Ownership structure and bank performance: An emerging market perspective

Mamatzakis, Emmanuel and Zhang, Xiaoxiang and Wang, Chaoke

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Emmanuel Mamatzakis*
e.mamatzakis@sussex.ac.uk
Xiaoxiang Zhang*
xiangxiang.zhang@sussex.ac.uk
Chaoke Wang*
cw322@sussex.ac.uk

Abstract

This study investigates whether ownership type does matter for bank performance in an emerging market. By tracing the identity of top owners, I group large shareholder of China's commercial banks into government, state owned enterprises (SOEs), domestic private investors and foreign investors. These distinct types of shareholders have multiple motivations and incentives, in turn, this will affect how they perform their control rights and monitor over the invested banks. The main findings regarding the impact of ownership structure on bank performance suggest that banks with high state shareholding tend to have poorer performance and low profitability, consistent with much of the literature. In addition, banks with higher domestic privately shareholders are generally operated more profitably. Furthermore, higher foreign ownership may negatively affect bank performance. Moreover, ownership type diversity is positively associated with bank performance, and banks with concentrated ownership are worse performing. My findings are robustness under the different measures of bank performance.

*Department of Business and Management, School of Business, Management and Economics, Jubilee Building, University of Sussex, Falmer BN1 9SL, UK.

1 Introduction

Explaining performance differences among banks is a prevailing theoretical and empirical issue in the field of finance literatures. Ownership structure is widely accepted in the finance and economics study as an instrumental determinant of bank performance. Indeed, a considerable literature has developed on the relationship between ownership and performance. More specifically, examining the state ownership versus private ownership has received much attention in banking sector.

This study falls within a broad research program focusing on ownership in general. There are commonly three types of shareholder – state, private investors, and foreign investor in governance literature. There have been a number of empirical studies showing how differences between owner types influence bank performance (for government owned banks, see Iannotta et al., 2013 and Berger et al., 2015; for ownership by privately owners, see Cornett et al., 2010; for ownership by foreign owners, see Lensink et al., 2008; for managerial owners, see DeYoung et al., 2013;). The results of these studies are mixed but overall suggest that types of owner differ in their contributions to performance variation over time. The aim of this study is to reconcile these conflicting results by enriching the analysis of the bank's ownership structure using the Chinese case.

I limit this study to the significance of owner type in countries making the transition to some form of capitalism and focus specifically on China. China's bank reform is still ongoing so that it is hard to reach conclusions on how it may affect the whole financial system. In particular, China's banking sector is the most important component of the financial system (with 69% of total financial assets in 2016) and yet it has long remained undercapitalized and presented with non-performing loans. In addition, bank capitalization, solvency and profitability are still below the average of international counterparties. As China's growing importance in the world economy, improved understanding about the banking sector in China has enormous practical

implications for regulators and other stakeholders. Moreover, study on ownership differences has to be grounded in an environment whereby banks of different ownership types coexist and compete, China's transition economy presents such an ideal context.

While ownership itself is an objective structure, I contend different ownership types that leads to different managerial cognitions. The main findings regarding the static effects of bank ownership on performance suggest that banks with more state shareholder tend to have poorer performance, consistent with much of the literature. In addition, banks with higher domestic privately shareholders are generally operated more profitably. Furthermore, higher foreign ownership may negatively affect bank performance. Moreover, ownership type diversity is positively associated with bank performance, while banks with concentrated ownership are worse performing. The results are robustness under the different measures of bank performance. My findings have implications for the design of appropriate corporate governance systems for Chinese commercial banks. Moreover, my results provide information that can inform policy debates within the China regulators.

This study makes a number of contributions to the literature. Firstly, it analysis the effects of ownership reforms, enriching the literature from the perspective of transitional as well as developing countries. The type of privatization and the form of state ownership is one of the major concerns in these countries. Secondly, this study exploits how banks function in an economy that combines rapid economic growth and state-owned banks that serve pollical goals. In another word, it examines the role of corporate governance in the banking sector of emerging market using a unique sample of Chinese banks. Thirdly, it expands beyond the narrow confines of ownership concentration and performance by incorporating issues related to bank reform. Thus, it adds to the literature that aims to examine the determinants of the bank profitability. Besides, this is the first study that considers both concentration and diversity of

ownership structure (i.e. ownership distribution and nature of the owners) in banking sector. As the recent calls to consider multiple dimensions of diversity simultaneously, this study extend the literature on the effects of shareholder diversity on performance in banks.

The study is organised as follows. Section 2 provides a brief outline of the current Chinese banking system, and followed by literature review in Section 3. Section 4 discusses the methodology and the data used. Section 5 presents the results of the tests, and followed by the robustness test in Section 6. Section 7 summarises and presents the implications of the results for China's banking sector in its new regulatory environment.

2 China banking background

For three decades prior to the 1970s, China was a centrally planned economy with the majority of companies owned by government or state-related cooperative entities. In another word, a large number of commercial banks are owned or controlled by the state, either directly through central or local government institutions or indirectly through marketized SOEs. Under the traditional communist system, the Chinese government gathered revenues from SOEs and provided financing support to the corporations according to the government planning. Whilst financial liberalisation helped to integrate Chinese markets with global markets, it constituted a major challenge for domestic banks and their systems of governance. However, the weak state of law and regulation in China's capital market is a major limitation on the efficiency of financial institutions.

The state-owned banks have been criticized for the larger amount of impairment loans due to the politically lending practices. Specifically, inefficient state-owned corporations are normally the largest borrowers for Chinese banks. Therefore,

Chinese government established the asset management companies that liquidated majority bank assets at high discounts.

Prior to 2003, the majority of Chinese commercial bank had been controlled by government entities with minority individual shareholders. Banking sector has been the primary source of financing for the economy growth, with the banking and other financial institutions accounting for over 80% of whole country's financial assets. China becomes the world's rapidly developing economies in last two decades.

In 2003, the government has been implementing a series of reforms to improve the efficiency and profitability of the state banks, particularly given the impending opening of the domestic financial sector to foreign investor under the World Trade Organization (WTO). China started the transition with a small number of large fully government-owned banks and few if any private banks. Three of the Big 4 state banks was changed from fully state owned banks to the corporations owned by public and private shareholders, despite the state still remains the largest shareholder. Foreign investors have been allowed to take few ownership shareholding in the state banks. Some larger banks were gone public in Hong Kong capital market, such as China Construction Bank listed in Hong Kong in 2005, and Bank of China and Industrial and Commercial Bank of China cross listed in Hong Kong and Shanghai in 2006.

In spite of these efforts, many inherent drawbacks still remain in Chinese banking system. For instance, the ownership of foreign owners is relatively minority, and their involvement in efficient corporate governance is remain limit. Besides, Chinese banks are forced to meet multiple and contradictory goals of supporting local economic growth, employment and political lending.

3 Literature review and Hypothesis development

2.1 Ownership and performance

Academic interests in bank performance have transfer from developed economies to developing and transitional markets. Bank governance structure is a critical and well-explored topic of relevant studies. For instance, the study on bank governance is dominated by research focus on how insiders versus outsiders can affect a bank's performance. However, in addition to insider versus outsider equity holders, another important dimension of ownership structure is state or public ownership versus private ownership structure. Especially, the study examines the impact of equity ownership by different shareholders group on manager behavior, in turn affecting performance. Thus, it seems reasonable to suggest ownership is a key determinant underlying different corporate governance regimes.

A bank's ownership structure influences its performance for several reasons. Firstly, differences in ownership type identity, concentration, diversity, and resource endowments among shareholders determine their incentives and ability to monitor bank managers. Shareholdings by state, state owned enterprise (SOE), domestic private and foreign investors are typical examples of this phenomenon. Secondly, as shareholders have divergent interest, consequence they have different impacts on bank behavior.

The relationship between the shareholder and management is complicated due to their interests are not aligned. The effect that ownership structure has on bank performance may be considered through the principal–agent framework (Altunbas et al., 2001).

The effectiveness of governance is determined by ownership mechanisms and as consequence it affects firm performance. Several studies analyze whether ownership and governance do matter for bank performance.

2.2 State

State ownership refers to equity investments by central or local governmental institutions. The state has become increasingly important as an owner of domestic firms as well as foreign firms (Carney and Child, 2013). Generally, governments owned banks have multiple (often conflicting) goals other than commercial considerations. They are forced to meet contradictory objectives of supporting employment and changing themselves into modern commercial banks. Therefore, state owned banks may not be the independent organization governed by shareholders with return maximization. Barth et al. (2013) presents a cross-country statistics on the degree of state ownership of the banking sector, they do not provide detailed information on the ownership structure of banks.

Banks with majority government ownership are normally beneficial of either implicit or explicit regulatory support from the authority (Faccio et al., 2006). For instance, these banks are likely to benefit from a lower cost of funding when issuing debt or equity securities in capital markets. Cornett et al. (2010) find that the deterioration in the cash flow returns, core capital, and credit quality of state-owned banks was significantly greater than that of private banks, especially for the countries that were hardest hit by the Asian crisis. Chen et al. (2016) find that government banks have high loan growth rates than privately-owned banks. Zhu and Yang (2016) find that state-owned banks have relatively lower risk taking after foreign acquisition. Zhang et al. (2013) suggest that banks taking a lower level of risks perform better. Tan (2016) find that compared to the state-owned commercial banks, the joint-stock commercial banks and city commercial banks in China have lower profitability. Beuselinck et al. (2017) suggest that the benefits of government ownership increased relative to the costs of government ownership in countries with good investor protection and low corruption.

On the other hand, the bulk of the evidence on government ownership of banks suggests that it is associated with poor bank performance due to weak managerial

incentives, political lending and misallocation of resource (Berger et al., 2005, Micco et al., 2007 and Lin and Zhang, 2009). Firstly, state shareholding is argued to be intrinsic inefficient because agency problem (Williams and Nguyen, 2005). The agent-principal problem turn into more significant under government ownership. Managers are likely to pursue their own benefits rather than acting in the best interest of owners, which may lead to negative effects on bank performance. Ashrf (2017) suggest that government ownership in banks are likely generating the moral hazard problems due to the expectation of government bailouts in worst economic conditions. Therefore, governance of banks more relevant for performance in bad than in good times (Martin-Oliver et al., 2017).

Second, state invest in a particular bank because of its political and strategic value (Iannotta et al., 2013). As such, governments tend to own equity in firms and industries that usually are not the most competitive ones. Iannotta et al. (2013) find that government-owned banks have higher operating risk than private banks, indicating the presence of governmental protection that induces higher risk taking. For instance, state owned banks are likely granting loans to socially valuable investment projects with low financial returns. State ownership of banks have led to ownership bias in lending (Lin et al., 2015). As consequence, these lending behaviors would inevitably deteriorate their asset quality and increase their risk profile. Dong et al. (2014) also find that government controlled banks tend to take more risks than those controlled by state-owned enterprises or private investors. Allen et al. (2017) find that government-owned banks relatively increased credit supply during the global crisis. Iannotta et al. (2007) find that government-owned banks exhibit a lower profitability than privately owned banks. Indeed, stated owned banks with lower profitability may be related to the situation that those banks finance projects with high social benefit.

Furthermore, state owned banks exist a lack of market discipline in inefficient and inadequate indicates of punishing managers for misbehaviors (Zhang et al., 2016).

Bailey et al. (2011) find that poor financial performance and high managerial expenses increase the likelihood of obtaining a bank loan in China. Besides, the government's nominees on the board are typically bureaucrats with minimal skill or expertise in banking sector. Micco et al. (2007) find that state-owned banks located in developing countries tend to have lower profitability and higher costs than their private counterparts. Shaban and James (2017) find that state-owned banks tend to be less profitable and more exposed to risk than private and foreign banks.

H1: Banks with high state ownership are negatively related to performance.

2.3 State owned enterprise (SOE)

Although an SOE's ultimate controlling shareholder is the local or central government, but as the shareholder of a bank, SOE are different from government shareholders in many prospective. First, despite SOEs need to serve some politicians' interests, but they are more empowered and have large autonomy. Second, SOEs have some financial policy constraints and may not obtain sufficient support from government. Furthermore, banks give preferential treatment to SOEs and discriminate against non-SOEs in China when making lending decision (Lu et al., 2013). Therefore, SOEs are willing to hold higher ownership and maintain good relationship with bank. Chen et al. (2009) find that SOE controlled Chinese listed firms perform better than private controlled firms. SOEs' may change their organizational goals following partial privatization, in turn, its effect on firm performance, as higher levels of profit orientation are instituted by the private investors.

In theory, SOEs are owned by all citizens in a country. However, they are controlled and managed by government bureaucrats and politicians in practice. SOEs are able to obtain additional finances from government if they make losses and get rescued with public money if they are threatened with bankruptcy. In this way, the managerial view of SOEs posits that these banks are inefficient because their managers are not

adequately monitored (leading to poor incentive structures). The predominant view is that SOEs may not have enough resources and financial expertise to monitor and discipline bank managers, and thereby reducing agency problems. Therefore, managers of those banks have little incentive to minimize costs or maximize profit. Bank owned by SOE are not run by their owners, therefore the owners cannot tell how much of performance is due to managerial failure or external factors. Furthermore, organizational slack can readily inform the understanding of organizations' behavior is possible due to SOEs prioritize goals such as social welfare different than other private owned firms (Stan et al., 2014). Saghi-Zedek (2016) find that when banks have no controlling shareholder yields diseconomies on activity diversification.

Given that they are less sensitive to market pressures, economic performance and operation efficiency are not necessarily the priority concerns of SOE managers. In particular, direct monitoring from shareholders are either unavailable or are ineffective tools for mitigating agency costs in SOE. Thus, in the absence of appropriate monitoring, bank managers may prefer to take riskier activities in order to maintain or increase their remuneration.

H2: Banks with high SOE ownership are negatively related to performance.

2.4 Domestic private investors

The third type of shareholder is the domestic private shareholder. In many emerging countries, domestic private investors are among the largest group of blockholders (Claessens et al., 2000). Lu et al. (2009) show that Chinese domestic investors have a greater propensity to hold significant ownership in commercial banks due to less suffer bank discrimination for political reasons. These shareholders usually have a long investment horizon. Shaban and James (2017) find that domestic investors tend to select the best performers for acquisition.

Domestic private ownership is anticipated to reduce agency problems and enhance operating performance through varies mechanisms, such as managerial ownership and attractive remuneration package. These investors tend to have maximal equity returns as their primary investment objective. Thus, they are typically tied to the firm only with their equity stakes and mostly operate at arm's length from managers. In response to the greater competitive and liberalized environment, these investors are closely monitor and give pressure on managers to improve operations as inadequate managers can be changed. Their monitoring incentives as well as their abilities are substantially greater than other domestic institutions. Jiang et al. (2013) show that the privatization of banks has improved performance with respect to revenue inflow and efficiency gains in the short- or long-run in China. Saghi-Zedek (2016) also find that bank with more domestic shareholders display higher profitability as these shareholders bring additional skills to manage activity diversification and yields economies.

H3: Banks with high domestic private ownership are positively related to performance.

2.5 Foreign shareholders

Financial globalization has further opened in banking sector that were previously off-limits to international investment. Increased openness to foreign equity investors generally enhances the information environment such as increasing analyst coverage and decreasing earnings management.

Foreign shareholding is expected to have a positively impact on performance. Firstly, foreign shareholders are less prone to political pressure and more likely to participate in arm's-length negotiation and monitoring in companies (Huang and Zhu, 2015). Second, foreign shareholders are likely bringing in new technology, modern techniques and effective managerial skills. As foreign investors often invest similar

corporations in different jurisdictions, they tend to have the relevant experience and know-how to set appropriate benchmarks for performance. Gillan and Starks (2003) observe that foreign owners play a more active role than local investors in advocating better firm-level governance which may influence corporate performance. Empirical studies (i.e. Berger et al., 2009; Lin and Zhang, 2009) suggest the improvements in performance after involved with foreign strategic investorss in domestic banks. Besides, foreign investors may choose to invest the better performing banks, or alternatively that the government sells the equity of better performing banks first in an effort to attract foreign investors. These foreign investors might help local banks in employ advanced banking strategies to enhance operating efficiency. Furthermore, foreign shareholders may insist having board member to represent their interest. Having foreign directors on the board would bring diversity of expertise that may effective than similar members from local business environment, as a result to enhance bank performance.

However, there are some inherent limitation for foreign shareholders to improve bank performance. Firstly, foreign investors may difficult to closely monitor from a long distance and limited access to local information. Indeed, those shareholders have general disadvantage about understanding the local country's economy, language, laws and politics. Second, foreigners and nationals may receive different treatment from local governments, consumers and suppliers. Lensink et al. (2008) find that foreign ownership negatively affects bank efficiency. Besides, Berger et al. (2009b) claim that foreign ownership is not helpful for bank stability in 23 developed nations. Lee and Hsieh (2014) show that domestic banks are better than foreign banks.

H4: Banks with higher foreign ownership are positively related to performance.

2.4 Ownership diversity

Ownership diversity is the distribution of equity type with regard to votes and capital

which includes the state, SOE, domestic private, and foreign owners. Ownership diversity can influence firm performance in several ways. First, these diversities have impact corporate governance structure because they determine the incentives of managers and the economic efficiency of the corporations. Second, enhance performance is a common avenue of the state, private, and foreign investors, conflicts of interest between each shareholder are alleviated. More diversity equity ownership may increase corporate performance because it means better alignment of the monetary incentives between the manager and other equity owners. Theories from economics, organizational behaviour, and social psychology can provide some understanding of the nature of the link between ownership diversity and financial performance. Diversity incentives of shareholders holds their potential conflict to improve the information provided by the board to managers. Thus, differences in background of shareholders are very likely to produce unique information sets that are available to management for better decision-making. However, decision-making may be slower and more conflicted with diverse shareholders. Garcia-Meca et al. (2015) shows that directors diversity increases bank performance.

Therefore, relying on above arguments, it is reasonably to believe that a bank with different type of owners (state, SOE, domestic private, and foreign) is more capable of securing the complementary set of key resources for improve the operations.

H5: Ownership type diversity is positively related to bank performance.

2.5 Ownership concentration

Ownership concentration is a generally used structure through which investors aim to ensure the reasonable return on their investment (Shleifer and Vishny, 1997). Claessens et al. (2000) find that more than two-thirds of the firms are controlled by a single shareholder after examine the separation of ownership and control in publicly corporations in East Asian countries. In particular, Caprio et al. (2007) find that banks

are not widely held and tend to be controlled by a family or the State. It is commonly held that concentrated ownership offers the best protection to shareholders.

Evidences from previous studies on the effect of ownership concentration on bank performances are mixed and complexity. The different national system of corporate governance reflected differences in ownership structure of firms in distinct economies and particularly, as well as in ownership concentration (Shleifer and Vishney. 1997; Caprio et al., 2007). Beltratti and Stulz (2012) find that more concentrated banking system was not associated with better performance.

It is not necessarily the case that greater ownership concentration means better alignment of interests of management with shareholders and thus enhance performance. DeYoung et al. (2001) indicate that banks with large ownership concentration face a classic monitoring problem. Garcia-Herrero et al. (2008) find that a more concentrated banking system is associated with a lower profit. Indeed, controlling shareholders could use control of a bank to benefit their related entities and easily extract private benefits. Besides, those controlling shareholder may abuse using their power, which could be detrimental to the value maximization goal of the firm. Large bank shareholders can fire managers, such shareholders can use their power to ensure that managers engage in related lending (Caprio et al., 2007). Battaglia and Gallo (2017) find that greater shareholder influences are take more systemic risk during the crisis. Indeed, although few larger shareholders might have the power to induce management to run the firm in their interest, these interests need not converge with those of minority shareholders.

In contrast, some empirical evidence shows that banks with higher ownership by few shareholders performed better because large ownership concentration has more incentive to enhance firm performance and to discipline managers. Heugens et al. (2009) find a significant positive association concentrated ownership and firm

financial performance in Asia. Iannotta et al. (2007) find that ownership concentration has no effects on banks' performance, but is associated with better loan quality. Caprio et al. (2007) find that concentrated ownership reduces incentives for insiders to expropriate bank resources, and that this boosts valuations. In the opposite situation, Jensen and Meckling (1976) argue that as more dispersed shareholding, the firm value increase.

More concentrated ownership can exploit strong bargaining power with mangers, in turn reducing managerial initiatives. Thus, my sixth hypothesis is as follows:

H6: Ownership concentration is negatively related to bank performance.

4 Methodology and data

4.1 Data and sample selection

Our sample is an unbalanced panel of 132 Chinese banks during the period of 2005–2015. These banks are the top banks based on the total assets according to the annual China Banking Regulatory Commission (CBRC) ranking.

To investigate the impact of ownership structure on banks' performance, I collect my dataset from two sources. I hand-collect the information about the sample banks' ownership structures, such as the percentage of ownership held by the top ten owners from annual reports. In addition, the bank-specific accounting data are retrieved from the BankScope database and the banks' annual reports. Whenever Bankscope and annual report do not support enough information or has questionable amount, I retrieve or double-check the data from other official sources, such as annual issues of Almanac of China's Finance and Banking.

Table (1) shows the top ten largest shareholders ownership structures of the banks in my sample over the period 2005 to 2015.

Table 1: The ownership structure of Chinese banks					
	N	Mean	Std. Dev.	Min.	Max.
Largest shareholder	830	21.82	15.64	4.23	92.01
Second shareholder	830	12.25	6.49	1.83	50.00
Third shareholder	830	7.87	3.53	0.90	20.00
Fourth shareholder	830	6.07	3.02	0.07	20.00
Fifth shareholder	830	4.92	2.36	0.06	11.67
Sixth shareholder	830	4.17	2.22	0.06	10.08
Seventh shareholder	830	3.61	1.94	0.04	10.00
Eighth shareholder	830	3.06	1.69	0.04	9.90
Ninth shareholder	830	2.66	1.51	0.03	8.00
Tenth shareholder	830	2.33	1.35	0.01	8.00
Ownership of top ten shareholders	830	67.18	18.23	38.54	100

Note: This table presents the percentage of a bank's equity share capital owned by the top ten largest shareholders individually and their total shareholding.

I delete the observations in the top 0.5% and in the bottom 0.5% of bank performance and ownership structure, as Chen et al. (2014) did.

4.2 Model

Several studies analyze whether ownership and governance do matter for bank performance. For example, Lin and Zhang (2009) assess the effect of bank ownership on performance using a panel of Chinese banks over the 1997–2004 period. Berger et al. (2009) analyze the efficiency using 266 annual observations over 1994–2003 on 38 commercial banks in China with different majority ownership. Iannotta et al. (2007) investigates whether any significant difference exists in the performance of European banks with different ownership structure.

Following previous studies (Jiang et al., 2013; Lin and Zhang, 2009; Iannotta et al., 2007; De Andres and Vallelado, 2008), I focus on two traditional performance measures. First, we use the measures of bank profitability, return on assets (ROA). ROA is calculated as the income before extraordinary items, interest expense, and

taxes, divided by the average of the two most recent years of total assets. Follow Elyasiani and Zhang (2015) and Berger et al. (2005), the second performance variable is return on equity (ROE), defined as profits (net income after taxes) relative to equity, which is used as robustness test.

In line with prior studies that examine the relationship between ownership and bank performance (e.g., Lin and Zhang, 2009; Berger et al., 2009; Iannotta et al., 2009), I use the following regression specification:

$$PERF_{it} = \alpha + \beta_1 STATE_{it} + \beta_2 SOE_{it} + \beta_3 DPO_{it} + \beta_4 FOR_{it} + \gamma_1 DIV_{it} + \gamma_2 CONC_{it}$$
$$+ \Sigma_k \delta_k CONTROL_{it}^k + \varepsilon_{it}$$

(Equation 1)

where the dependent variable PERF is one of the two bank performance measures: the return on assets (ROA) and return on equity (ROE).

STATE, SOE, DPO and FOR indicates the percentage of equity shares held by the shareholders for government, state owned enterprise, domestic private owners and foreign investors respectively. State ownership refers to equity investments by central or local governmental institutions. In China, for historical reasons, a large number of commercial banks are owned or controlled by the state, either directly through central or local government institutions or indirectly through marketized SOEs. Governments have conflicting objectives other than profit maximization. The model captures the contribution of state ownership, SOE ownership, domestic private ownership, foreign ownership, ownership diversity and ownership concentration on the performance measured by return on asset and return on equity of conglomerate banks.

DIV and CONC represent the ownership type diversity and concentration. First, following Chen et al. (2014), I used the Herfindahl measure, a commonly-used approach of computing the level of diversification for ownership type diversity.

Ownership type diversity

$$= 1 \Big/ {\sum i \left[\left(\frac{cumulative\ ownership\ of\ type\ i\ blockholder}{total\ ownership\ by\ all\ blockholder} \right)^2 \right]}$$

(Equation 2)

where i can be one of the state, SOE, domestic private, or foreign investors.

In addition, ownership concentration equals the sum of the squared ownership shares of the ten largest shareholders of the bank (Dong et al., 2014). It is the proportion of shares owned by a certain number of shareholders. I argued that the higher the number of equity owned by the block holders, the more mangers action will be monitored to act in the interest of the shareholders.

A larger value of ownership diversity indicates a more diverse presence of ownership types among those larger shareholders, while a higher value of ownership concentration indicates more concentrated control by larger shareholders.

Control variables

Bank size: Bank size is measured by the natural logarithm of the bank's total assets. This variable includes the total assets to take account for differences in bank size. Large banks normally have diversified geographically, setting up branches around the world in countries and with many different sources of income. As large and complex organisations that have multiple and overlapping layers of hierarchy, they may suffer from complex agency problems. However, DeYoung et al. (2013) find that the larger banks are able to take advantage of these opportunities when industry deregulation expanded these banks' growth opportunities. Bertay et al. (2013) show that bank returns increase with absolute size because large banks are subject to greater market discipline, yet decline with systemic size.

Loans: For Chinese banks, deposits and loans are the most important business

throughout decades. Banks obtain low cost fund by giving lower interest rates for deposits. A large portion of these funds are loaned to enterprises and individual borrowers to generate interest income. Jiang et al. (2013) find that Chinese banks are more efficient in generating interest revenue than non-interest income. Moreover, loans might be more profitable than other types of assets, such as securities and other types of investment; therefore, a positive coefficient sign is expected for this variable in the regression.

Capital adequacy: Better capitalized banks may reflect higher management quality, thereby generating a higher profit. As pointed out by Berger and Bouwman (2013), well capitalized bank face lower expected bankruptcy costs, which in turn increase their shareholders' return. Moreover, regulators require banks to hold a minimum level of capital as a percentage of risk-weighted assets. Higher levels of capital may therefore indicate banks with riskier assets.

Non-performing loans: This variable is used to proxy for asset quality. Lower loan quality typically indicates more resources on credit underwriting and loan monitoring, thus reduce profitability.

Block shareholder numbers: This variable is the number of shareholders whose single holding exceeds 5% of total shares outstanding of the bank. Block shareholders may have incentive to extract private benefit from bank and have a negative effect on a bank's profitability.

Board size: Corporate governance plays a special role due to the uniqueness of banking sector. The consensus is that complex firms, which need a greater level of advising and monitoring, thus have larger boards. Small numbers of board may difficult to monitor managers due to the idiosyncratic nature of banking business. However, more board members would increase the free rider problem. De Andres and

Vallelado (2008) find that an inverted U-shaped relation between bank performance and board size. Jiang et al. (2013) find board size has a significantly negative impact on bank performance.

Independent directors: It is not enough merely to appoint more executive directors to safeguard the efficacy of supervision and advising for a bank. Independent directors should be appointed to monitor and discipline mangers. De Andres and Vallelado (2008) suggest that that larger and not excessively independent boards might prove more efficient in monitoring and advising functions, and create more value. Jiang et al. (2013) find the proportion of independent directors have significantly positive impacts on both bank performance and asset quality.

Table 2: Definition of variables			
Variables	**Symbol**	**Description**	**Sources**
Performance variables			
Return on assets	**ROA**	The ratio of profit to total assets.	Bankscope
Return on equity	**ROE**	The ratio of profit to equity.	Bankscope
Ownership variables			
Government ownership	**STATE**	The percentage of shares held by government	Manual collection
SOE ownership	**SOE**	The percentage of shares held by state owned enterprises (SOE)	Manual collection
Domestic private ownership	**DPO**	The percentage of shares held by domestic private owners	Manual collection
Foreign ownership	**FOR**	The percentage of shares held by foreign investors	Manual collection
Ownership type diversity	**DIV**	The diversification for ownership type diversity and calculated from equation 2	Use original ownership data to calculate
Ownership concentration	**CONC**	The sum of the squared ownership shares of top the largest ten shareholders of the bank	Use original ownership data to calculate
Top 3 ownership	**TOP3**	The sum of the percentage of equity shares owned by the top three shareholders	Use original ownership data to calculate
Control variables			

Bank size	**LNTA**	The natural logarithm of total assets in thousands of Chinese Yuan	Bankscope
Loans	**LTD**	Ratio of total loans to total deposit	Bankscope
Capital adequacy	**CAR**	Risk-weighted capital adequacy ratio	Bankscope
Non-performing loan	**NPL**	Ratio of non-performing loans to total loans	Bankscope
Block shareholder numbers	**BLO**	The number of block shareholders, whose holding exceeds 5% of total shares outstanding of the bank	Annual reports
Board size	**BS**	The number of board members	Annual reports
Independent board members	**IND**	The number of non-executive directors in the board	Annual reports

It is reasonable to believe that the role played by different types of owners in banks' performance behaviors is conditional on their incentives as reflected by the ownership type diversity and concentration, i.e., the relation between performance and the ownership type diversity and the degree of ownership concentration. To explore this issue, I use the following regression model:

$$PERF_{it} = \alpha + \beta_1 STATE_{it} + \beta_2 SOE_{it} + \beta_3 DPO_{it} + \beta_4 FOR_{it} + \gamma_1 DIV_{it} + \gamma_2 CONC_{it}$$
$$+ \, \varepsilon_1 STATE_{it} \times DIV_{it} + \varepsilon_2 SOE_{it} \times DIV_{it} + \varepsilon_3 DPO_{it} \times DIV_{it}$$
$$+ \, \varepsilon_4 FOR_{it} \times DIV_{it} + \varepsilon_5 STATE_{it} \times CONC_{it} + \varepsilon_6 SOE_{it} \times CONC_{it}$$
$$+ \, \varepsilon_7 DPO_{it} \times CONC_{it} + \varepsilon_8 FOR_{it} \times CONC_{it} + \Sigma_k \delta_k CONTROL_{it}^k + \varepsilon_{it}$$

(Equation 3)

where the interaction terms are included in the model as the output of the ownership type diversity (DIV) and concentration (CONC) with the percentage of each ownership type, respectively. Other control variables are as defined as above. If the coefficients of the interaction terms are statistically significant, this imply that the impacts of ownership type diversity and concentration on performance varies across those ownership types.

4.3 Descriptive statistics

Table 3 presents statistics for all variables. The mean (median) of ROA is 1.13%

(1.12%) with standard deviation of 0.42%, and minimum and maximum values of 0.05% and 2.39% respectively. This figure is similar as the value given by Lin and Zhang (2009). The mean (median) ROE is 17.71% (17.64%).

Table 3: Descriptive statistics for main model variables					
Variable	N	Mean	Std. Dev.	Min.	Max.
Performance variables					
ROA	830	1.14	0.43	0.05	2.39
ROE	830	17.87	6.86	0.63	39.72
Ownership variables					
STATE	830	7.22	10.18	0.00	39.21
SOE	830	25.16	22.66	0.00	90.15
DPO	830	14.36	17.02	0.00	67.33
FOR	830	3.88	7.14	0.00	20.00
DIV	830	1.81	0.6	1.00	2.99
CONC	830	0.21	0.14	0.00	0.74
TOP3	830	0.42	0.18	0.16	0.92
Control variables					
LNTA	830	16.32	1.79	13.19	21.19
LTD	830	60.76	10.64	28.34	78.45
CAR	830	12.96	3.18	5.77	30.14
NPL	830	1.31	1.18	0.00	8.21
BLO	830	4.22	2.15	0.00	10.00
BS	830	12.88	2.94	6.00	19.00
IND	830	3.09	1.85	0.00	7.00

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

Regarding ownership structure, the state ownership has a mean of 7.21% with standard deviation of 10.18%, and minimum and maximum of 0% and 39%. In addition, the SOE owners holds an average stake of 25.18% in those commercial banks. The domestic private investors and foreign investors holds an average stake of

14.37% and 3.89%. furthermore, the mean (median) of the ownership type diversity is 1.80 (1.80). The mean (median) of the ownership concentration is 0.21 (0.15), with a small degree of variation across sample.

With regard to the control variables, the range of capital adequacy ratio is from 5.77% to 30.14%, with an average of 13.19%. This figure is comparable to the figure reported in Dong et al. (2014). The mean (median) NPL is 1.31% (1.03%).

The correlation between variables is used to identify whether there is a significant relationship between the ownership type and the performance. Table (4) shows the correlation matrix, which shows the relationship between all pairs of variables in the regression model. The correlation matrix indicates that state ownership (STATE) is not significantly related to two of the two performance measures, the return on assets (ROA), and the return on equity (ROE). However, SOE ownership (SOE) is significantly negatively related to ROA and ROE. Foreign ownership (FOR) is also significantly negatively related to ROA, but not significantly related to ROE. In addition, private domestic ownership (PDO) is significantly positively related to both ROA and ROE. Furthermore, ownership type diversity (DIV) is significantly positively related to ROA and ROE, and ownership concentration (CONC) is significantly negatively related to both ROA and ROE. Although I observe significant correlation among the measures of performance variables, but there are not be used in same model. In general, there is no evidence of severe multicollinearity.

Table 4: The matrix of Pearson correlation coefficients							
	ROA	**ROE**	**STATE**	**SOE**	**DPO**	**FOR**	**DIV**	**CONC**
ROA	1.000							
ROE	0.6835*	1.000						
STATE	0.0256	0.0367	1.000					
SOE	-0.2905*	-0.1922*	-0.1908*	1.000				
DPO	0.2195*	0.0971*	-0.0272	-0.3855*	1.000			
FOR	-0.1966*	-0.0261	-0.1087*	0.1146*	-0.2816*	1.000		
DIV	0.1244*	0.0911*	0.4770*	-0.2431*	0.1090*	0.2375*	1.000	

CONC	-0.1660*	-0.0835*	0.0338	0.6410*	-0.3978*	0.0998*	-0.3075*	1.000
TOP3	-0.2134*	-0.1232*	0.1884*	0.7436*	-0.2477*	0.2305*	-0.0646	0.7885*
LNTA	-0.1346*	0.0655	-0.0483	0.2801*	-0.4228*	0.3179*	-0.1244*	0.4500*
LTD	-0.0336	-0.0329	-0.1146*	-0.0133	-0.0852*	0.1245*	-0.03	0.0147
CAR	0.2160*	-0.1602*	-0.0157	-0.0022	0.1425*	-0.0774*	0.0736*	-0.0696*
NPL	-0.3412*	-0.2524*	0.0850*	0.0032	-0.1801*	0.0313	-0.0247	0.0851*
BLO	0.0441	-0.0186	0.0721*	-0.0366	0.6979*	-0.0928*	0.2743*	-0.4306*
BS	-0.1284*	-0.0382	-0.1001*	-0.0073	-0.1839*	0.2494*	-0.0116	-0.0137
IND	-0.1176*	-0.0385	-0.0841*	0.0765*	-0.3162*	0.2771*	-0.0547	0.1768*

	TOP3	LNTA	LTD	CAR	NPL	BLO	BS	IND
TOP3	1.000							
LNTA	0.3000*	1.000						
LTD	-0.0695*	0.2277*	1.000					
CAR	-0.0054	-0.2204*	-0.1305*	1.000				
NPL	0.0484	0.0093	0.0849*	-0.2916*	1.000			
BLO	-0.2031*	-0.3931*	-0.0780*	0.1273*	-0.1546*	1.000		
BS	-0.1124*	0.5084*	0.2436*	-0.0911*	-0.0013	-0.0730*	1.000	
IND	0.0394	0.6735*	0.2591*	-0.0949*	-0.0629	-0.2699*	0.6725*	1.000

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

5 Empirical results

5.1 OLS estimation results

These regressions for the estimations of the relationship between the ownership structures and performance are presented from Tables (5) to (7). In the estimation, there is a significant relationship for performance and the different types of ownership.

Table 5: The relationship between ownership and bank performance (only individual type ownership) - OLS

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**

	(1)	(2)	(3)	(4)	(5)
STATE	0.001				-0.002
	(0.74)				(-1.14)
SOE		-0.006***			-0.005***
		(-8.82)			(-6.93)
DPO			0.006***		0.002**
			(6.54)		(2.05)
FOR				-0.012***	-0.009***
				(-5.83)	(-4.41)
Constant	1.130***	1.278***	1.058***	1.184***	1.278***
	(62.34)	(60.30)	(55.94)	(71.83)	(36.09)
Observation	830	830	830	830	830
F test	0.554	77.801	42.74	33.941	28.172
R	0.001	0.084	0.048	0.039	0.118

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

In Table (5), the fundamentals variables are being used individually. A number of interesting results show in the results. First, in the column (1) of Table (5), there is no statistically relationship between the state shareholding and performance. This indicates the state shareholders may not create enough incentive environment and condition for the managers that is conducive to knowledge transfer for enhancing the performance. These results are in line with Altunbas et al. (2001) and Micco et al. (2007), who find no evidence that state-owned banks are less profitable than private banks. In addition, this result further extends the findings of Fu and Heffernan (2009), who investigate the relation between market structure and performance in China's banking system from 1985 to 2002 and find no evidence to support the quiet-life hypothesis in state owned banks. The influence of government ownership on the bank performance is especially complex, as governments impose non-profit-maximizing social and political objectives yet also provide implicit guarantees against default.

Moreover, this evidence also can be explained that the state-owned banks do not enjoy monopoly profits, probably because strict interest rate control.

Second, in the column (2) of Table (5), there is a statistically negative relationship between the extent of SOE ownership i.e., the percentage of SOE shareholding (SOE) and performance measures. Specifically, the SOE ownership has a coefficient of -0.005 with a t-value of -8.86 which is significant at 1%. The result is not surprising as in many cases SOE shareholders tend to satisfy their personal interest instead of aligning their interest with that of the bank. Thus, agency problems could be a source of worse performing due to it explains why external pressures, which influence the effort of management, may fail to coerce maximal effort from managers. In highly competitive markets, external pressures are expected to strengthen management's incentive to be operating efficiently. In addition, increase SOE shareholding may encourage a lack of discipline and risk taking behaviour. The notion of economically efficient SOE owned banks is contentious and revolves around alternative views of government benevolence. Hypothesis (2) is fully confirmed by the this results, banks with high SOE ownership are associated with worse performance.

Third, in the column (3) of Table (5), there is a statistically positive relationship between the domestic private ownership i.e., the percentage of domestic private shareholding (DPO) and performance measures. Specifically, the DPO ownership has a coefficient of 0.00 with a t-value of 6.515 which is significant at 1%. The result indicates that banks with more private domestic shareholders are perform better. The finding is consistent with literature, for instance, Williams and Nguyen (2005). Domestic private owners might require management implement certain operational strategies in order to achieve their returns. This, in turn, results in better performance. In addition, this result can be explained by the finding of Jiang et al. (2013), who claims that the bank performance is improved after privatization with respect to revenue inflow and efficiency. Domestic shareholders in the bank's control chain is an

advantage source of skills and expertise that help banks with activity diversification (Saghi-Zedek, 2016). Moreover, Altunbas et al. (2001) also conclude that privately owned banks are more efficient that their counterparts. Indeed, private domestic ownership is expected to reduce agency problems thereby promoting profitability because these shareholders exercise due diligence and monitor manager efficiently. Shaban and James (2017) find that domestic investors tend to select the best performing banks. Hence, the results confirm Hypothesis (3).

Fourth, in the column (4) of Table (5), there is a statistically negative relationship between the foreign ownership i.e., the percentage of foreign shareholding (FOR) and performance measure. Specifically, the FOR variable has a coefficient of -0.012 with a t-value of -5.85 which is significant at 1%. This indicates that higher foreign ownership may negatively affect bank performance. This result is in line with the finding of Lensink et al. (2008), who also find that foreign ownership negatively affects bank performance. Besides, this result can be interpreted that foreign owners may find it difficult than domestic owners to deal with a host country's regulation or related banking supervision requirements. Indeed, foreign shareholders may face strong domestic networks and may also encourage managers to increase shareholder returns through greater risk-taking (Garcia-Meca et al., 2015). Consistent with the finding of Lee and Hsieh (2014), they find that the home field advantage hypothesis is existence. The results confirm Hypothesis (4).

However, this result is contrast with findings in Berger et al., (2005) that foreign ownership helps mitigate loss of profit or increase in costs from diversification. Jiang et al., (2013) also find that more shares of foreign ownership associated with the high level of cost efficiency. Micco et al. (2007) also offer evidence that foreign ownership improves a bank's performance through profit increases and cost downs.

In the column (5) of Table (4), the coefficients of SOE and FOR are negative and

significant, while the coefficient of DPO is positive and significant, which in line with other specifications.

In table (6), I add the ownership type diversity (DIV) and concentration (CONC) variables, while the table also presents the results for individual type shareholders. The signs of the coefficients on STATE, SOE, DPO and FOR are relatively consistent with regression results in Table (5).

Table 6: The relationship between ownership and bank performance (without control variables) - OLS

Dependent variable	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA
STATE	-0.001				-0.006***
	(-0.04)				(-3.74)
SOE		-0.006***			-0.006***
		(-6.92)			(-6.81)
DPO			0.005***		0.002**
			(5.61)		(2.15)
FOR				-0.013***	-0.013***
				(-6.28)	(-5.86)
DIV	0.060**	0.048*	0.063**	0.104***	0.153***
	(2.04)	(1.95)	(2.55)	(4.04)	(5.01)
CONC	-0.407***	0.142	-0.13	-0.289***	-0.473***
	(-3.66)	(-1.07)	(-1.10)	(-2.67)	(3.37)
Constant	1.111***	1.158***	0.970***	1.057***	0.971***
	(17.94)	(20.08)	(15.35)	(18.16)	(15.22)
Observation	830	830	830	830	830
F test	9.088	25.586	19.935	22.679	23.261
R	0.032	0.085	0.067	0.076	0.144

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

There is a statistically positive relationship between the extent of ownership type diversity (DIV) and bank performance variables in all columns of Table (6). Specifically, in column (5) of Table (6), the ownership type diversity has a coefficient of 0.153 with a t-value of 5.01 which is significant at 1%.

More generally, firms with few large, undiversified shareholders such as founding owners may forgo maximum profits because they are unable to separate their financial preferences with those of outside or minority shareholders. Founding owners often limit executive management positions to the members who may have relation. These are suggesting a restricted human resource from which to obtain qualified and capable talent, potentially leading to competitive disadvantages relative to other firms.

There is a statistically negative relationship between the extent of ownership concentration (CONC) and bank performance variables in three columns of Table (6). Specifically, in column (5) of Table (6), the CONC has a coefficient of -0.473 with a t-value of 3.37 which is significant at 1%. The results are suggesting that banks with concentrated ownership are poorer performing.

The results can be explained by the views that for the expropriation of minority shareholders in banks, which contrast with the finding of Caprio et al. (2007). Although the dispersed owners lack both the means and the motive to address managerial agency problems, but the incentives of the controlling shareholders are more likely to expropriate resources from the corporation. This situation is generally known as "tunneling," and is commonly defined as "the transfer of assets and revenues out of firms for the benefit of their controlling shareholders".

A stream of corporate governance research indicates specifically on large shareholders attempts to expropriate smaller shareholders. Fama and Jensen (1983) claim that combining ownership and control allows concentrated shareholders to exchange

profits for private rents. Shleifer and Vishny (1997) suggest that large premiums associated with superior voting shares or control rights provide incentive that larger shareholders seek to extract private benefits from the firm. Indeed, higher ownership concentration may increase the power for shareholder to monitor management, but it may also increase the risk for the power abuse by large controlling shareholders.

Typically, in column (5) of Table (6), STATE ownership has a coefficient of -0.006 with a t-value of -3.74 which is significant at 1%. This result indicate that state ownership of banks has been associated with subpar bank performance (Cornett et al., 2010; Berger et al., 2009a; Lensink et al., 2008; Lin and Zhang, 2009). The underperformance of the banks associated with high state ownership is consistent with the theoretical arguments of the agency view, the social view, and the political view of state ownership.

The political view claims that government control of financial institutions politicizes resource allocation for the sake of advancing certain political agendas, and, by pursuing such objectives, economic efficiency is impaired (Shleifer and Vishny, 1997). In another word, state ownership of commercial banks was used to assist national economic development policies. In fact, the political views should not be seen as corner solutions without any intermediate possibility; it is possible that state-owned banks are mandated to engage with some political lending. In addition, the state shareholders may act as both owner and regulator of its banks. As consequence, some banks might be either too-big-to-fail or too-important-to-fail which would allow worse performing banks to survive. This view can be support by the finding of Faccio et al. (2006), who find that politically connected firms are significantly more likely to be bailed out than similar nonconnected firms. Furthermore, the free-rider problem becomes obvious in government owned banks. State ownership means that every citizen is shareholder, which suggest that shareholders may have no power and incentive to monitor the managers. Indeed, the inferior performance of state-owned

banks may due to the perverse incentives of political bureaucrats who influence the operation of state-owned banks. My findings provide further support for the political view of public banks and corroborate previous findings by Micco et al. (2007), who find that state owned banks tend to have lower profitability and higher costs than their private counterparts in developing countries.

Again, the signs of the coefficients on SOE, DPO and FOR are relatively consistent with regression results in previous specifications. Specifically, the SOE ownership has a coefficient of -0.006 with a t-value of -6.81, which is significant at 1% in column (5) of Table (6). DPO ownership has a coefficient of 0.002 with a t-value of 2.15, which is significant at 1% in column (5) of Table (6). Moreover, FOR ownership has a coefficient of -0.013 with a t-value of -5.86, which is significant at 1% in column (5) of Table (6).

The regression results in Table (6) supports proposed hypotheses. Ownership type diversity has a statistically and positively significant effect on performance variable in all estimations. The R^2 values, which demonstrates the quality of estimations, increase significantly when ownership type diversity is added in the regressions (e.g., R^2 increases from 3.2% in column 1 to 14.4% in column 5), suggesting that ownership diversity and concentration are the essential explanatory factors for determining bank performance.

In table (7), I present the full model by adding all control variables as equation (1), while the table also presents the results for individual type shareholders from column (1) to (4). Again, the signs of the coefficients on STATE, SOE, DPO and FOR are relatively consistent with regression results in previous specifications. The coefficient for STATE is negative and significant at the 1% level in column (5) instead of column (1) of Table (7). In addition, the coefficients for SOE are negative and significant at the 1% level in both column (2) and column (5) of Table (7). Moreover, the

coefficient for DPO is positive and significant at the 1% level in column (3) of Table (7). However, for column (5) of Table (7), this result breaks down. It is still positive, yet no longer significant. Furthermore, the coefficients for FOR are negative and significant at the 1% level in both column (4) and column (5) of Table (7).

Table 7: The relationship between ownership and bank performance (full model) - OLS					
	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
STATE	0.002				-0.005***
	(0.98)				(-3.00)
SOE		-0.007***			-0.007***
		(-8.23)			(-6.33)
DPO			0.007***		0.001
			-6.18		(-0.28)
FOR				-0.011***	-0.011***
				(-5.53)	(-5.25)
DIV	0.058**	0.047**	0.092***	0.112***	0.131***
	(2.11)	(2.06)	(3.91)	(4.57)	(4.59)
CONC	-0.434***	-0.384**	-0.339***	-0.406***	-0.509***
	(-3.26)	(-2.41)	(-2.61)	(-3.13)	(-2.76)
LNTA	-0.003	0.004	0.003	0.009	0.016
	(-0.27)	-0.3	-0.28	-0.73	-1.32
LTD	0.002*	0.002	0.002	0.002*	0.002
	(1.70)	(1.54)	(1.48)	(1.85)	(1.39)
CAR	0.014***	0.016***	0.014***	0.014***	0.015***
	(3.09)	(3.50)	(3.04)	(3.09)	(3.42)
NPL	-0.131***	-0.133***	-0.120***	-0.126***	-0.125***
	(-9.86)	(-10.42)	(-9.19)	(-9.67)	(-9.79)
BLO	-0.021***	0.003	-0.056***	-0.024***	0.004
	(-2.69)	-0.37	(-5.87)	(-3.07)	-0.3
BS	-0.012*	-0.012**	-0.01	-0.01	-0.011*
	(-1.89)	(-1.99)	(-1.51)	(-1.60)	(-1.82)
IND	-0.015	-0.017	-0.013	-0.014	-0.016
	(-1.29)	(-1.50)	(-1.15)	(-1.21)	(-1.48)
Constant	1.303***	1.121***	1.144***	1.022***	0.834***
	(6.00)	(5.34)	(5.35)	(4.66)	(3.92)
Observation	830	830	830	830	830
F test	18.225	26.377	22.77	21.843	23.426

R	0.182	0.244	0.218	0.211	0.272

Regarding the control variables in the efficiency equation it appears that most variables are in line with expectation. The coefficients on the majority control variables are significant, except for that of LNTA and IND. The coefficients of loan to deposit ratio (LTD) have a statistically significant and positive effect on performance in column (1) and (4) of Table (7), which suggests that banks with more loans are likely to associate with higher return for the shareholders. The result is in line with the finding of Jiang et al. (2013). In addition, the coefficients of non-performing loan ratio (NPL) have a statistically significant and negative effect on performance in column (1) and (4) of Table (7), which suggest that banks with lower non-performing loan are better perform and more profitable. Furthermore, consistent with the finding of Liang et al. (2013), board size has a significantly negative impact on bank performance.

The coefficients of bank sizes (LNTA) have no statistically significant. The result is consistent with the finding of Micco et al. (2007), who find no correlation between absolute bank size and ROA for banks located in developing countries.

Adding these control variables greatly increases the explanatory power of the model, but leaves the significance levels and relative magnitudes of the various ownership coefficient unchanged. Although the control variables together explain the different type of owner's share of the total variation in performance across banks, marginal changes in diversity and concentration are still associated with statistically significant. The R2 values increase significantly after control variables added in the estimations

(e.g., R2 increases from 18.2% in Column 1 to 27.2% in Column 5), meaning that these control variables are reasonable explanatory factor determining bank performance.

5.2 Fixed effect estimation

In Table (8), the results still clearly suggest that bank ownership matters. In both column (1) and (5), the coefficient on STATE is negatively and significantly at 10% and 5%. This results confirm the previous findings that banks with more percentage shares holding by government are associated with lower profitability. In addition, the coefficient on DPO is positively and significantly at 5% and 10% on column (3) and (5) respectively. This results confirm the previous findings that banks with more shares holding by domestic provide investors are associated with better performing. Moreover, the coefficient on DIV is positively and significantly at 1% on all five columns.

Table 8: The relationship between ownership and bank performance (without control variables) – Fixed effect

	(1)	(2)	(3)	(4)	(5)
Dependent variable	ROA	ROA	ROA	ROA	ROA
STATE	-0.006*				-0.007**
	(-1.75)				(-2.00)
SOE		-0.001			-0.002
		(-0.97)			(-1.25)
DPO			0.004**		0.003*
			(2.18)		(1.71)
FOR				0.000	0.000
				(0.12)	(0.04)
DIV	0.209***	0.204***	0.193***	0.198***	0.213***
	(4.91)	(4.78)	(4.57)	(4.56)	(4.77)
CONC	0.021	-0.08	-0.076	-0.151	0.236
	(0.08)	(-0.30)	(-0.29)	(-0.58)	(0.78)
Constant	0.793***	0.818***	0.747***	0.805***	0.759***
	(8.00)	(8.19)	(7.30)	(8.11)	(7.28)

Observation	830	830	830	830	830
F test	8.84	8.101	9.411	7.784	5.433
R	0.036	0.033	0.039	0.032	0.045

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

The Table (9) results indicate that controlling for these other bank-specific characteristics does not change previous findings. In particular, NPL enters negatively and significantly as expected.

Table 9: The relationship between ownership and bank performance (full model) – Fixed effect

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
STATE	0.003				-0.001
	(0.90)				(-0.15)
SOE		-0.004***			-0.004**
		(-2.86)			(-2.12)
DPO			0.003*		0.00
			(1.71)		(0.01)
FOR				-0.001	-0.002
				(-0.30)	(-0.43)
DIV	0.172***	0.183***	0.184***	0.181***	0.188***
	(4.25)	(4.61)	(4.61)	(4.42)	(4.49)
CONC	-0.129	0.243	-0.083	-0.061	0.251
	(-0.48)	(0.90)	(-0.33)	(-0.24)	(0.75)
LNTA	0.024	0.021	0.019	0.018	0.02
	(1.25)	(1.16)	(1.06)	(0.99)	(1.01)
LTD	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.85)	(-0.71)	(-0.78)	(-0.82)	(-0.69)
CAR	0.005	0.006	0.005	0.005	0.006
	(1.38)	(1.45)	(1.33)	(1.30)	(1.43)
NPL	-0.114***	-0.115***	-0.112***	-0.113***	-0.115***
	(-10.02)	(-10.19)	(-9.92)	(-9.96)	(-10.10)
BLO	0.016	0.025**	-0.001	0.015	0.024
	(1.51)	(2.21)	(-0.08)	(1.41)	(1.31)

BS	-0.002	-0.001	-0.001	-0.002	-0.001
	(-0.20)	(-0.11)	(-0.13)	(-0.29)	(-0.11)
IND	-0.001	0.000	0.001	-0.001	0.000
	(-0.10)	(0.02)	(0.06)	(-0.07)	(-0.02)
Constant	0.54	0.552	0.615*	0.650*	0.581
	(1.41)	(1.51)	(1.68)	(1.77)	(1.51)
Observation	830	830	830	830	830
F test	16.917	17.836	17.182	16.828	13.68
R	0.197	0.205	0.199	0.196	0.206

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

5.3 *Interacting different types of owners with ownership type diversity and concentration*

Table 6 reports the results of Equation (3) that examines how the different types of owners in banks' performance behaviors is conditional on the ownership type diversity and concentration. In another word, the marginal effect of percentage of shareholding by different owners may depend on the ownership type diversity and the level of ownership concentration.

In column (1) of Table (10), the coefficient on the interaction between STATE and DIV is not significantly affected. However, CONC is negatively and significantly at 5%, while the interaction term STATE and CONC enters negatively and significantly at 1%. The result can be explained that the negative impact of STATE shareholders on bank performance are pronounced among banks with concentrated ownership.

In column (2) of Table (10), the coefficient on the interaction between SOE and DIV is positively and significantly at 5%, while the interaction term SOE and CONC enters also positively and significantly. The results suggest that the negative impact of SOE shareholders on bank performance are reduced on banks with ownership type diversity and concentrated ownership.

In column (4) of Table (10), the coefficient on the interaction between FOR and CONC is positively and significantly at 1%, while the coefficient of interaction between FOR and DIV is not significantly affected. The result indicates that that FOR and CONC reduce bank performance, but the marginal effect of each diminishes as the other increases. In other words, the results suggest that the negative impact of FOR shareholders on bank performance are reduced when banks with concentrated ownership.

The column (5) of Table (10) results indicates that including all variables does not change previous findings. For instance, the coefficient on interaction term STATE and CONC is still negatively and significantly at 1%. The coefficients on interaction term SOE and DIV is positively and significantly.

Table 10: The relationship between ownership and bank performance (interaction without control variables)

	(1)	(2)	(3)	(4)	(5)
Dependent variable	ROA	ROA	ROA	ROA	ROA
DIV	0.034	-0.000	0.027	0.108***	0.048
	(0.89)	(-0.00)	(0.77)	(3.82)	(0.70)
CONC	-0.265**	-0.757***	-0.154	-0.482***	0.544
	(-2.20)	(-2.73)	(-1.27)	(-3.98)	(1.24)
STATE	0.007				-0.003
	(1.10)				(-0.45)
STATE * DIV	0.001				0.001
	(0.44)				(0.54)
STATE * CONC	-0.035***				-0.025**
	(-3.59)				(-2.28)

SOE		-0.015***			-0.013***
		(-4.57)			(-3.59)
SOE * DIV		0.004**			0.004**
		(2.10)			(2.26)
SOE * CONC		0.018***			0.002
		(3.93)			(0.39)
DPO			0.001		0.000
			-0.21		(-0.11)
DPO * DIV			0.002		0.002
			(1.39)		(1.01)
SOE * CONC			0.004		-0.008
			(0.20)		(-0.41)
FOR				-0.025***	-0.007
				(-2.84)	(-0.75)
FOR * DIV				-0.001	-0.005
				(-0.41)	(-1.54)
FOR * CONC				0.069***	0.024
				(3.53)	(1.14)
Constant	1.111***	1.387***	1.030***	1.087***	1.127***
	(14.71)	(16.25)	(13.45)	(17.11)	(7.70)
Observation	830	830	830	830	830
F test	8.135	18.742	12.354	16.58	11.637
R	0.047	0.102	0.069	0.091	0.166

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

Perhaps as a result of so many inconsistencies, previous researchers have typically pointed out that the fragile relation between ownership and performance may be explained in terms of certain "conditional factors". To determine which variable affects the relation between ownership and performance and whether these factors enhance or weaken this relation, I further adopt equation (3) to investigate the interaction effects of the variables for different types of ownership, ownership diversity, and concentration on bank performance on Table (11).

In particular, ownership type diversity remains a consistently positive effect on bank performance (Column 4 of Table 11) and ownership concentration has a consistently negative effect on bank performance (Column 1, 3 and 4 of Table 11).

Table (11) results indicate that controlling for these other bank-specific characteristics does not change the findings. In addition, these control variables enter significantly as expected, but this does not affect the study's core results on the impact of ownership structure on bank performance.

Among the other control variables, for example, the effects of capital adequacy ratio, non-performing loan, and the board size on bank performance are all significantly negative, meaning bank profitability will drop. More specifically, the coefficients on CAR are still positively and significantly at 1% in all specifications, while the coefficients on NPL are still negatively and significantly at 1%.

Table 11: The relationship between ownership and bank performance (interaction with control variables)

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
DIV	0.025	-0.004	0.054	0.122***	0.025
	(0.70)	(-0.11)	(1.61)	(4.57)	(0.39)
CONC	-0.418***	0.034	-0.374***	-0.639***	0.561
	(-3.06)	(0.11)	(-2.78)	(-4.68)	(1.30)
STATE	0.001				-0.009
	(0.11)				(-1.54)
STATE * DIV	0.003				0.003
	(1.13)				(1.20)
STATE * CONC	-0.020**				-0.009
	(-2.01)				(-0.81)
SOE		-0.013***			-0.014***
		(-4.26)			(-3.87)
SOE * DIV		0.003**			0.004**
		(2.06)			-2.36
SOE * CONC		0.008*			0.000

		(1.67)			(0.00)
DPO				0.005	-0.003
				(1.40)	(-0.62)
DPO * DIV				0.003*	0.003
				(1.89)	(1.43)
SOE * CONC				-0.021	-0.012
				(-1.13)	(-0.57)
FOR				-0.024***	-0.003
				(-2.89)	(-0.35)
FOR * DIV				-0.003	-0.008**
				(-0.97)	(-2.46)
FOR * CONC				0.088***	0.039**
				(4.73)	(1.97)
LNTA	0.003	0.004	0.005	0.001	0.013
	(0.21)	(0.33)	(0.42)	(0.09)	(1.04)
LTD	0.002*	0.002	0.002	0.002	0.001
	(1.65)	(1.39)	(1.35)	(1.43)	(0.57)
CAR	0.015***	0.014***	0.014***	0.012***	0.013***
	(3.26)	(3.17)	(2.99)	(2.73)	(2.94)
NPL	-0.126***	-0.134***	-0.117***	-0.133***	-0.131***
	(-9.27)	(-10.34)	(-8.91)	(-10.30)	(-10.01)
BLO	-0.023***	-0.001	-0.063***	-0.028***	-0.004
	(-2.94)	(-0.08)	(-6.18)	(-3.57)	(-0.29)
BS	-0.013**	-0.011*	-0.012*	-0.012*	-0.014**
	(-1.97)	(-1.79)	(-1.89)	(-1.96)	(-2.22)
IND	-0.019	-0.017	-0.011	-0.011	-0.014
	(-1.57)	(-1.47)	(-0.91)	(-0.94)	(-1.21)
Constant	1.261***	1.281***	1.231***	1.276***	1.191***
	-5.66	-5.75	-5.63	-5.72	-4.74
Observation	830	830	830	830	830
F test	15.685	22.481	19.424	20.937	16.288
R	0.187	0.248	0.222	0.235	0.297

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

Some prior research has concluded that there are nonlinear relations between

ownership concentration and bank performance. To test this on our data, I add squared terms for each of the ownership variables (e.g., STATE, SOE, DPO and FOR). However, the model specifications are rather weak when the squared terms are included and so the results are not tabulated in the study. The evidence for a non-linear effect is weak.

6 Robustness test

Next, I replicated my main regressions using alternative bank performance measure to examine whether my previous results would be affected by measurement error. These regression estimates of the relationship between ownership structures and performance that showed in Tables (5) to (7). In the majority estimations of this section, I still found that there was a significant relationship between bank performance and the different types of owners.

6.1 Alternative bank performance

Table (12) presents the regression results when return on equity (ROE) is used as the dependent variable. The results imply that the significantly positive relationship between ownership type diversity and performance remains obvious.

Table 12: The relationship between ownership and alternative bank performance (only individual type ownership) - OLS					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable	**ROE**	**ROE**	**ROE**	**ROE**	**ROE**
STATE	0.025				0.001
	(1.07)				(0.05)
SOE		-0.058***			-0.055***
		(-5.68)			(-4.79)
DPO			0.039***		0.01
			(2.83)		(0.65)
FOR				-0.025	0.002
				(-0.76)	(0.06)

Constant	17.693***	19.351***	17.304***	17.971***	19.108***
	(60.94)	(55.56)	(55.98)	(66.77)	(32.06)
Observation	830	830	830	830	830
F test	1.137	32.314	8.02	0.573	8.166
R	0.001	0.037	0.009	0.001	0.037

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

Using alternative bank performance ROE in Table (13), I re-estimate the baseline model without including control variables, and find that the results are similar to benchmark regression in Table (5). The result suggests that the significantly positive relationship between ownership type diversity and performance remains in most specifications.

Table 13: The relationship between ownership and alternative bank performance (without control variables) - OLS

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROE**	**ROE**	**ROE**	**ROE**	**ROE**
STATE	0.011				-0.03
	(0.42)				(-1.02)
SOE		-0.066***			-0.065***
		(-4.98)			(-4.61)
DPO			0.040***		0.022
			(2.64)		(1.36)
FOR				-0.033	-0.017
				(-0.98)	(-0.45)
DIV	0.757	0.728*	0.888**	0.972**	1.072**
	(1.60)	(1.81)	(2.19)	(2.29)	(2.09)
CONC	-2.559	-4.070*	-0.264	-2.106	-5.791**
	(-1.42)	(-1.87)	(-0.14)	(-1.18)	(-2.44)
Constant	16.868***	17.275***	15.638***	16.597***	16.245***
	(16.85)	(18.30)	(15.10)	(17.25)	(15.06)
Observation	830	830	830	830	830

F test	3.005	11.288	5.299	3.267	6.299
R	0.011	0.039	0.019	0.012	0.044

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

After including control variables in Table (14), I still find similar impacts of state, SOE, domestic private and foreign ownership on bank performance, as well as the measure of ownership type diversity and concentration. Specifically, ownership type diversity has a significantly positive effect on bank performance, while ownership concentration has a consistently negative effect on bank performance.

Table 14: The relationship between ownership and alternative bank performance (full model) - OLS

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROE**	**ROE**	**ROE**	**ROE**	**ROE**
STATE	0.024				-0.026
	(0.93)				(-0.89)
SOE		-0.075***			-0.071***
		(-5.65)			(-3.79)
DPO			0.079***		0.014
			(4.28)		(0.55)
FOR				-0.057*	-0.039
				(-1.67)	(-1.06)
DIV	0.913**	0.846**	1.351***	1.322***	1.267***
	(2.04)	(2.22)	(3.51)	(3.28)	(2.64)
CONC	-6.089***	3.304	-4.922**	-5.745***	3.342
	(-2.82)	(1.25)	(-2.31)	(-2.69)	(1.08)
LNTA	0.672***	0.751***	0.750***	0.733***	0.802***
	(3.30)	(3.75)	(3.71)	(3.55)	(3.93)
LTD	-0.011	-0.016	-0.016	-0.012	-0.017
	(-0.53)	(-0.73)	(-0.75)	(-0.57)	(-0.81)
CAR	-0.532***	-0.519***	-0.539***	-0.536***	-0.524***
	(-7.05)	(-7.00)	(-7.23)	(-7.11)	(-7.06)
NPL	-1.967***	-1.977***	-1.832***	-1.926***	-1.919***
	(-9.11)	(-9.37)	(-8.55)	(-8.96)	(-8.93)

BLO	-0.199	0.078	-0.598***	-0.213*	-0.017
	(-1.54)	(0.57)	(-3.79)	(-1.65)	(-0.08)
BS	-0.109	-0.111	-0.08	-0.102	-0.103
	(-1.03)	(-1.08)	(-0.76)	(-0.96)	(-0.99)
IND	-0.500***	-0.522***	-0.479**	-0.496***	-0.515***
	(-2.62)	(-2.78)	(-2.53)	(-2.60)	(-2.74)
Constant	20.217***	18.136***	18.395***	18.796***	16.950***
	(5.74)	(5.21)	(5.24)	(5.20)	(4.73)
Observation	830	830	830	830	830
F test	15.216	18.897	17.287	15.444	14.727
R	0.157	0.187	0.174	0.159	0.190

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

6.2 Alternative bank concentration

In Table (15), the ownership concentration is being replaced by cumulative top 3 (TOP3) shareholding as one of the robustness tests.

Table 15: The relationship between alternative ownership concentration and bank performance (without control variables) - OLS					
	(1)	(2)	(3)	(4)	(5)
Dependent variable	ROA	ROA	ROA	ROA	ROA
STATE	0.001				-0.009***
	(0.81)				(-4.24)
SOE		-0.005***			-0.008***
		(-5.20)			(-6.03)
DPO			0.005***		0.000
			(5.42)		(0.29)
FOR				-0.012***	-0.016***
				(-5.66)	(-6.41)
DIV	0.069**	0.043*	0.068***	0.115***	0.148***
	(2.50)	(1.75)	(2.89)	(4.76)	(4.91)
TOP3	-0.478***	0.005	-0.348***	-0.344***	-0.531***
	(-5.73)	(0.04)	(-4.24)	(-4.20)	(-3.38)

Constant	1.199***	1.183***	1.088***	1.116***	0.969***
	(19.36)	(20.65)	(18.2)	(19.15)	(15.08)
Observation	830	830	830	830	830
F test	15.623	24.893	25.741	26.655	23.052
R	0.054	0.083	0.085	0.088	0.143

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

In Table (16), after including control variables, I find similar impacts of state, SOE, domestic private and foreign ownership on bank performance, as well as ownership type diversity and concentration variables.

Table 16: The relationship between alternative ownership concentration and bank performance (full model) - OLS

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
STATE	-0.003*				-0.009***
	(-1.84)				(-3.26)
SOE		-0.005***			-0.010***
		(-5.57)			(-4.51)
DPO			0.006***		-0.004
			(5.80)		(-1.51)
FOR				-0.009***	-0.016***
				(-4.40)	(-5.25)
DIV	0.065**	0.044*	0.105***	0.121***	0.126***
	(2.49)	(1.84)	(4.66)	(5.12)	(4.44)
TOP3	-0.563***	-0.036	-0.471***	-0.453***	-0.656**
	(-6.56)	(-0.30)	(-5.67)	(-5.34)	(-2.55)
LNTA	0.007	0.013	0.013	0.013	0.025**
	(0.60)	(1.06)	(1.10)	(1.11)	(2.08)
LTD	0.002	0.002	0.001	0.002	0.002*
	(1.34)	(1.45)	(1.08)	(1.44)	(1.67)
CAR	0.016***	0.016***	0.015***	0.015***	0.015***
	(3.52)	(3.67)	(3.41)	(3.36)	(3.48)
NPL	-0.132***	-0.130***	-0.120***	-0.126***	-0.123***

	(-10.06)	(-10.14)	(-9.27)	(-9.79)	(-9.65)
BLO	-0.017**	-0.007	-0.051***	-0.019***	0.017
	(-2.26)	(-0.90)	(-5.48)	(-2.60)	-0.99
BS	-0.017***	-0.015**	-0.014**	-0.014**	-0.011*
	(-2.63)	(-2.45)	(-2.25)	(-2.21)	(-1.77)
IND	-0.018	-0.019	-0.016	-0.016	-0.017
	(-1.56)	(-1.63)	(-1.42)	(-1.42)	(-1.54)
Constant	1.308***	1.118***	1.153***	1.086***	0.629***
	(6.13)	(5.26)	(5.46)	(5.00)	(2.75)
Observation	830	830	830	830	830
F test	22.003	25.489	25.824	24.026	23.173
R	0.212	0.238	0.24	0.227	0.27

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

6.3 System GMM estimation

System GMM estimator is employed as another robustness test. This methodology controls for potential endogeneity, unobserved heterogeneity and the persistence of the dependent variable, measuring bank performance. This methodology also yield consistent results. For instance, a higher shareholding from domestic private owners is found significant in increasing bank performance in column (3) specification. Besides, more diversity of ownership structure is positive with the bank performance in all specifications.

Table 17: The relationship between ownership and bank performance (full model) - GMM					
	(1)	(2)	(3)	(4)	(5)
Dependent variable	ROA	ROA	ROA	ROA	ROA
Lag.ROA	0.392***	0.371***	0.355***	0.368***	0.379***
	(12.34)	(12.28)	(10.68)	(11.00)	(11.94)
STATE	0.002**				0.001
	(2.54)				(0.81)

SOE		-0.004***			-0.003***
		(-6.39)			(-3.12)
DPO			0.005***		0.002
			(5.93)		(1.58)
FOR				-0.005***	-0.003*
				(-4.55)	(-1.93)
DIV	0.042**	0.058***	0.096***	0.097***	0.064***
	(2.17)	(3.18)	(4.71)	(5.18)	(3.02)
CONC	-0.132*	-0.427***	-0.08	-0.128	-0.238*
	(-1.67)	(-3.89)	(-1.02)	(-1.65)	(-1.79)
LNTA	-0.004	-0.004	0.000	0.005	0.000
	(-0.62)	(-0.51)	(0.06)	(0.79)	(0.010)
LTD	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.30)	(-1.11)	(-1.16)	(-0.07)	(-0.89)
CAR	0.034***	0.035***	0.033***	0.034***	0.034***
	(9.36)	(9.28)	(8.55)	(9.47)	(8.89)
NPL	-0.102***	-0.101***	-0.103***	-0.103***	-0.100***
	(-11.20)	(-12.33)	(-9.45)	(-11.43)	(-8.89)
BLO	-0.028***	-0.013*	-0.056***	-0.033***	-0.029***
	(-4.34)	(-1.91)	(-8.53)	(-5.31)	(-2.72)
BS	0.015***	0.018***	0.018***	0.016***	0.018***
	(3.72)	(3.42)	(4.45)	(3.90)	(4.27)
IND	-0.033***	-0.033***	-0.034***	-0.036***	-0.034***
	(-4.10)	(-4.36)	(-4.79)	(-4.76)	(-4.82)
Constant	0.419**	0.337**	0.387**	0.242	0.308*
	(2.47)	(2.21)	(2.21)	(1.37)	(1.87)
Observation	691	691	691	691	691
F test	138.797	129.139	555.814	125.463	230.406
AR1	0.001	0.000	0.001	0.001	0.001
AR2	0.852	0.944	0.872	0.833	0.872
Hansen	0.150	0.206	0.187	0.158	0.195

Note: ROA is ratio of profit to the book value of total assets. ROE is ratio of profit to the book value of total equity. STATE is the percentage of equity shares held by government owners. SOE is the percentage of equity shares held by state owned enterprises (SOE) owners. DPO is the percentage of equity shares held by domestic private owners. FOR is the percentage of equity shares held by foreign owners. DIV is the diversification for ownership type diversity and calculated from equation 2. CONC is the sum of the squared ownership shares held by top ten largest shareholders. TOP3 is the total percentage of equity shares owned by the largest three shareholders. LNTA is the natural logarithm for the amount of total assets in thousands of Chinese Yuan. LTD is the ratio of total loans to total deposit. CAR is risk-weighted capital adequacy ratio. NPL is the ratio of the amount of non-performing loans over the amount of total loans. BLO is the number of block shareholders. BS is the number of board members. IND is the total number of independent member in the board.

In summary, the empirical results of robustness tests indicate that bank ownership structure is not influenced by bank performance and reverse causality does not appear

to be a problem for my study.

7 Conclusion

Ownership structure is widely recognized in the finance study as an instrumental determinant of firm performance. This study has provided and empirical evidence in support of the typical hypothesis that bank ownership governance is an important determinant of performance. Specifically, this study examine how ownership type and distribution in a country's banking system affect bank performance.

This study compares all foreign-owned banks, private domestic, and government-owned banks to assess the impact of ownership on performance in an emerging market. The main findings regarding the static effects of bank ownership on performance suggest that banks with more state shareholder tend to have poorer long-term performance, consistent with much of the literature. The result can be explained by greater government involvement and political corruption in the banking system. In addition, banks with higher privately shareholders are generally operated more profitably. Furthermore, higher foreign ownership may negatively affect bank performance. Moreover, ownership type diversity is associated with better bank performance, while banks with concentrated ownership are worse performing. I check the robustness of the results by using different model specification and ownership indicators.

I believe that my findings contribute to a better understanding of how ownership structure influence the efficient operation of Chinese banks. However, many questions pertaining to the impact of well-developed governance on the performance of banks have yet to be answered. A drawback of the analysis presented in this study is that it only examines to what extent ownership structure influence the bank performance or, in other words, to what extent governance explain the gap from the accounting ratio.

However, it may also be that ownership structure affect bank efficiency, i.e. may lead to shifts in the accounting measure. This would be the case if ownership structure has an impact upon the efficiency that are most suited for individual banks. In my opinion future research on this issue is highly relevant.

I acknowledge that the findings could consistent with other explanations as well. For instance, state shareholders may be more exposed to a different set of banks regulation such as small banks have more intensive monitoring It is also possible that subsidies to poor borrowers may have been funneled through government banks to improve social welfare. My findings are of interest to a variety of academics, policymakers, and contribute to problems ranging from improving banking supervision and regulations to market discipline such as the recent large bank initial public offerings (IPOs) from China. The positive impact of ownership diversity presence on the bank performance enhances its economic prospects, opening new pathways for the flourishing of the banking sector.

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