

Hasan, I., Wachtel, P., & Zhou, M. (2009). Institutional development, financial deepening and economic growth: Evidence from China. *Journal of Banking & Finance*, 33(1), 157-170.

Jayaratne, J., & Strahan, P. E. (1996). The finance-growth nexus: Evidence from bank branch deregulation. *The Quarterly Journal of Economics*, *111*(3), 639-670.

Jiang, C., Yao, S., & Zhang, Z. (2009). The effects of governance changes on bank efficiency in China: A stochastic distance function approach. *China Economic Review*, *20*(4), 717-731.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics*, *108*(3), 717-737.

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of monetary Economics*, *46*(1), 31-77.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, *1*, 865-934.

Lin, X., & Zhang, Y. (2009). Bank ownership reform and bank performance in China. *Journal of Banking & Finance*, *33*(1), 20-29.

Ljungwall, C., & Li, J. (2007). Financial sector development, FDI and economic growth in China. *Peking University, CCER Working Paper*, (E2007005).

Lucas Jr, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, *22*(1), 3-42.

Robinson, J. (1952). The Generalization of the General Theory, in: *Rate of Interest and Other Essays*, London: MacMillan

Schumpeter, J. A. (1912). *Theorie der wirtschaftlichen Entwicklung. Leipzig: Duncker & Humblot*. English translation by R. Opie, published in 1934 as *The theory of economic development*. Cambridge, MA: Harvard University Press

Shen, Y., Shen, M., Xu, Z., & Bai, Y. (2009). Bank size and small-and medium-sized enterprise (SME) lending: Evidence from China. *World Development*, 37(4),

800-811.

Simmons, Beth A. and Zachary Elkins (2004). The Globalization of Liberalization: Policy Diffusion in the International Political Economy. The *American Political Science Review*, Vol. 98, No. 1, pp. 171-189

Wang, Y., & Yao, Y. (2001). *Sources of China's economic growth, 1952-1999: Incorporating human capital accumulation* (No. 2650). World Bank Institute, Economic Policy and Poverty Reduction Division.

Wooldridge, J. M. 2002. *Econometric Analysis of Cross Section and Panel Data.* Cambridge, Massachusetts: The MIT Press.

Zhang, J., Wang, L., & Wang, S. (2012). Financial development and economic growth: Recent evidence from China. *Journal of Comparative Economics*, 40(3), 393-412.

Zhang, J., Peng Wang, Baozhi Qu, (2012). Bank risk taking, efficiency, and law enforcement: Evidence from Chinese city commercial banks, *China Economic Review*, Volume 23, Issue 2, June 2012, Pages 284-295

Appendix

Top ten loan clients of top nine CCBs

Top ten loan clients of top nine CCBs

Top 10 Loan Clients	Type
Bank of Beijing: 2012	
Dagong (shanghai) Electric Appliance Co., Ltd	Others
Beijing Land Reserve Center	Public institute
Beijing Public Transportation Holding (Group) Co., LTD	SOE
Beijing Land Reserve Center Chaoyang branch	Public institute
China Guodian Corporation	SOE
Beijing North Star Industrial co., LTD	Others
Beijing Road and Wire Co., LTD	SOE
Shaanxi Coal and Chemical Industry Group Co., LTD	SOE
China National Gold Group Corporation	SOE
Beijing Land Reserve Center Shunyi branch	Public institute
Bank of Tianjin: 2012	
Tianjin Iron & Steel Group Co., LTD	SOE
Tianjin Teda Development Co., LTD	SOE
Tianjin Binhai New Area Land Reserve Center	Public institute
Tianjin Affordable Housing Construction Investment Co., LTD	SOE
Tianjin Land Structural Adjustment Acquisition Center	Public institute
Tianjin Historical Architecture Restoration and Development Co. LTD	SOE
Tianjin Binhai New City Construction Development Co., LTD	SOE
Tianjin New Financial Investment Co., LTD	SOE
Tianjin Teda Group Co., LTD	SOE
Tianjin Oriental Wealth Investment Group Co., LTD	SOE
Bank of Shanghai: 2012	
China Vanke Co. LTD	Others
Shenzhen Dean International Freight Agency Co., LTD	Others
Shenzhen Honglaikesi Supply Chain Service Co., LTD	Others
Shanghai Land Reserve Center	Public institute
Shanghai Pudong Engineering Construction Management Co., LTD	SOE
Bright Food (Group) Co.	Others
Shanghai Harbour City Development (Group) Co., LTD	SOE
Shanghai Zhangjiang (Group) Co., LTD	SOE
Inventec Co., LTD	Others
Shenzhen Liutonghe Chain Service Co., LTD	Others
Bank of Nanjing: 2007	
Nanjing University of Finance	Public institute
Nanjing Urban Construction Investment Holding (Group) Co., LTD	SOE
Nanjing Communications Institute of Technology	Public institute

Nanjing ShangMao Real Estate Sevelopment Co., LTD	Others
Jiangsu Maritime Technical Institute	Others
Zhangjiagang Shazhou Electric Power Co., LTD	Others
Nanjing Institute of Industry Technology	Others
Nanjing Qinhuai River Construction Development Co., LTD	SOE
Nanjing HomeMall Commercial Plaza Co., LTD	Others
Nanjing Chemical Industrial Park Co., LTD	Others
Bank of Hangzhou: 2008	
Hangzhou Land Reserve Center	Public institute
Shanghai Long Ang International Trade Co., LTD	Others
Hangzhou Railway Investment Co., LTD	SOE
Changsha City Construction Investment Development Co., LTD	SOE
Hangzhou Canal Protection and Construction Group Co., LTD	Others
Hangzhou Xiaoshan Qianjiang Century City Construction Co., LTD	SOE
Jiang Gan District Airport Road Constrution Office	Public institute
Hangzhou Tianrui Real Estate Co., LTD	Others
Huarong Financial Leasing Co., LTD	SOE
China Honglou Group Co., LTD	Others
Bank of Ningbo: 2007	
Ninghai Economic and Technological Development Zone Industrial Park Co., LTD	Others
Ningbo Urban Village Reconstruction Office	Public institute
Ningbo Jiangdong District Urban Construction Co., LTD	SOE
Ningbo Land Reserve Center	Public institute
Bosideng International Holdings Limited	Others
Ningbo Yadeke Automation Industry Co., LTD	Others
Ningbo Jiangbei Investment Development Co., LTD	Others
Shangyu Construction Development Co., LTD	Public institute
Ningbo Zhonghua Paper Industry Co., LTD	Others
Ningbo Zhenhai District Urban Construction Co., LTD	SOE
Ping An Bank: 2012	
Shenzhen Metro Group Co., LTD	SOE
Wuhan Urban Construction Investment and Development Co., LTD	SOE
Shaanxi Coal and Chemical Industry Group Co., LTD	SOE
Zhuhai Zhenrong Corp	SOE
Guangzhou Panyu Southern Star Co., LTD	Others
Founder Commodities Group Co., LTD	Others
Shanxi Communications Department	Public institute
Zhenhua Oil Holding Company	SOE
Southern Petrochemical Group Co., LTD	SOE
Yanzhou International Coal Mining Company Limited	Others
Bank of Jiangsu: 2010	
Wuxi Construction Company	SOE
Beijing Land Reserve Center Chaoyang branch	Public institute

Zhenjiang Urban Construction Group Co., LTD	SOE
Wuxi Traffic Industry Group Co., LTD	SOE
Wuxi Zhaoshaocheng Co., LTD	Others
Yixing Transportation Asset Management Co., LTD	SOE
Suzhou Railway Station Comprehensive Reconstruction Co., LTD	Others
Suzhou Land Reserve Center	Public institute
Jiangyin Urban Construction Co., LTD	Public institute
Jiangsu SOPO (Group) Co., LTD	Others
Huishang Bank: 2012	
Anhui Investment Group Co., LTD	SOE
Wuhu Xinxing Ductile Iron Pipes Co., LTD	SOE
Hefei Binhu New Area Construction Investment Co., LTD	SOE
Hefei Urban Constrution Holding Co., LTD	SOE
Hefei BOE Optoelectronics Technology Co., LTD	Others
Hefei Xincheng State-owned Assets Management Co., LTD	SOE
Huaibei Coal Mining Co., Ltd	SOE
Hefei hi-tech Construction Investment Group Co., LTD	SOE
Tongling Land Reserve Center	Public institute
Wuhu Construction Investment Co., LTD	SOE
Anhui Highway Administration Bureau	Public institute

Data source: Banks' annual reports.

Note: Not all banks report names of top loan clients in 2012. Public Institute means government institutions owned by local city government.