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## Board governance and performance of Chinese banks

### Abstract

As a part of its banking reform, China is standardizing the practice of boards of directors and giving a full play to their decision-making and board oversight function. This paper helps to predict the effect of such effort by examining the relation between board governance structure and performance of Chinese banks for the period of 1998-2007. The authors find that Western governance mechanisms within the principal-agent framework work effectively in Chinese banks. Boards with stronger governance structure produce superior financial performance in Chinese banks. Specifically, higher board ownership, lower percentage of insiders on board, and lower block ownership are associated with better bank performance. These findings suggest that strengthening board governance and introducing global best practices and accountability will likely improve Chinese bank performance significantly and it is the right direction to take as China's banking reform deepens.

**Keywords:** Chinese banks, board governance, bank performance.

**JEL Classification:** G21, G34, G28.

### Introduction

With China's double digit growth rate, the importance of China to the economies of the rest of the world becomes ever more apparent. Commercial banks have played a key role in its market driven economic reforms for three decades. More than 85% of financial resources in China are allocated through the banking system. In this regard, an efficient banking system with competitive profitability is vital to sustaining the economic growth of China. However, Chinese banks have long suffered from bad loans and high operating costs and were underperforming their Western counterparts. In recent years, the Chinese government has carried out a series of reforms aiming at making banks more market driven, more profitable, and better managed. One important reform among these is to establish a board of directors system in existing banks to improve corporate governance.

With the rapid privatization of Chinese banks, the objective of a bank has evolved to maximize the return to shareholders and protect the interests of the depositors and other creditors. Good corporate governance is essential for maintaining and enhancing shareholders' value and investors' confidence. Having strong board governance structure to ensure that bank managers are focused on the right issues is vitally important. Many banks have adopted a comprehensive board governance structure similar to Western standards and practices to enhance the checks and balances between the shareholders' general meetings, the Board of Directors, the Board of Supervisors, and the management according to PRC regulations. Bank officials are quite receptive to successful governance concepts and practices in their Western counterparts such as board composition, board size, and managerial ownership, many of which are adopted by Chinese banks consequentially.

The issue lies in the enforcement. How effective are these Western board governance mechanisms enforced in Chinese banks? Are they really working in Chinese banks? Do boards with better governance structure produce better financial results in Chinese banks? Some argue that Chinese boards are merely rubber-stamping decisions made by managers and communist party officials and board structure has no impact on bank performance. If that is the case, maybe it is time for Chinese banks to search for their own governance structure that fits better with their unique banking system. Answers to these questions have significant implications to the success of Chinese bank reform. Despite of the importance of this issue, it has received limited academic attention.

In this paper, we fill this void in the literature by empirically examining the role of board of directors in the performance of Chinese banks. We hypothesize that effective board structure is associated with better financial performance in Chinese banks. We use a unique, hand-collected panel dataset of 41 Chinese commercial banks for the period of 1998-2007. Our sample represents more than 80% of the total assets of China's banking industry for sample period.

We find that Western governance mechanisms do work effectively in Chinese banks. Boards with stronger governance structure produce superior financial performance in Chinese banks. Specifically, higher board ownership, lower percentage of insiders on board, and lower block ownership are associated with better bank performance. These findings suggest that strengthening board governance and introducing global best practices and accountability will likely improve Chinese bank performance significantly and it is the right direction to take as China's banking reform deepens.

The remainder of the paper is organized as follows. Section 1 provides literature review on board governance and its effect on bank performance. Section 2 presents the history of Chinese commercial banks

and background information on its corporate governance effort. Section 3 describes our data and empirical methodology, and Section 4 displays our empirical results. The final Section concludes.

## 1. Literature review on board governance and bank performance

Rich literature has been established on the relationship between board governance and corporate performance in areas such as board composition, board ownership, block ownership, and board size. Theoretically, optimal board composition reduces agency costs and improves firm performance. Baysinger and Butler (1985) find that changes in board composition over a ten-year period affect a firm's accounting performance. Molz (1988) find no significant relationship between the degree of managerial control of boards and financial performance. Hermalin and Weisbach (1991) examine the relation between firm performance as well as board composition and ownership structure for public utilities. They use panel data to control for biases due to the joint endogeneity of variables and find no significant relation between board composition and firm performance. Barnhart, Marr and Rosenstein (1994) adopt the same instrumental variable approach as in Hermalin and Weisbach (1991) to measure the relation between board composition and firm performance. They use market-to-book ratio instead of Tobin's Q to measure performance. Contrary to Hermalin and Weisbach (1991), they find a significant curvilinear relation between board composition and firm performance, and managerial ownership and firm performance. Agrawal and Knoeber (1996) examine the interdependence of seven mechanisms used to control agency problems. Their results suggest that cross-sectional OLS regressions of firm performance on single mechanisms may be misleading. Through separate OLS regressions, they find that insider shareholding, outsider representation on the board, debt policy, and market for corporate control are all cross-sectionally related to firm performance when ignoring any interdependence among the mechanisms. Greater insider shareholding is positively associated with firm performance. More outsiders on the board, more debt financing and greater corporate control activity are negatively related with firm performance. When they examine all seven mechanisms together in a single OLS regression, the effect of insider shareholdings on a firm's performance disappears. When they examine the mechanisms in a simultaneous estimation system, accounting for the interdependence among the mechanisms, only the negative effect of outsiders on the board on firm performance remains. Their findings are consistent with optimal use of each control mechanism except for the negative effect of outside directors on

firm performance. They postulate that boards may include too many outside directors for political reasons and these inclusions result in poorer performance. The relation between board size and firm performance has also been examined. Lipton and Lorsch (1992) and Jensen (1993) suggest small-sized boards are more effective and can help improve firm performance. They recommend that the optimal board size contains seven to eight people. Their proposition is confirmed by Yermack (1996). He examines the relation between board size and firm value measured by Tobin's Q for a sample of 452 large U.S. industrial firms between 1984 and 1991. He finds an inverse relation between board size and firm value, controlling for company size, industry, stock ownership, growth opportunity and corporate governance structures. The relation has a convex shape. The greatest loss of value occurs when boards grow from 6 to 12 members.

According to Jensen and Meckling (1996), insider ownership provides a powerful incentive for managers to act in the interests of shareholders. Insider directors with large ownership are more capable of monitoring managerial behavior and reducing management entrenchment. Demsetz (1983) and Fama and Jensen (1983) argue that management ownership may also incur a cost. When management has significant ownership of a firm's equity, they may have enough voting power to entrench themselves. They may indulge in self-dealing behaviors, knowing that their large ownership may provide them with immunity from being replaced or monitored. Morck, Shleifer, and Vishny (1988) argue that the linear specification in Demsetz and Lehn (1985) is not appropriate. They examine the relation between board ownership and firm performance measured by Tobin's Q using 371 Fortune 500 firms from 1980. They find a nonlinear relation between board ownership and firm performance. Their results suggest a positive relation between board ownership and firm performance in the 0% to 5% board ownership range, a negative relation in the 5% to 25% range, and a positive relation beyond 25% board ownership. The positive relation reflects the convergence of interests between managers and shareholders while the negative relation is consistent with management entrenchment hypothesis. Consistent with Morck, Shleifer, and Vishny (1988), McConnell and Servaes (1990) find a significant curvilinear relation between management ownership and corporate performance measured by Tobin's Q. Using a sample of 1173 firms from 1976 and 1093 firms from 1986, they find firm performance increases with ownership at low levels of ownership and decreases with ownership at about 40% to 50%. Barnhart, Marr and Rosenstein (1994) use an instrumental variable approach to measure the relation between board own-

ership and firm performance. Once again, they find a significant curvilinear relation between managerial ownership and firm performance measured by market-to-book ratio. Firm performance increases as managerial ownership increases in the 0% to 25% ownership range. Beyond 25% ownership, a negative relation between performance and ownership is observed.

Recent research focuses on the importance of corporate governance in banks. For example, Macey and O'Hara (2003) propose to require bank directors be held to a broader standard of care than other directors. They argue that bank directors should owe fiduciary duties to fixed claimants as well as to equity claimants due to the bank's highly leveraged condition and the mismatch in the term structure and liquidity of their assets and liabilities. Levine (2004) identifies two attributes of banks that make them special in practice: greater opacity than other industries and greater government regulation. These attributes weaken many traditional governance mechanisms. As a result, it is important to strengthen the abilities and incentives of private investors to exert governance over banks rather than relying excessively on government regulators. As an application of theories, empirical studies also paid attention to the role of board of directors in bank performances. Staikouras et al. (2007) find that for European banks, profitability is negatively related to the size of the board of directors, while the impact of board composition, although positive in all models, is insignificant in most cases.

Besides board factors, the relationship between ownership structure and profitability of banks is also discussed. La Porta, Lopez-de-Silanes, and Shleifer (2002) find that government ownership of banks is large and pervasive, and higher in countries with low levels of per capita income, backward financial systems, interventionist and inefficient governments, and poor protection of property rights. Countries with these characteristics will also have less profitable banks. This conclusion implies an indirect correlation between government ownership and bank profitability. Grigorian and Manole (2006) find that foreign ownership with controlling power and enterprise restructuring enhances commercial bank efficiency. Yao, Han and Feng (2008) find that ownership reform and foreign competition have forced Chinese commercial banks to improve performance, as their total factor productivity rose by 5.6 per cent per annum during the period of 1998-2005.

Based on existing board governance literature, we hypothesize that superior bank performance is associated with higher percentage of independent board of directors on board, smaller board size, and higher managerial ownership.

## 2. History of Chinese banks and their profitability and governance issues

### 2.1 Evolution of Chinese commercial banks.

Since the People's Republic of China was founded in 1949, the People's Bank of China (PBOC) had been the only bank in Mainland China until 1978. During this period, the PBOC played a dual role in China's financial system: as a central bank and as a commercial bank. From 1979 to 1983, as China started economic reforms and opened its door to the world, three other national specialty banks were established to meet the needs of economic reforms. They are: the Agricultural Bank of China (ABC), the Bank of China (BOC), and the People's Construction Bank of China (PCBC). In 1984, the Industrial and Commercial Bank of China (ICBC) became the fourth national specialty bank in China. PBOC began to function as a central bank and a main regulatory agency of China's banking industry. During this time, some nationwide joint-stock commercial banks and urban and rural credit cooperatives were established. In 1994, three policy banks – China Development Bank (CDB), Agricultural Development Bank of China (ADBC), and the Export-Import Bank of China (China Eximbank) – were established. They undertook most of the policy loan business from the four national specialty banks. Meanwhile, the four national specialty banks became state-owned commercial banks. In the next year, *Commercial Banking Law of the Peoples Republic of China* and *the Law of the People's Republic of China on People's Bank of China* came into effect, requiring that commercial banks should operate individually, take their own risks, and assume their own losses. Some urban credit cooperatives were restructured to be urban cooperative banks. In 1998, the Ministry of Finance of China issued special government bonds worth RMB 270 billion to inject capital into four state-owned commercial banks to raise their capital adequacy ratios. Four asset management companies were established to buy unhealthy assets from the four state-owned commercial banks. In 2003, the China Banking Regulatory Commission (CBRC) was established to take over most supervisory functions of PBOC, becoming the main regulator of China's banking industry. The same year witnessed the start of comprehensive restructuring in China's banking industry. China's government established the Central SAFE Investments Limited ("Huijin") to inject USD 22.5 billion into PCCB and BOC, respectively. CCB and BOC then disposed of unhealthy assets, introduced domestic and foreign strategic investors, and issued subprime bonds. In 2005, "Huijin" injected USD 15 billion into ICBC. PCCB, BOC, and ICBC were restructured to joint-stock commercial banks and went public.

Unlike the state-owned banks and joint-stock banks, China's city commercial banks have a unique developmental history. In the mid-1980s, with the development of private enterprises in many Chinese cities, urban credit cooperatives which provided financial services to those enterprises also experienced rapid growth. However, the operations of these urban credit cooperatives have experienced some problems such as small size, high operating costs, inadequate ownership structures, and weak internal controls. In 1995, to deal with these problems, the Chinese government decided to close and merge the urban credit cooperatives and transform them into urban cooperative

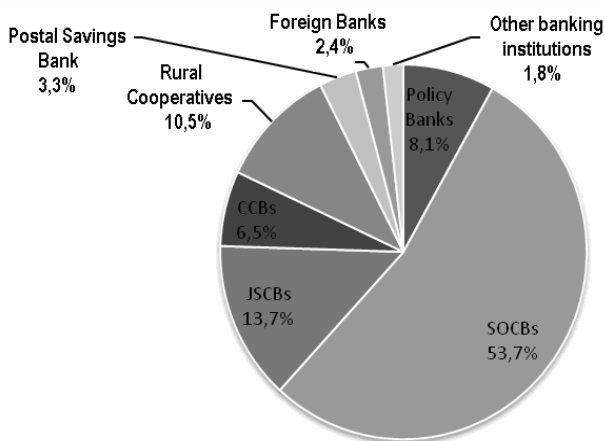
banks. The urban cooperative banks were designed to be organized in joint-stock form, with their shares mostly held by local government, corporations and private investors. The earliest urban cooperative banks were established in 35 large- and middle-sized cities. In later years, this reform was extended to more cities. In 1998, the government decided all urban cooperative banks would change their names to city commercial banks, due to the joint-stock rather than cooperative nature of these banks. By the end of 2007, there were 124 city banks in China. Their assets totaled RMB 3340 billion, possessing a market share of 6% among all depository banking institutions.

Table 1. Number of legal entities of the banking institutions in China (as of the end of each year)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
SOCBs	4	4	4	4	4	4	4	4	4	4	4	4	5
JSCBs	11	11	11	11	11	11	11	11	11	12	12	12	12
CCBs	2	17	64	87	90	97	108	111	112	113	112	114	124

Notes: SOCBs were state-owned commercial banks; JSCBs were joint-stock commercial banks; CCBs are city commercial banks. Source: compiled by authors using information from China Banking Regulatory Commission Annual Reports and its website.

By the end of 2007, there were 3 policy banks, 5 large state-owned commercial banks, 12 joint-stock commercial banks, 124 city commercial banks, and 29 locally incorporated foreign bank subsidiaries as well as other banking institutions. The total assets of China's banking system amounted to RMB 52.6 trillion (China Banking Regulatory Commission, 2007). Figure 1 shows the assets comparison of each type of banks. Measured by the first tier capital, ICBC and BOC stood among the top ten largest commercial banks in the world with 31 Chinese commercial banks among the world top 1000.

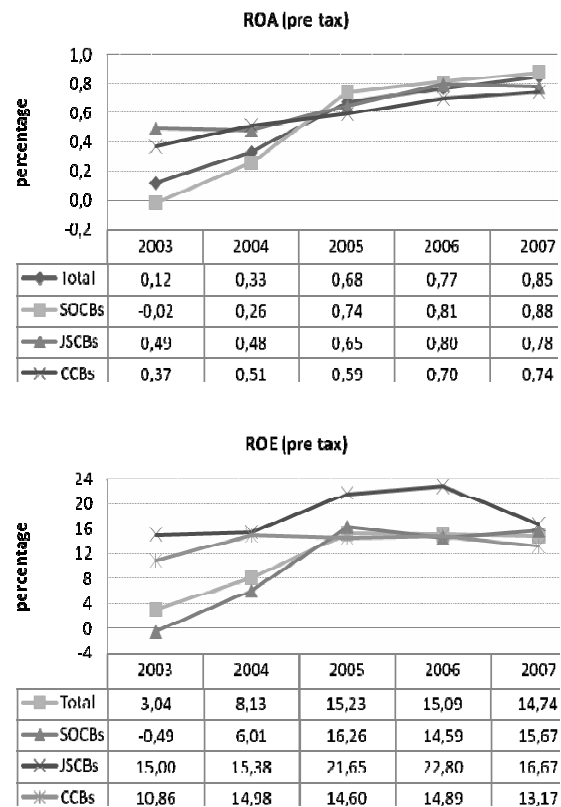


Source: China Banking Regulatory Commission 2007 Annual Report.

Fig.1. Structure of China's banking industry (as of the end of 2007, by assets).

**2.2. Profitability of Chinese banks.** Profits of three major types of Chinese commercial banks as well as total of all banking institutions have growing steadily in recent years (Figure 2). Pre-tax return on assets of all banking institutions increased from 0.12% in 2003 to 0.85% in 2007. Pre-tax return on equity

of all banking institutions increased from 3.04% in 2003 to 14.74% in 2007. Pre-tax return on assets of SOCBs, JSCBs and CCBs increased from -0.02%, 0.49% and 0.37% in 2003 to 0.88%, 0.78% and 0.74% in 2007, respectively. Pre-tax return on assets of SOCBs, JSCBs and CCBs increased from -0.49%, 15.00% and 10.86% in 2003 to 15.67%, 16.67% and 13.17% in 2007, respectively.



Source: Bankscope database.

Fig. 2. Profits changes of Chinese commercial banks (2003-2007)

In 2007, the weighted average capital adequacy ratio of the banking sector exceeded the minimum regulatory level of 8%. The non-performing loans ratio of commercial banks was reduced to an historical low level of 6.2%. The net profit (after-tax), net return on equity and net return on assets, of the banking sector were RMB 446.7 billion, 16.7% and 0.9%, respectively. Net interest income, investment returns and net fee-based income constituted the three major contributors to the income portfolio.

**2.3. Board governance in Chinese banks.** For a long time, there were no directors or board of directors in Chinese banks. Senior management was responsible for making all decisions relevant to the bank. With the establishment of the first seven joint-stock commercial banks in 1987 and 1988, the system of a board of directors was first introduced to Chinese banks. When another three joint-stock banks were established in 1992 and city banks established after 1995, all commercial banks had board of directors except for the big four state-owned banks. From 2004 to 2005, three of the big four state-owned banks were restructured to joint stock companies, and they also introduced the board of directors system. According to *Commercial Banking Law of the People's Republic of China* which went into effect on July 1, 1995, one of the prerequisites to establish a commercial bank is "Having directors and senior management personnel with professional knowledge for holding the post and work experiences". In June 2002, the People's Bank of China promulgated *Guidance on Independent Directors and External Supervisors of Joint-Stock Commercial Banks*, which aims to establish and enhance the arrangement of independent directors. In September 2005, the China Banking Regulation Commission promulgated *Guidelines on Due Diligence Performance of the Boards of Directors of Joint-Stock Commercial Banks (Provisional)*, which aims at standardizing the operations of the boards of directors of JSCBs, giving a full play to their decision-making and oversight functions, and thereby ensuring safe and sound development of the JSCBs. According to the Guidelines, the board should effectively protect the legitimate rights and interests of shareholders and depositors, as well as other stakeholders of the bank. The board shall also make independent judgment and decisions on the bank's major activities based on a good command of information and are not subject to undue influence from shareholders or senior management. However, many Chinese banks still cannot meet the requirement above. The effectiveness of the bank boards remains questionable.

### 3. Data and methodology

**3.1. Data and sample.** It is well known that data collection process for board governance research is time consuming, tedious, and challenging. The difficulty is tripled for collecting board governance data of Chinese banks due to reporting irregularities among banks, less standardization in proxy statements, and language issues. After many rounds of checking, we have successfully compiled a hand-collected, clean panel dataset of 41 Chinese commercial banks' governance characteristics from 1998 to 2007. Our sample represents more than 80% of the total assets of China's banking industry for sample period. We use this sample to empirically examine the relation between board governance and the performance of Chinese commercial banks.

Our initial sample consists of 85 Chinese commercial banks for the period of 1989-2007. The sample includes 5 state-owned banks, 12 joint-stock banks, and 68 city banks. Since some joint-stock banks and all city commercial banks were established in mid-1990s or thereafter, data for some banks in certain years are unavailable. Out of the 514 observations in our initial sample, we eliminate 364 observations with missing values for at least one variable needed in our research. As a result, our final sample consists of 150 observations covering 41 Chinese commercial banks for the period of 1998-2007. This sample includes 5 state-owned banks, 9 joint-stock banks, and 27 city banks. It represents more than 80% of total assets in Chinese banking industry (see Appendix B, Table 2A for a list of sample banks).

The profitability indicators and various financial ratios are obtained from the BANKSCOPE database. These indicators and ratios are provided in global summary format and calculated from the original balance sheet and income statement figures issued by each bank based on Chinese accounting standards. The board governance data were hand collected and calculated from the annual reports of each bank in different years.

**3.2. Variables and testing hypotheses.** The objective of this paper is to empirically investigate the effect of board governance on Chinese bank profitability. Previous literature has used several measures of profitability. One of the measures is return on assets (ROA), which shows how profitable a bank's assets are in generating revenue. This ratio is widely used to compare the efficiency and operational performance of banks as it looks at the returns generated from the assets financed by the bank. For this reason, we choose ROA as one of our optional dependent variables. Using ROA as a dependent variable also provides convenience in comparing our results to other findings in the literature.

Another measure of profitability is return on equity (ROE). This indicator reflects the capability of a bank in utilizing its equity to generate profits. Though not used as widely as ROA, it is also a standard indicator to compare financial performance among different banks in developed countries. Therefore we apply the same examinations to ROE as we do to ROA.

Our explanatory variables fall into two categories: governance characteristics variables and financial characteristics variables. We test the relation between governance characteristics and bank profitability while controlling for financial characteristics (see Appendix A for a complete list and variable definitions).

The first factor we are interested in is the size of the board, namely the number of directors in a bank's board. Intuitively, the effect of board size on a bank's operating performance is two-folded. On one hand, a large board is helpful to encourage diversified or democratic policy making in a bank's development strategy and important operation decisions. In this vein, it is plausible a bank with a large board could be influenced by opinions representing interests of the majority of stakeholders and is more likely to be operated aiming for maximizing the benefits of the majority. On the other hand, a large board may lack efficiency in decision-making. Compared to a small board, directors in a large board, on average, need more time to persuade each other and to make compromises. This may lead to some adverse effects on a bank's performance. As a result, the overall effect of board size on profitability depends on which will dominate in our case. A possibility is that the effects from two opposite directions just offset each other and result in an insignificant estimate.

The composition of the board is also subject to our investigation. In Chinese banks, directors are mainly categorized into two types: executive directors and non-executive directors. The difference between these two is defined by the position a director holds within the bank. If a director is also an executive officer of the bank, he/she will be identified as an executive director. If a director comes from outside and does not hold a position within the bank, he/she is identified as a non-executive director. Some Chinese banks designate a special type of non-executive director who acts not on behalf of any single shareholder and serves as an independent outsider. These directors are called independent non-executive directors. Usually they are elected from academic institutions or accounting and law firms. Among different types of directors, executive directors are more involved in the daily operations of a bank. Their responsibilities

include not only sitting on the board to decide collectively the important issues concerning a bank but also making routine policies directly related to the bank's daily activities. They are considered to be insiders since they possess more inside information and have more influence on banks than non-executive directors. Hence, the percentage of executive directors in the board may have some relationship with bank's profitability. A board with more insiders tends to compromise more easily in that executive directors have common interests of their own. This may harm the benefits of shareholders and reduce bank's profitability. For this reason, we expect a negative relationship between profitability and the percentage of executive directors in the board.

The influence of independent directors on bank profitability deserves specific investigation since they are designated to independently express their views on major decisions on behalf of all small shareholders. In this regard, independent directors are critically important for bank governance. Therefore, we are interested in examining whether strong presence of independent directors is associated with enhanced performance in Chinese banks.

Another factor regarding board governance is the case where directors hold shares of their bank. Intuitively, if a director holds shares issued by the bank, he/she will have more incentive to act on behalf of the benefits of shareholders. Hence, we expect a positive relationship between profitability and the percentage of shares owned by the board members.

Besides the board characteristics, a bank's ownership structure also has some potential influences on a bank's profitability. We will try to answer this question from different perspectives. First, it is common in Chinese banks that government has ownership to some extent. Central government owns a large percentage in major Chinese banks including nationwide state-owned and joint-stock banks. For most city commercial banks, local governments hold a portion of the shares. In some cases, government is the largest single shareholder who has control over the bank. This kind of control may influence the operating strategy of a bank and hinder it from acting freely according to market law. As a result, a high percentage of shares owned by government may have some negative effect on bank's profitability.

Second, as China is opening its financial industry to foreign investors and competitors, some Chinese commercial banks have attracted foreign investments over the years. These banks hope to obtain better governance and improve management quality by introducing foreign investments. Thus, we

want to see whether high profitability is associated with a high percentage of shares owned by foreign investors.

Third, most banks have block holders, whose single holding exceeds 5% of total shares outstanding of the bank. The concentration of share holding of a bank can be indicated by total percentage of shares owned by block holders. If a bank's shares are owned by a small number of block holders, it is more easily controlled by these holders. This may harm the benefits of small shareholders and have a negative effect on a bank's profitability.

The first financial factor we need to control for is bank capitalization. Capitalization is important to bank operations in that it is the main source to cover bank loan losses. Banks with more capital have more capability to develop business and deal with risks upon assets. An indicator widely used for supervisory purposes is capital adequacy ratio defined by the Bank of International Settlement. Although it is an ideal indicator to our study, the data availability is limited in Chinese banks. We have to use an alternative variable, namely equity over assets, and approximate the capitalization condition to ensure our sample is as large as possible. This variable also indicates a bank's capitalization and shows capital adequacy against its assets to some extent. It is expected that high equity over assets ratio is associated with better bank performance.

For Chinese banks, deposits and loans are most important business throughout decades. Chinese banks obtain low cost money by giving low interest rates for deposits. A large portion of these deposits are loaned to enterprises and other borrowers. Interest income has always been the main source of Chinese bank operating income. Hence, deposits and loans may reflect bank profitability to some extent. In our study, we use deposits over assets ratio and loans over assets ratio to proxy the factor concerning these two main parts of assets and liabilities.

Asset quality is a key factor affecting bank's profitability. Obviously, banks that lack high quality assets will suffer from low profits. A commonly used indicator regarding asset quality is the non-performing loans (NPL) ratio, which is calculated by impaired loans over total loans. We can expect that the NPL ratio has a negative relationship with bank profitability.

Bank operations are also worthy of our attention. We choose two ratios to proxy for it. One is net interest margin, which equals net interest income divided by total assets. The other is cost to income ratio.

The last factor we should consider is a bank's liquidity condition. In this paper, we use liquidity ratio, which equals liquid assets over deposits and short-term funding.

**3.3. Descriptive statistics of the sample.** Table 2 shows summary statistics of bank financial ratios from our sample. The mean of ROA is 0.62%, with -1.25% and 2.06% as the minimum and maximum, respectively. The mean of ROE is 12.55%, with -193.91% being the minimum and 41.13% being the maximum. The mean of capital ratio, *Capital*, is 4.52% with the lowest -11.74% and highest 31.34%. The mean of loans over assets, *Loans*, is 54.57% with the minimum of 37.89% and the maximum of 74.27%, respectively. The mean of deposits over assets, *Deposits*, is 87.62% with 64.08% being the minimum and 109.15% being the maximum. The mean of non-performing loans ratio, *NPL*, is 6.99% with the minimum of 0.00% and the maximum of 39.60%. The mean of net interest margin, *NIM*, is 2.57%, with 1.10% and 6.68% as the minimum and maximum, respectively. The mean of cost to income ratio, *Costinc*, is 44.18% with the lowest 20.68% and the highest 165.05%. The mean of liquidity assets over deposits and short term funding is 18.25%, with the minimum of 7.35% and the maximum of 48.68%.

Table 2. Financial ratios (descriptive statistics)

Variable	N	Minimum (%)	Maximum (%)	Mean (%)	Std. deviation
<i>ROA</i>	150	-1.25	2.06	0.62	0.42
<i>ROE</i>	150	-193.91	41.13	12.55	19.42
<i>Capital</i>	150	-11.74	31.34	4.52	3.47
<i>Loans</i>	150	37.89	74.27	54.57	7.68
<i>Deposits</i>	150	64.08	109.15	87.62	7.08
<i>NPL</i>	150	0.00	39.60	6.99	7.82
<i>NIM</i>	150	1.10	6.68	2.57	0.70
<i>Costinc</i>	150	20.68	165.05	44.18	14.17
<i>Liquidity</i>	150	7.35	48.68	18.25	7.29

Notes: *ROA* – return on average assets; *ROE* – return on average equity; *Capital* – equity over total assets; *Loans* – total loans over total assets; *Deposits* – total deposits over total assets; *NPL* – impaired loans over total loans; *NIM* – net interest margin; *Costinc* – cost to income ratio; *Liquidity* – liquid assets over deposits & short-term funding.

Source: Bankscope database.

Table 3 shows summary statistics of bank board and ownership variables in our sample. The mean of board size, *Brdsz*, is 13.29, with 4 and 19 as the minimum and maximum, respectively. The mean of percentage of executive directors, *Exec*, is 34.32%, with 5.26% being the minimum and 100% being the maximum. The mean of percentage of independent directors, *Indept*, is 15.62% with the lowest 0.00% and highest 41.18%. The mean of percentage of

shares owned by the board, *Brdown*, is 0.12% with the minimum of 0.00% and the maximum of 1.51%, respectively. The mean of percentage of shares owned by government, *Govown*, is 30.09% with 0.00% being the minimum and 100% being the maximum. The mean of percentage of shares owned by foreigners, *Frgown*, is 6.55% with the minimum of 0.00% and the maximum of 50.41%. The mean of percentage of shares owned by blockholders, *Blckown*, is 54.39%, with 6.44% and 100% as the minimum and maximum, respectively.

Table 3. Board governance and ownership (descriptive statistics)

Variable	N	Minimum (%)*	Maximum (%)*	Mean (%)*	Std. deviation
<i>Brdsiz</i>	150	4	19	13.29	3.81
<i>Exec</i>	150	5.26	100.00	34.32	26.60
<i>Indept</i>	150	0.00	41.18	15.62	14.48
<i>Brdown</i>	150	0.00	1.51	0.12	0.30
<i>Govown</i>	150	0.00	100.00	30.09	33.37
<i>Frgown</i>	150	0.00	50.41	6.55	10.65
<i>Blckown</i>	150	6.44	100.00	54.39	29.30

Notes: *Brdsiz* – number of directors; *Exec* – percentage of executive directors; *Indept* – percentage of independent directors; *Brdown* – percentage of shares owned by the board; *Govown* – percentage of shares owned by government; *Frgown* – percentage of shares owned by foreigners; *Blckown* – percentage of shares owned by blockholders (above 5%). \* % for all listed variables except for *Brdsiz*.

Source: Hand collected and calculated from each bank's annual reports for the period of 1998-2007.

Table 4 (see Appendix C) shows the correlation coefficients of the variables. It can be seen that the two different measures, *ROA* and *ROE*, are weakly correlated in our sample, with a correlation coefficient of 0.350. The percentage of executive directors (*Exec*) and the percentage of shares owned by government (*Govown*) are strongly correlated with a correlation coefficient of 0.757. In addition, the percentage of executive directors (*Exec*) and the non-performing loans ratio (*NPL*) are strongly correlated with a correlation coefficient of 0.712. To avoid the problem of multicollinearity, the strongly correlated variables will not be used in the same regression equation.

#### 4. Empirical results

We conduct pooled regressions for the unbalance panel data of our sample. Tables 5-8 show the results of regressions of profitability measured by return on assets and return on equity on board governance factors as well as financial ratios.

Table 5. Results for return on average assets

Dependent variable: <i>ROA</i>								
	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8
<i>Brdsiz</i>		0.008 (1.055)				0.007 (0.881)	0.009 (1.118)	0.009 (1.112)
<i>Exec</i>			-0.002* (-1.864)			-0.001 (-0.957)		-0.003* (-1.667)
<i>Indept</i>				0.002 (1.129)		0.001 (0.625)	0.002 (1.181)	0.002 (0.884)
<i>Brdown</i>					0.236*** (3.127)	0.239*** (3.225)	0.272*** (3.550)	0.273*** (3.586)
<i>Govown</i>	-0.001 (-0.669)	-0.001 (-0.696)		-0.001 (-0.517)	-0.001 (-0.719)		-0.001 (-0.582)	0.000 (-0.007)
<i>Frgown</i>	0.001 (0.524)	0.000 (0.123)	0.000 (0.170)	0.000 (-0.014)	0.002 (0.983)	0.000 (-0.077)	0.000 (-0.019)	0.000 (-0.146)
<i>Blckown</i>	0.000 (-0.162)	0.000 (0.269)	0.000 (0.432)	0.000 (-0.187)	-0.001 (-0.540)	0.000 (0.243)	0.000 (-0.088)	0.001 (0.475)
<i>Capital</i>	0.014 (1.522)	0.013 (1.407)	0.013 (1.544)	0.013 (1.459)	0.014 (1.558)	0.011 (1.253)	0.012 (1.361)	0.013 (1.462)
<i>Loans</i>	-0.013*** (-3.843)	-0.013*** (-3.807)	-0.012*** (-3.813)	-0.013*** (-3.984)	-0.012*** (-3.860)	-0.012*** (-3.832)	-0.013*** (-3.981)	-0.012*** (-3.552)
<i>Deposits</i>	0.002 (0.465)	0.002 (0.428)	0.002 (0.632)	0.002 (0.396)	0.002 (0.509)	0.002 (0.589)	0.001 (0.394)	0.002 (0.570)
<i>Npl</i>	0.000 (-0.123)	0.001 (0.137)		0.001 (0.183)	0.002 (0.482)		0.005 (1.172)	0.008* (1.731)
<i>NIM</i>	0.258*** (7.334)	0.263*** (7.411)	0.242*** (6.706)	0.263*** (7.421)	0.252*** (7.375)	0.247*** (6.887)	0.262*** (7.652)	0.243*** (6.810)
<i>Costinc</i>	-0.016*** (-8.454)	-0.016*** (-8.436)	-0.016*** (-9.106)	-0.016*** (-8.415)	-0.016*** (-8.386)	-0.015*** (-8.408)	-0.016*** (-8.330)	-0.016*** (-8.544)
<i>Liquidity</i>	-0.005 (-1.438)	-0.004 (-1.341)	-0.005 (-1.499)	-0.004 (-1.358)	-0.007** (-2.274)	-0.007** (-2.308)	-0.007** (-2.233)	-0.007** (-2.237)



Table 5 (cont.). Results for return on average assets

Dependent variable: ROA								
	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8
Constant	1.264*** (2.770)	1.121** (2.359)	1.228*** (2.777)	1.268*** (2.781)	1.248*** (2.822)	1.087** (2.384)	1.088** (2.353)	1.059** (2.304)
Adjusted R <sup>2</sup>	0.623	0.623	0.632	0.623	0.645	0.653	0.651	0.656
F value	25.584***	23.379***	29.478***	23.420***	25.616***	24.329***	22.405***	21.275***
N	150	150	150	150	150	150	150	150

Notes: *ROA* – return on average assets; *Brsize* – numbers of directors; *Exec* – percentage of executive directors; *Indept* – percentage of independent directors; *Brdown* – percentage of shares owned by the board; *Govown* – percentage of shares owned by government; *Frgown* – percentage of shares owned by foreigners; *Blckown* – percentage of shares owned by blockholders (above 5%); *Capital* – equity over total assets; *Loans* – loans over total assets; *Deposits* – deposits over total assets; *NPL* – impaired loans over total loans; *NIM* – net interest margin; *Costinc* – cost to income ratio; *Liquidity* – liquid assets over deposits & short-term funding. \*\*\* Significance level of 1% for a two-tailed test. \*\* Significance level of 5% for a two-tailed test. \* Significance level of 10% for a two-tailed test.

Source: Bankscope database and bank annual reports.

We first regress *ROAs* on ownership and financial variables only. Results are shown in Regression (1) in Table 5. Without board governance factors, the adjusted R<sup>2</sup> is 0.623, with an F value of 25.584. The result shows that loans over assets, net interest margin, and cost to income ratio have significant effects (at 1% significance level) on bank return on assets. Specifically, the loan over assets ratio is negatively correlated with return on assets with an estimated coefficient of -0.013. This indicates that high percentage of loans in bank assets is averagely associated with low return on assets. Given the magnitude of problem loans incurred to many Chinese banks, the negative relationship between loans to assets ratio and return on assets is plausible. The results about net interest margin and cost to income ratio are consistent with our expectation. Net interest income has been the largest part of Chinese bank-profits for decades. It is reasonable that more profitable banks have higher net interest margin. Cost is a deducted term in profit computations. So it is obvious that high cost to income ratio is negatively correlated with return on assets.

Board governance factors are added one by one in the next regressions. Results are shown in Regressions 2-5 in Table 5. Board ownership has a significant (at 1% level) positive effect on *ROA* with the estimated coefficient of 0.236. This implies that banks with directors holding more shares have higher return on assets. Directors in this kind of bank are more likely to be stakeholders as they have incentives to increase the value of their shares by increasing the bank's profit. Another effect when board ownership variable is added is the relationship between liquidity ratio and return on assets becomes significant (at 5% level). The relationship has a negative sign, implying that a high percentage of liquid assets relative to deposits and short-term funding tend to decrease return on as-

sets. This is consistent with our intuition since most liquid assets are short-term loans with lower interest rates compared to profitable long-term loans.

Regression 6 in Table 5 put all four board variables together with control variables. Since the percentage of executive directors is highly correlated with government ownership and NPL ratio, we exclude the latter two variables to avoid multicollinearity. The result is similar with previous regressions in that the effects of loans over assets, net interest margin, and cost to income ratio on return on assets are significant at 1% level. Board ownership is still positively correlated with return on assets at 1% significance level. Liquidity ratio is also negatively correlated with return on assets at 5% significance level. Regression 7 in Table 5 excluded the percentage of executive directors variable and added government ownership and NPL ratio which we had dropped previously. The result is quite similar with Regression 6. Regression 8 in Table 5 shows the result of putting all test variables and control variables together regardless of collinearity. The result remains the same in significance with very slight changes in estimated coefficients.

We also investigate the relationships among these variables by type of banks. Hence, regressions are run for state-owned commercial banks, joint-stock commercial banks, and city commercial banks in our sample, respectively. Results are shown in Table 6. For state-owned commercial banks, net interest margin is positively correlated with return on assets, significant at 1% level. Cost to income ratio is negatively correlated with return on assets, significant at 10% level. For joint-stock commercial banks, the relationship between loans over assets and return on assets is significantly negative at 1% level. Net interest margin is positively correlated with return on assets at 1% significance level. Both cost to income

ratio and liquidity ratio are negatively correlated with return on assets at 1% significance level. For city commercial banks, the effect of percentage of executive directors on ROA becomes significant, with a negative estimate of -0.017. Cost to income ratio is also negatively correlated with ROA at 1% significance level.

Table 6. Results for return on average assets by category

Dependent variable: ROA			
	SOCBs	JSCBs	CCBs
<i>Brdsiz</i>	-0.020 (-0.476)	-0.005 (-0.544)	0.026 (1.280)
<i>Exec</i>	-0.004 (-0.584)	0.001 (0.894)	-0.017*** (-2.793)
<i>Indept</i>	0.002 (0.139)	0.000 (0.168)	0.005 (0.996)
<i>Brdown</i>	25.377 (0.647)	4.322 (1.592)	0.289** (2.548)
<i>Govown</i>	-0.007 (-0.801)	0.000 (0.121)	0.003 (0.734)
<i>Frgown</i>	-0.009 (-1.304)	-0.005 (-1.477)	-0.002 (-0.281)
<i>Blckown</i>	0.000 (0.059)	0.000 (-0.786)	0.003 (1.092)
<i>Capital</i>	0.007 (0.510)	0.024 (1.685)	0.022 (0.741)
<i>Loans</i>	-0.012 (-0.987)	-0.024*** (-4.687)	-0.007 (-0.856)
<i>Deposits</i>	0.001 (0.058)	0.003 (0.586)	-0.002 (-0.208)
<i>NPL</i>	0.012 (1.361)	-0.006 (-0.725)	0.026 (1.178)
<i>NIM</i>	0.569*** (3.090)	0.351*** (4.635)	0.105 (1.589)
<i>Costinc</i>	-0.014* (-2.071)	-0.017*** (-5.050)	-0.022*** (-3.520)
<i>Liquidity</i>	-0.008 (-0.987)	-0.017*** (-2.839)	-0.002 (-0.326)
Constant	1.353 (0.880)	1.908*** (3.205)	1.434 (1.287)

Adjusted <i>R</i> <sup>2</sup>	0.783	0.895	0.458
<i>F</i> value	10.020***	31.298***	4.738***
<i>N</i>	36	51	63

Notes: *ROA* – return on average assets; *Brdsiz* – numbers of directors; *Exec* – percentage of executive directors; *Indept* – percentage of independent directors; *Brdown* – percentage of shares owned by the board; *Govown* – percentage of shares owned by government; *Frgown* – percentage of shares owned by foreigners; *Blckown* – percentage of shares owned by blockholders (above 5%); *Capital* – equity over total assets; *Loans* – loans over total assets; *Deposits* – deposits over total assets; *NPL* – impaired loans over total loans; *NIM* – net interest margin; *Costinc* – cost to income ratio; *Liquidity* – liquid assets over deposits & short term funding. \*\*\* Significance level of 1% for a two-tailed test. \*\* Significance level of 5% for a two-tailed test. \* Significance level of 10% for a two-tailed test.

Source: Bankscope database and bank annual reports.

We carried out similar investigations for return on equity instead of return on assets. Unlike the return on assets, the connections between return on equity and independent variables looks different. The main factors affecting the return on equity are block ownership, capital ratio, deposits over assets, and cost to income ratio. In our results, block ownership is negatively correlated with return on equity, implying that the more concentrated in ownership structure, the lower return on equity is. This indicates the possibility of the benefits of banks and small shareholders being taken advantage of blockholders. Capital ratio is positively correlated with return on equity. This implies that more equity relative to assets is associated with high return. The relationship between deposits over assets and return on equity is positive, implying that high deposits are associated with high return. The reason is that for Chinese banks, deposits are low-cost funding resources since the interest rates of deposits are much lower than those of loans. Cost to income ratio is negatively correlated with return on equity, similar to the result of return on assets. When regressed by banktype, board ownership and percentage of executive directors are seen to have significant effect on return on equity for city commercial banks, which is also quite similar with the results of return on assets.

Table 7. Results for return on average equity

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8
<i>Brdsiz</i>		-0.292 (-0.521)				-0.152 (-0.244)	-0.262 (-0.416)	-0.265 (-0.419)
<i>Exec</i>			-0.038 (-0.434)			-0.035 (-0.366)		-0.059 (-0.493)
<i>Indept</i>				-0.021 (-0.148)		0.003 (0.021)	0.024 (0.154)	0.011 (0.067)
<i>Brdown</i>					4.044 (0.710)	4.387 (0.768)	3.705 (0.630)	3.727 (0.632)
<i>Govown</i>	0.103 (1.246)	0.105 (1.256)		0.102 (1.212)	0.103 (1.237)		0.106 (1.248)	0.120 (1.338)
<i>Frgown</i>	-0.020 (-0.124)	0.011 (0.066)	-0.005 (-0.032)	-0.009 (-0.047)	-0.003 (-0.021)	0.025 (0.138)	0.010 (0.054)	0.003 (0.017)

Table 7 (cont.). Results for return on average equity

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8
<i>Blckown</i>	-0.131*	-0.148*	-0.062	-0.130*	-0.137*	-0.077	-0.152*	-0.137
	(-1.725)	(-1.786)	(-0.867)	(-1.715)	(-1.794)	(-0.964)	(-1.787)	(-1.514)
<i>Capital</i>	1.638**	1.674**	1.583**	1.644**	1.637**	1.585**	1.662**	1.681**
	(2.478)	(2.511)	(2.445)	(2.473)	(2.471)	(2.401)	(2.479)	(2.496)
<i>Loans</i>	0.190	0.185	0.102	0.196	0.195	0.103	0.184	0.211
	(0.784)	(0.765)	(0.444)	(0.796)	(0.805)	(0.427)	(0.736)	(0.823)
<i>Deposits</i>	0.569**	0.574**	0.559*	0.572**	0.571**	0.564*	0.573**	0.588**
	(2.021)	(2.033)	(1.973)	(2.020)	(2.024)	(1.968)	(2.012)	(2.048)
<i>NPL</i>	-0.366	-0.403		-0.377	-0.325		-0.349	-0.284
	(-1.279)	(-1.364)		(-1.267)	(-1.114)		(-1.116)	(-0.836)
<i>NIM</i>	1.906	1.735	1.634	1.863	1.804	1.429	1.709	1.288
	(0.740)	(0.667)	(0.610)	(0.716)	(0.698)	(0.518)	(0.651)	(0.465)
<i>Costinc</i>	-0.288**	-0.289**	-0.349***	-0.289**	-0.279*	-0.336**	-0.280*	-0.291**
	(-2.039)	(-2.043)	(-2.610)	(-2.036)	(-1.960)	(-2.420)	(-1.952)	(-2.001)
<i>Liquidity</i>	0.278	0.267	0.242	0.276	0.231	0.183	0.228	0.229
	(1.177)	(1.124)	(1.039)	(1.160)	(0.938)	(0.744)	(0.920)	(0.921)
Constant	-45.665	-40.519	-37.570	-45.702	-45.929	-35.132	-41.246	-41.908
	(-1.370)	(-1.162)	(-1.144)	(-1.366)	(-1.375)	(-1.000)	(-1.163)	(-1.178)
Adjusted R <sup>2</sup>	0.068	0.063	0.062	0.061	0.064	0.046	0.052	0.047
F value	2.084**	1.909**	2.093**	1.883**	1.934**	1.605*	1.628*	1.520
N	150	150	150	150	150	150	150	150

Notes: *ROE* – return on average equity; *Brdsize* – numbers of directors; *Exec* – percentage of executive directors; *Indept* – percentage of independent directors; *Brdwn* – percentage of shares owned by the board; *Govown* – percentage of shares owned by government; *Frgown* – percentage of shares owned by foreigners; *Blckown* – percentage of shares owned by blockholders (above 5%); *Capital* – equity over total assets; *Loans* – loans over total assets; *Deposits* – deposits over total assets; *NPL* – impaired loans over total loans; *NIM* – net interest margin; *Costinc* – cost to income ratio; *Liquidity* – liquid assets over deposits & short-term funding. \*\*\* Significance level of 1% for a two-tailed test. \*\* Significance level of 5% for a two-tailed test. \* Significance level of 10% for a two-tailed test.

Source: Bankscope database and bank annual reports.

Table 8. Results for return on average equity by category

Dependent variable: ROE			
	SOCBs	JSCBs	CCBs
<i>Brdsize</i>	-0.301	-1.170	0.674
	(-0.135)	(-0.541)	(1.425)
<i>Exec</i>	0.021	-0.176	-0.255*
	(0.059)	(-0.481)	(-1.830)
<i>Indept</i>	-0.160	-0.130	0.141
	(-0.179)	(-0.220)	(1.257)
<i>Brdwn</i>	-69.096	142.668	4.751*
	(-0.033)	(0.228)	(1.801)
<i>Govown</i>	-0.348	0.726	0.034
	(-0.785)	(1.652)	(0.320)
<i>Frgown</i>	-0.208	-0.159	-0.005
	(-0.581)	(-0.1930)	(-0.037)
<i>Blckown</i>	-0.064	-0.301	0.044
	(-0.149)	(-1.041)	(0.640)
<i>Capital</i>	1.600*	5.809*	-2.168***
	(2.032)	(1.738)	(-3.080)
<i>Loans</i>	-0.239	-0.286	-0.119
	(-0.381)	(-0.244)	(-0.663)
<i>Deposits</i>	0.303	2.728**	-0.171
	(0.630)	(2.578)	(-0.982)
<i>NPL</i>	0.191	0.120	0.627
	(0.415)	(0.064)	(1.230)

<i>NIM</i>	9.422	-16.912	2.316
	(0.954)	(-0.970)	(1.514)
<i>Costinc</i>	-0.029	-1.009	-0.487***
	(-0.082)	(-1.337)	(-3.300)
<i>Liquidity</i>	-0.366	1.362	0.037
	(-0.874)	(0.978)	(0.264)
Constant	8.686	-137.420	50.304*
	(0.105)	(-1.003)	(1.940)
Adjusted R <sup>2</sup>	0.233	0.024	0.325
F value	1.758	0.915	3.136***
N	36	51	63

Notes: *ROE* – return on average equity; *Brdsize* – numbers of directors; *Exec* – percentage of executive directors; *Indept* – percentage of independent directors; *Brdwn* – percentage of shares owned by the board; *Govown* – percentage of shares owned by government; *Frgown* – percentage of shares owned by foreigners; *Blckown* – percentage of shares owned by blockholders (above 5%); *Capital* – equity over total assets; *Loans* – loans over total assets; *Deposits* – deposits over total assets; *NPL* – impaired loans over total loans; *NIM* – net interest margin; *Costinc* – cost to income ratio; *Liquidity* – liquid assets over deposits & short-term funding. \*\*\* Significance level of 1% for a two-tailed test. \*\* Significance level of 5% for a two-tailed test. \* Significance level of 10% for a two-tailed test.

Source: Bankscope database and bank annual reports.

## Conclusions

In this research, we empirically examine the relation between board governance and the performance of

Chinese commercial banks. Chinese commercial banks have experienced tremendous growth over the past decade. In recent years, Chinese banks have implemented a series of bank reforms and a board of director system has been put in place in banks as more and more Chinese banks are privatized. While some are convinced that this Westernized governance approach leads to better business results, many have cast doubts on the effectiveness of China's embryonic board governance system due to its long history of command economy. Traditionally, boards in China have been seen as more of a rubber stamp rather than as a value-added entity. Are those bank directors true "watch dogs" for shareholders or they are party designers captured by party officials powering over Chinese banks?

Evidence from existing board governance literature suggests that better firm performance is associated with higher percentage of independent board of directors, smaller board size, and higher managerial ownership. Board composition, board size, and managerial ownerships have been proven to be successful governance tools in the West. The issue is: are these Western governance mechanisms effective in reducing agency cost for Chinese banks?

Consistent with existing board governance literature, we find that board governance has a significant impact on the performance of Chinese banks. Specifically, higher board ownership, lower percentage

of insiders on board, and lower block ownership are associated with better bank performance. In addition, to improve bank performance, Chinese bank managers should also focus on effectively controlling bank operating costs, increasing net interest margins, and closely monitoring loan productivity.

Empirical evidence from this study has important policy implications in transforming China's banking system into a more transparent and more efficient-market driven system with sound governance. Our results suggest that banks with stronger governance structure produce better bank performance. Western corporate governance practices can be applied effectively in China. China should continue and speed up its effort in introducing global best practice and accountability in governance. China's recent initiative of establishing a national board of directors and providing professional training and education to directors mark a major commitment to improve corporate accountability and performance. It is an exciting step China takes in the right direction on a road towards full transparency and effective corporate governance.

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## Appendix A

Table 1A. Variable definitions

Variable name	Definition
<i>Roa</i>	Return on average assets, equal to profit after tax/average total assets.
<i>Roe</i>	Return on average equity, equal to profit after tax/average total equity.
<i>Brdsize</i>	Total number of directors in the board.
<i>Exec</i>	Percentage of executive directors in the board, equal to number of executive directors/total number of directors.
<i>Indept</i>	Percentage of independent directors in the board, equal to number of independent non-executive directors/total number of directors.
<i>Brdwn</i>	Percentage of shares owned by the board, equal to number of shares owned by the board/total number of outstanding shares of the bank.
<i>Govown</i>	Percentage of shares owned by government, equal to number of shares owned by government/total number of outstanding shares of the bank.
<i>Frgown</i>	Percentage of shares owned by foreigners, equal to number of shares owned by foreign investors/total number of outstanding shares of the bank.
<i>Blckown</i>	Percentage of shares owned by blockholders, equal to number of shares owned by all single shareholders each holding more than 5% of total shares/total number of outstanding shares of the bank.
<i>Capital</i>	Equity over assets, equal to total equity/total assets of the bank.
<i>Loans</i>	Net loans over assets, equal to net loans/total assets of the bank.
<i>Deposits</i>	Deposits and short-term funding over assets, equal to (deposits + short term funding)/total assets of the bank.
<i>Npl</i>	Non-performing loans ratio, equal to impaired loans/total loans of the bank.
<i>Nim</i>	Net Interest Margin, equal to (interest income – interest expenses)/total assets of the bank.
<i>Costinc</i>	Cost to income ratio, equal to overheads/(net interest income + other operating income).
<i>Liquidity</i>	Liquidity ratio, equal to liquid assets/(deposits + short-term funding).

## Appendix B

Table 2A. List of sample banks

SOCBs	JSCBs	CCBs
Industrial and Commercial Bank of China	China CITIC Bank	Bank of Beijing
Agricultural Bank of China	China Everbright Bank	Bank of Shanghai
Bank of China	Hua Xia Bank	Bank of Tianjin
China Construction Bank	Shenzhen Development Bank	Bank of Nanjing
Bank of Communications	China Merchants Bank	Bank of Ningbo
	Shanghai Pudong Development Bank	Bank of Wenzhou
	Industrial Bank	Hangzhou City Commercial Bank
	China Minsheng Banking Corp., Ltd.	Wuxi City Commercial Bank
	China Bohai Bank	Yangzhou City Commercial Bank
		Nantong City Commercial Bank
		Huzhou City Commercial Bank
		Jinan City Commercial Bank
		Dongying City Commercial Bank

Table 2A (cont.). List of sample banks

SOCBs	JSCBs	CCBs
		Yantai City Commercial Bank
		Jiujiang City Commercial Bank
		Linyi City Commercial Bank
		Rizhao City Commercial Bank
		Fuzhou City Commercial Bank
		Qingdao City Commercial Bank
		Laiwu City Commercial Bank
		Xiamen City Commercial Bank
		Weifang City Commercial Bank
		Zhengzhou City Commercial Bank
		Weihai City Commercial Bank
		Liuzhou City Commercial Bank
		Xiaogan City Commercial Bank
		Yingkou City Commercial Bank

Table 4. Pearson correlations

	<i>ROA</i>	<i>ROE</i>	<i>Brdsize</i>	<i>Exec</i>	<i>Indept</i>	<i>Brdwn</i>	<i>Govown</i>	<i>Frgown</i>	<i>Blckown</i>	<i>Capital</i>	<i>Loans</i>	<i>Deposits</i>	<i>NPL</i>	<i>NIM</i>	<i>Costinc</i>	<i>Liquidity</i>
<i>ROA</i>	1.000	.350	.206	-.322	.188	.272	-.130	.195	-.156	-.010	-.150	-.069	-.338	.551	-.646	-.016
<i>ROE</i>	.350	1.000	.116	-.184	.105	.115	-.101	.110	-.148	.096	-.032	.026	-.211	.154	-.191	.074
<i>Brdsize</i>	.206	.116	1.000	-.511	.602	-.143	-.405	.432	-.506	.133	-.137	.016	-.449	.015	-.118	-.012
<i>Exec</i>	-.322	-.184	-.511	1.000	-.468	-.112	.757	-.244	.621	-.189	.012	.219	.712	-.347	.108	-.202
<i>Indept</i>	.188	.105	.602	-.468	1.000	-.107	-.374	.483	-.218	.147	.050	.006	-.476	.077	-.108	-.028
<i>Brdwn</i>	.272	.115	-.143	-.112	-.107	1.000	-.104	-.088	.043	.069	-.039	-.185	-.261	.168	-.132	.331
<i>Govown</i>	-.130	-.101	-.405	.757	-.374	-.104	1.000	-.069	.657	-.145	-.208	.195	.610	-.239	.013	-.227
<i>Frgown</i>	.195	.110	.432	-.244	.483	-.088	-.069	1.000	-.060	.239	-.250	.087	-.253	.038	-.088	-.059
<i>Blckown</i>	-.156	-.148	-.506	.621	-.218	.043	.657	-.060	1.000	.128	-.061	-.007	.345	-.104	.161	-.078
<i>Capital</i>	-.010	.096	.133	-.189	.147	.069	-.145	.239	.128	1.000	-.244	-.481	-.202	.116	.393	.185
<i>Loans</i>	-.150	-.032	-.137	.012	.050	-.039	-.208	-.250	-.061	-.244	1.000	-.059	.030	.224	-.003	-.118
<i>Deposits</i>	-.069	.026	.016	.219	.006	-.185	.195	.087	-.007	-.481	-.059	1.000	.217	-.277	-.079	-.354
<i>NPL</i>	-.338	-.211	-.449	.712	-.476	-.261	.610	-.253	.345	-.202	.030	.217	1.000	-.295	.261	-.192
<i>NIM</i>	.551	.154	.015	-.347	.077	.168	-.239	.038	-.104	.116	.224	-.277	-.295	1.000	-.282	.116
<i>Costinc</i>	-.646	-.191	-.118	.108	-.108	-.132	.013	-.088	.161	.393	-.003	-.079	.261	-.282	1.000	.069
<i>Liquidity</i>	-.016	.074	-.012	-.202	-.028	.331	-.227	-.059	-.078	.185	-.118	-.354	-.192	.116	.069	1.000