Chinese Banking Reforms, An Analysis and Evaluation of Non-Performing Loans (NPL's)

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1 Introduction

In developing and transition economies, the importance of a well-functioned banking sector has been acknowledged as an engine of economic growth and development (La Porta *et al.,* 2002). In recent years, the banking sector reforms have become a high priority policy agenda for these countries. There are many commonalities in banking systems of transition economies, such as poor risk management skills, lack of managerial expertise, weak legal and regulatory framework, poor oversight of institutions and underdevelopment of credit assessment system. Deregulation and financial liberalization along with the creation of two-tier banking system are the similarities of earlier market-oriented reforms in China. The privatization of state-owned banks is the subsequent strategies for financial reforms. The prevalence of state ownership is one prominent feature of banking system in transition economies. The existence of state ownership in banks is based on the argument that those sectors which has high social return but weak financial standing are unable to attract the private capital, hence the government can channel capital to those sectors and projects to keep their social return high. So the profit oriented private sector is unreliable to balance between social and economic objectives in China. (Huibers, 2005).

The banking system in China is heavily influenced by the state and less skilled in term of credit assessment and risk management. However, the on-going banking sector reforms have significantly improved the asset quality and enhanced the banking sector performances. In wake of these reforms, a significant reduction in non-performing loans (NPLs) is observing with the increase in profitability. This immediate improvement in the asset quality is not only attributed to the banking sector reforms but also by transferring the NPL's from banks to asset management companies to clean up the balance sheets of state owned commercial banks (SOCB's). Whether the on-going banking sector reforms could make the banking system viable in the long-run or it needs more fundamental changes to improve the asset quality of the Chinese bank is unknown and will be examined in this study.

The effect of political culture, corporate governance structure and instability of economic conditions on non-performing loans is rarely addressed in banking literature. This examination has its due importance to identify the main causes of non-performing loans in China and transition economies. The problem of non-performing loans causes inefficiency and financial burden in the banks. Chinese banking sector has suffered badly with this chronic disease. Several reforms and measures have been taken to counter with NPLs problem by the Chinese Government. These reforms include corporate governance settings, macroeconomic stability and ownership restructuring.

This study investigates the impact of corporate governance settings, macroeconomic changes and political factors on non-performing loans of Chinese commercial banks. Since, China is an emerging and transitory economy, therefore, non-performing loans of banks is a common

problem. To investigate this research problem, a larger data set of Chinese banking NPL's and corporate governance variables are used in this study. The objective of this study is two-fold. First, is to look at the history of Chinese banking reforms and how these reforms have been carried out or implemented. Second is to make an evaluation and analysis of non-performing loans in Chinese banks and role of corporate governance in this context.

China has experienced a very rudimentary banking sector reforms during the past three decades. It is imperative to discuss the outcomes of these reforms in banking practices in China. The non-performing loans is a major concern of Chinese banks as well as the role of corporate governance in resolving the issue of Chinese banks NPLs must be explore further.

Therefore, we first discuss the Chinese banking sector reforms in detail. The third section provides a brief literature review on non-performing loans, and role of corporate governance. Fourth section of this study explain the methodology and variable construction along with the econometric model to be tested. Fifth section discusses the results and outcomes of this study. Final section will summarize the finding of this study.

The outcomes of this study are very encouraging and give some direction to policy maker in order to settle a serious issue Chinese banking. This study shows that how corporate governance settings such as board size, board independence, number of supervisors, ownership concentration and association among top ten shareholders affect non-performing loans of banks in China. In addition, the macroeconomic changes such as GDP growth rate and interest rate are also included to determine its impact on non-performing loans of banks.

2 China's Banking Reforms

Unlike to some other transitional economies of the world, where a shock therapy approach was adopted to restructure their banking sector, China has adopted a rehabilitation approach to restructure its banking sector along with the economic reforms. One of the clear objectives of financial reforms was to restructure the banking sector from state-owned, monopolistic and policy driven to a split ownership, profit-oriented and more competitive one.

2.1 First Stage Reforms

Over a span of three decades, the banking sector reforms can be divided into different phases (Tang, 2005). The first phase had started in 1979 until 1984, where the focus was on institutional initial restructuring. During this phase, the People's Bank of China (POBC) was split into four specialized and one central bank. The POBC had given a role of central bank but in a restricted manner where it supposed to report the State Council of the country. The four specialized banks, namely Bank of China (BOC), Agriculture Bank of China (ABC), Industrial and Commercial Bank of China (ICBC), and China Construction Bank (CCB) which latterly became China Construction Bank Corporation (CCBC) in 2004, started their operation under specific roles. (Zhang et al., 2012) The segmentation of Big-Four banks were gradually

diminished after 1984, when they were allowed to perform commercial banking operation. (Cheng et al., 2010)

In order to make banking sector more competitive, the POBC lifted restrictions on new entries during mid-1980s. In a period of eight years, between 1985 to 1993, a number of new banks were come into the industry by mergers, restructuring or incorporation with the objective of having more competition with Big-Four banks. (Abiad et al., 2010) These new JSCBs have diverse equity structure included as compared to Big-Four, where the controlling shareholder is the government. The JSCBs equity structure included central government, local government and other private investors and institutions. These banks are also allowed to raise their equity from various channels outside the government and fully responsible for their lending policies.

Another important contribution of that part of reforms was the fact that the foreign banks had been gradually allowed by the government to open their branches in China. It was the first time after 1949, that foreign banks had started their operations in China in the beginning of 1978. However, these foreign banks were allowed doing their limited business activities to some specific cities of China. However, in 1990, foreign banks allowed to do foreign currency business in Pudong New Zone in Shanghai. Further, the foreign banks also permitted to expand their operation into 13 other large Chinese cities on the East Coast Mainland in 1992. More importantly in 1908s, flexible interest rates were introduced by these banking reform which allowed banks to adjust their interest rates on commercial loans within in a certain margin of administrated rate set by the PBC. Specially, small credit cooperatives allowed to set interest rate 30% to 60% higher than the rates set by the Big-Four, the JSCBs and other banks. However, such facility was not available for deposit rates.

2.2 Second Stage Reforms After1994

The government of China was reconsidered its wisdom of pervasive political influence on lending and credit decisions of SOCBs in early 1990, because the asset quality of SOCBs were badly deteriorated. One third of the state owned bank loans were policy loan during that regime. In 1994, the government had established three policy banks to encounter that problem. The purpose of these three policy banks were to strike off state owned bank's policy loans and to increase the pace of transformation of state owned banks into true commercial banks. The China Development Bank, China Export-Import Bank and China Agricultural Development banks are the three policy banks. Unfortunately the lending decisions by these banks were not basing on true commercial basis due to persistent intervention of the government in lending policy. Therefore, the banking reforms during this phase were considered unsuccessful.

In 1995, two major legislative reforms occurred. The Law of the People's Bank of China commonly known as the Central Bank Law had implemented in March 1995. The Central Bank Law further strengthen the role of The People's Bank of China to act as an autonomous body with less intervention of central government in order to dictate the monetary policy. However,

the Law stated that the People's Bank of China is operated under the leadership of State Council, but should not be intervened by the local government, individuals and other administrative organs. The main responsibilities of The POBC are to implement monetary policy, to regulate financial system in China and to supervise the financial institutions. Another important legislation was the introduction of the Commercial Banking Law in May 1995. The purpose of this legislation was to develop an independent and diversified market-oriented modern banking system in China.

Chinese banking legislation was compatible with the provisions of the Basel Committee on Banking Supervision after these reforms. (Chen et al., 2005). In addition, the growing banking problems like non-performing loans and capital adequacy which most of the banks had pushed the government to speed up the process of banking reforms. China's banking key reforms included the re-organization of the POBC, abolishing the loan quota system, re-capitalization of the state owned banks, introduction of a risk-based loan classification system and disposal of non-performing loans.

In this connection, the POBC had stopped the credit plan system for both working capital and fixed investment loans, which had previously applied to commercial banks, by the start of 1998. The POBC also began the promotion of asset liability ratio management and risk control by setting an indicative non-binding target as an indirect monetary policy. In another word, the POBC had no longer directed commercial banks for their credit decision, and instead, only provided voluntary guidance. This reform gave the commercial banks more freedom to set their own lending target in accordance with their commercial objectives.

In early 1980s, the POBC put a token effort in order to determine the bank loans quality, and before 1995, the major banks had their own standards to declare banks loans as non-performing loans. However, in 1995, the POBC had announced four-category loan classification; normal loans, past due loan, doubtful loans and bad loans. In accordance with this system, past due loans, doubtful loans and bad loans were classified as non-performing loans, while banks were not required to classify it any other overdue loans. The basis of this system is on payment schedule of loans rather than on any risk assessment. Later on, after the Asian Financial Crisis of 1997, the POBC had realized the importance of risk management system in the banking sector and then an internationally accepted loan classification system had introduced by the POBC in 1998. The sub-standard loans, doubtful loans, loss and any bank's provision according to the defined risk category of the loans were included in non-performing loan. Initially, a five-category loan classification system was implemented experimentally, and was not fully implemented by all banks until 2002.

The balance sheets of Big-Four were rehabilitated from non-performing loans by the Chinese government through injecting 270 billion RMB. This capital injected into the Big-Four banks in form of government special bonds. First, the POBC relaxed the legal reserve requirement from 13% to 8%, freeing up about 270 billion RMB bank liquidity. Then, the

additional liquidity used by the Big-Four banks in order to buy government bonds issued by Ministry of Finance. Finally, the receipts of the bonds purchased by the Big-Four banks transferred to the Big-Four banks as fresh equity capital by the Ministry of Finance. The capital adequacy ratios of the Big-Four banks significantly improved with changing the asset liability position in the balance sheets by this recapitalization. In result of this recapitalization in 1998, the capital adequacy ratio for the Big-Four banks had increased to 6.19%. However, it was still less than the recommended capital adequacy ratio by Basel Accord 1998 as 8%.

The SOCBs had given two rounds of bailouts packages by the government in the form of NPLs buyout by the asset management company and capital injection for their capital restructuring. These efforts made by the government were considered the most significant part of banking sector reforms. In first round, government injected RMB270 billion into four SOCBs in 1998 to strengthen their capital structure in the form of issuing bonds. Moreover, by using the state's massive foreign reserves, the government injected further capital of US$ 22.5 billion in BOC and CCBC in 2003 and US$ 15 billion into ICBC in 2005.

In 1999, the Chinese government had created four asset management companies with the intention to purchase and manage the substantial amount of non-performing loans from the state owned banks. The purpose of creating these asset management companies was to reduce the volume of non-performing loans and to regain the repute and the international competitiveness of the state owned banks. The idea behind in creation of four AMCs was to assign each AMC to each state owned commercial bank. The four AMCs were, Cinda AMC, Oriental AMC, Great Wall AMC, and Huarong AMC. The Cinda AMC was assigned to China Construction Bank, Oriental AMC assigned to Bank of China, Great Wall assigned to Agricultural Bank of China and Huarong assigned to Industrial and Commercial Bank of China. The PoBC was the supervisory body of these AMCs.

These AMC were given a budgetary life span of 10 years with the guidance of State Securities Supervisory Committee of China and Ministry of Finance. Initially in 1999-2000, these AMCs bought 1.4 trillion RMB of non-performing loans at their book values, which was approximately 19% of the total loans of state owned banks. With this purchase, the NPLs ratio of Big-Four was reduced to 25% as compared to 35%, which was before the purchase of these loans. However, in order to divest NPLs of SOCBs in second round, the government had transferred the NPLs of SOCBs to four newly established asset management companies in different time periods, RMB 1.4 trillion in 1999, RMB 475 billion in 2004, and RMB 705 billion in 2005. The AMCs on the other hand tried to seek out the purchased assets as much as possible through debt equity swap, securitization, and asset restructuring and outright asset sales

Another important achievement of these reforms in China was interest rate liberalization. The interest rate liberalization enhances the role of market forces in resource allocation. During the Ninth Five-year Plan Period in 1995, regulations issued under the title of the POBC Program of Deepening Interest Rate Reform and marked as the beginning of interest rate liberalization.

The intention toward interest rate liberalization had gradually started during the second round of bank reforms in 1994.

Though, the government of China initiated and implemented the bank reforms in letter and spirit, but still there are some gray areas which need to be identified and addressed. The big four banks are one of the dominant part of Chinese banking system. Despite the ownership restricting and listing of these banks on Chinese stock market, these banks are still under government influence. There is a need to introduce and implement a strong code of corporate governance structure. The lack of effective corporate governance structure is one of the reasons that these banks are still intervened by the government. However, this intervention is not explicitly like previous practice before the bank reforms, but still government enforced these banks to lend credit to non-profit oriented SOEs to fulfil its social objectives and causes. It is also very important for the future bank reforms that how quickly government will step back and allow banks to operate in a competitive market environment.

3 Literature Review

In recent years several studies investigated the degree of relationship between financial development, bank lending and economic activities at the local level. (Guiso et al.,2004; Becker, 2007). Some other academicians have examined the role of banks in transmitting the effect of economic fluctuations and monetary policy to the local level and assure the local financial development. (Kashyap et al., 2000). Becker (2007) finds that if there is segmentation in the capital markets, then there is a chance of variation of output due to variation of bank lending. Whenever banking systems temporarily break down or operate ineffectively, firm's ability to obtain funds to fuel existing projects and pursuing new endeavors is curtailed. The loan quality in banking institutions have become increasingly complex, and profitability become a main driver of a bank performance. (Bergeret al. 2010).Phillips et al. (2014) and Spring (2014) argue that there is a tremendous systematic risk for the banking sector and whole Chinese economy because approximately 40% of the China's economy and 50% of the banking assets are of bad quality. Some loans are considered as non-performing loans when borrower may not able to pay them in partial or full. (Fukuyama et al., 2010)

The Cinderella of its internal functions in Chinese banking sector has been the risk management. The extra influence of the political forces and the government directive on bank's lending decision in China somewhat ignore the standards of risk management resulting in large non-performing loans. Kent (2013) evaluated the risk management practices in Chinese banks and examined the importance of risk management standard in improving the bank's income efficiency. The results of the study supported the argument that there is a significant relationship between risk metrics and bank's income efficiency.

The financial institutions globally have faced baking crisis repeatedly in different forms such as Financial crisis of 2008, Mexican crisis 1994-1995 and 1997 Asian crisis etc. These

events are on face of unstable banking and banks behaviour towards risk taking. There are number of factors behind these events playing their role. The structure of banks ownership is quite important and interesting here because several factors interact and alter governance, like quality of bank governance. The relationship between bank ownership and performance is unresolved albeit a significant body of literature available on this issue and subject. Following to property rights hypothesis, private enterprise should perform better than the public enterprise (Millward, 1980). Berger et al (2005) suggest that there are two common strategies to privatize state banks, attracting foreign investors and going public. The inclusion of foreign investors into the ownership structure not only bring the much needed capital for the firm but also bring new technology, modern banking, superior managerial skills and advancement in the financial intermediation. Fries et al (2005) suggest that the foreign ownership in banking sector increase banking efficiency. Bonin et al (2005) observe during banking privatization it is desirable to include strategic foreign investor. Bradley et al (2003) argue that IPOs may also be considered as strategic move to increase the publicity and reputation of a firm. Market discipline is also one factor for banks to get public because it encourages managers to increase bank efficiency in order to stay in the market. Jiang et al (2009) find that public traded firms are more efficient in USA and China respectively.

A few years ago, Chinese banking sector got attention by the academicians before it was neglected and ignored since long. Recently studies show that Chinese banking sector is a very interesting area for researchers to explore the insights. For example, Berger et al (2009), Yao et al (2007) and Jiang et al (2009) observe that Joint Stock Commercial Banks has better performance than State Owned Commercial Banks but the overall efficiency has also improved. On the other hand, Fu et al (2007) and Chen et al (2005) have different opinion, they think that overall efficiency has declined from 1993 to 2002 as compared to 1985 to 1992, also the state owned banks are more efficient than joint stock commercial banks. Whereas, those banks which have some foreign ownership are more efficient that those which do not have any foreign ownership between 1994 to 2003.(Berger et al., 2009).

Jiang et al (2009) observe that minor foreign ownership is better for domestic banks efficiency in long run, whereas, IPOs has its impact on banking efficiency in short run. Wang et al (2012) applied tobit regression and showed that the bank size and the ownership structure are the main influencing factor for banking efficiencies in China, however, capital adequacy ratio has the insignificant impact on efficiency level. Jiang et al (2013) conducted a study related to static effect of ownership and the dynamic effect of privatization on banks performance in China during 1995-2010. The results suggested that the dynamic private intermediary such as joint stock commercial banks and city commercial banks performed better relative to state owned commercial banks of China. However, the listed banking institutions performed well regardless to ownership structure, because they get extra monitoring and vetting in the capital markets. The privatization of banking institutions has improved the performance in term of revenue inflow and efficiency gains in both short and long run. The positive long run impact on banking

performance and efficiency is more important for minority foreign ownership. Further, the interest income efficiency and non-interest income efficiency have also examined for Chinese banks. The results showed that the Chinese banks are more efficient in generating interest income as compared to non-interest income, but the latter has improved significantly in the sampled period.

In the decades of 1980's and 1990's policy makers along with academics endorsed the privatization reforms that have since performed in many emerging economies. Recently the research focus has transferred to outcomes of privatization programs and a number of them were implemented with little success. How does concentrated ownership influence the banks riskiness? Number of answers is available in the existing literature to this particular question. In poor investor's protection environment, shareholders who running the firms extract benefits (La Porta et al., 2000) and control benefits is the need for ownership concentration. Violence of ownership concentration in common law countries means that governance mechanism is not restricting managers to extract the benefits. Restricting the new shareholders facilitates pre-existing controllers to control the firms. Ownership concentration plays vital role in financial institutions because it substitutes the board of directors as the main internal mechanism of governance.Casu et al. (2013) and Fujii et al (2014) conclude that the ownership structure of the banks has its direct effect on bank's performance.

For example Shleifer et al.(1986) reveal that through ownership concentration, corporate control could be enhance by improving the monitoring of management. With low concentrated ownership, shareholders have low incentive to monitor. With more concentrated ownership, the cost of shirking will be allocated to large shareholders who therefore increase the monitoring incentives. The early studies on banking governance believed that an increase in the corporate value significantly depend upon ownership structure (Allen et al.,1991). These studies focused on US banking industry. Shehzad et al (2010) examine relationship between ownership concentration and impaired loans and capital adequacy among 50 different countries. They collected the data of 500 banks over the time period of 2005 and 2007. They statistically show that ownership concentration significantly reduce the nonperforming loans in the banking industry along with the improvement in the capital adequacy ratioThere are lot of factors pushing private enterprises managers to do the good job as high chances of takeovers, loosing job and negative reputation in the market.

It is very often that privatization removers obstacles in efficient resource allocation posed by the government control and it becomes easy to removal of government appointed managers whose objective is far away from the maximizing of wealth. In contrast, state owned ownership is argued inefficient due to the most important agent-principle problem. In state owned enterprises, managers may pursue their own benefits rather than the owners. Secondly the issue of free rider which states that state owned ownership means that all citizens are the co-owners of that firms who are not in practice have any power to control and minor tiring of the management of state

owned entities document by (Huibers, 2005). Therefore, state owned enterprises have multiple conflicting goals.

4 Methodology

The Chinese commercial banking system is composed of various components such as State Owned Commercial Banks (SOCBs), Joint Stock Commercial Banks (JSCBs), City Commercial banks (CCBs) and Rural Commercial Banks (RCBs). However, this study has taken a sample of all listed commercial banks of China from 2000-2013. The listed commercial banks of China include all major components of Chinese commercial banking sectors such as JSCBs, CCBs and SOCBs. The data of Chinese Banks are collected from CSMAR, a very reputable database of Chinese listed firms, from Almanac of China Finance and Banking a detailed periodic survey book on Chinese banking and economic and China Statistical Year Book, from 2000 to 2013.

Currently, there are sixteen commercial banks of China, which are listed on Shanghai and Shenzhen stock exchanges. After the ownership reforms in different periods, all SOCBs got listed on stock exchanges and became JSCBs. These listed banks are held more than 60% of the commercial banks assets in China by the end of 2013. The majority of share in Chinese banking sector assets are held by listed commercial banks of China. The last ten years market share of major Chinese banks, which include Large Chinese Commercial banks and Joint Stock Commercial banks, are shown in figure 1. The figure shows that during the last decade the market share of major Chinese commercial banks holds more than 60% of the assets in Chinese banking sectors.

The total number of banking institutions in China is more than 3,000 according to the 2013 annual report of CBRC. The majority of banking institutions of China are small and they have their less significance in the financial sector of China. These small banking institutions have a specific role in the country and they operate with a limited scope. These banking institutions are not even listed on the Stock Exchanges of China. Due to this fact, this study include only listed Commercial banks of China, which include Large Commercial Banks which are commonly known as Big Four, Joint Stock Commercial banks and some listed City Commercial banks of China. These banks have a major stake in Chinese banking sector and have their significance in China's financial system. These banks do not have a limited scope of operation. The purpose of including these banks in this study is to analyze the impact of China's Bank reforms especially the ownership restructuring on their banking efficiencies.

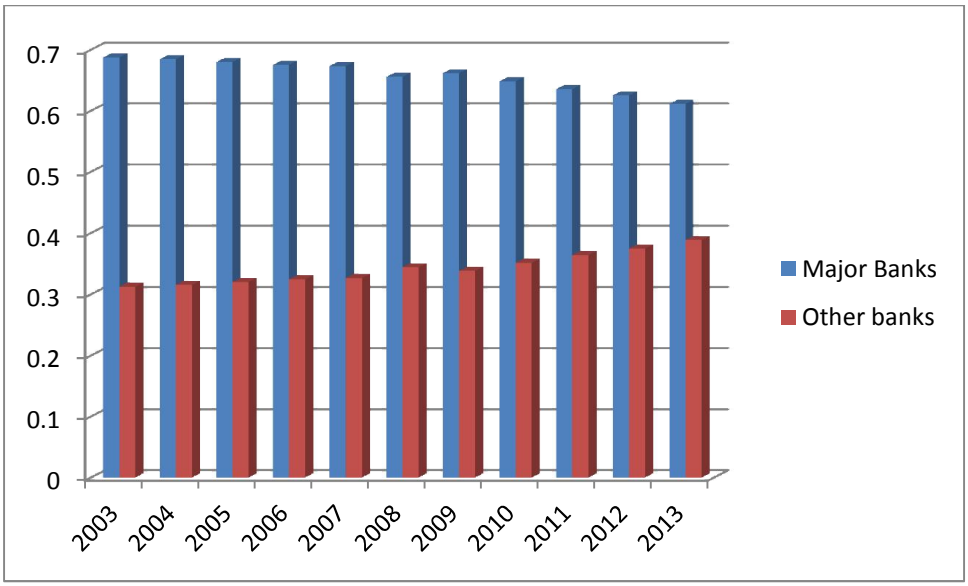

Figure 1 The Market Share of Major Chinese Commercial Banks
Source: CBRC annual report 2013

The most reliable data sources of China are used for the collection of data such as CSMAR, one of the biggest listed companies' databases of China, and Almanac of China Finance and Banking.

Table 1 provides a summary of descriptive statistics of the sampled banks. The table 1 indicates that the overall sample has divided into two categories, Big-four banks and non-big four banks. The mean total assets of Big-four banks are 7,640 billion RMB, however, non-big four banks have only 1000 billion RMB mean total assets. This difference clearly shows the size and influence of big-four banks in Chinese banking sector as compared to other banks. The NPL ratio is 1.97% for big-four banks and 2.97 for non-big four banks, which also shows how Chinese government bailout Big-four bank's NPLs on preferential basis. However, these NPL ratio's are not matched with the NPLs ratio computed by World bank 15% for Chinese banks. (Wall Street Journal, WSJ, August 31, 2016).

Table 1 Descriptive Statistics of All Listed Commercial Chinese Banks

Variable	Overall Banks					Big Four Banks					Non-Big Four Banks				
	No. of obs.	Mean	SD	Min	Max	No. of obs.	Mean	SD	Min	Max	No. of Obs.	Mean	SD	Min	Max
Total Assets	224	2,660	3,760	32	18,900	56	7,620	4,450	2,180	18,900	168	1,000	1,140	32	5,960
Deposit	224	2,280	3,260	24	15,500	56	6,580	3,880	1,800	15,500	168	846	974	24	4,910
Debt	224	2,130	3,030	21	14,200	56	6,150	3,570	1,580	14,200	168	792	904	21	4,490
Loan	224	1,350	1,900	3	9,680	56	3,900	2,180	1,240	9,680	168	507	587	3	3,190
Investment	224	289	459	0	3,100	56	923	536	178	3,100	168	77	84	0	495
Net Capital	224	147	246	-729	1,280	56	426	353	-729	1,280	168	54	72	-0	421
Interest Income	224	104	148	1	767	56	290	184	79	767	168	42	51	1	259
Interest Expense	224	44	60	0	324	56	117	75	35	324	168	19	25	0	129
Operating Expense	224	38	56	0	253	56	109	71	21	253	168	14	17	0	84
Net Profit	224	25	46	0	263	56	74	71	0	263	168	9	13	0	63
ROA in %	224	0.96	0.43	-0.20	1.85	56	0.93	0.54	-0.20	1.85	168	0.97	0.38	0.01	1.66
NPL Ratio %	224	2.71	4.73	0.27	40.49	56	1.93	1.79	0.30	12.48	168	2.97	5.35	0.27	40.49

In the light of above-discussed literature review, this study formulates the following hypotheses to test the role of corporate governance in reduction of non-performing loans in Chinese banking sector. Further, the on-going banking reforms and macroeconomic variables such as GDP growth and interest rates and its relationship with non-performing loans of Chinese banking sector are also examined through these hypotheses.

Hypothesis 1: The board size has a positive impact on banking NPLs.

In this hypothesis, the impact of board size on banking sector NPLs is tested for China

Hypothesis 2: The board independence has a negative impact on banking NPLs.

Hypothesis 3: The association among top ten shareholders has a positive impact on banking NPLs.

Hypothesis 4: The banking sector reforms (listing of banks on stock market) in form of ownership structure has a negative impact on banking NPLs.

Hypothesis 5A: The GDP growth has a negative impact on banking NPLs .

Hypothesis 5B: Interest rate spread has a positive impact on banking NPLs.

To test these hypotheses, the following econometric model is suggested. The panel data multiple linear regression is applied to determine the influence of corporate governance practices and macroeconomic variables on the banking sector NPLs in China.

Model

$$LNNPL = \alpha_1 + \beta_1 BS + \beta_2 BIND + \beta_3 ASSSHRD + \beta_4 LIST + \beta_5 GDPG + \beta_6 INTSP$$
$$+\beta_7 SIZE + \beta_8 LNDPT + \beta_9 LNTPRFT + \sum_{i=1}^{n} Banktype_i + \sum_{j=1}^{m} Year_j + \varepsilon_i$$

In above Model , the non-performing loan (LNNPL) is analyzed as a dependent variables. The explanatory variables include proxies for corporate governance variables such as board size (BS), board independence (BIND) and association among top ten shareholders (ASSSHRD). Whereas β1 …..,β3 are coefficients of corporate governance variables respectively. The impact of ownership reforms in Chinese banking sector is proxied by listing process of Chinese commercial banks and the impact of listing (LIST) is measured in this model. Whereas β4 is the coefficient of listing in this model. The proxies of macroeconomic variables are change in annual GDP growth rate (CGDPG) and interest rate spread (INTSP). Whereas β5 and β6 are coefficients of macroeconomic variables respectively. There three two control variables introduced in the above models, one is size of a bank (SIZE), second is bank's deposit (LNDPT) and third is bank's taxable profit (LNTPRFT). Whereas β7…, β9 are coefficients of control variables respectively. To study the year and bank type effect, two dummy variables one for bank type and other for year are also included in the model. Whereas ϵ_i is a residual error of the model.

Dependent Variable

(1) Non-Performing Loans

IMF's Compilation Guide on Financial Soundness Indicators 2004 (Guide) defines such loans as: A loan is nonperforming when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons—such as a debtor filing for bankruptcy—to doubt that payments will be made in full.

The non-performing loan for each bank in each year is measured by

$$LNNPL = Log\ (Total\ NPLs\ in\ RMB\ amount)$$

Independent Variables

(1) Corporate Governance Variables

The corporate governance practices in Chinese listed commercial banks are proxied by three variables such as board size, board independence and association among top ten shareholders.

a. Board Size

Board size (BS) of a bank is determined by the number of total directors included in the board of a bank. A number is suggested whether the board size of a bank is large or small.

$$BS = number\ of\ total\ directors$$

b. Board Independence

Board Independence (BIND) refers to the proportion of independent directors in the board of a bank. A larger proportion indicates the more independence in the board.

$$BIND = \frac{number\ of\ independent\ directors\ in\ the\ board}{total\ number\ of\ directors\ in\ the\ board}$$

c. Association among Top Ten Shareholders

Association among top ten shareholders (ASSSHRD) is determined by the strength of relationship exist among the top ten shareholders of the banks. The measurement of this variable is rather difficult therefore a coding system is used to measure this variable. The codes consist of 1, 2 and 3 which mean that if there is no association among top ten shareholders then it is coded as 1, otherwise 2. If the association among top ten shareholders is unable to determine then it is coded as 3.

(2) Chinese Bank Reforms Variables

The Chinese banking reforms is proxied the following variable i.e., Listing of Chinese Commercial banks on stock exchanges.

a. Listing of Chinese Commercial Banks on Stock Market

Listing of Chinese Commercial Banks (LIST) on stock market refers to the major banking reform in the country in term of ownership restructuring. It is measured by a dummy variable i.e., if a bank is listed on the stock market during the sample period then it takes a value of 1 otherwise 0.

(3) Macroeconomic Variables

The third set of independent variable is composed of macroeconomic variables of China. There are two macroeconomic variables are included in this set i.e., GDP growth and interest rate spread.

a. GDP Growth

The annual nominal growth rate of gross domestic production (GDPG) in China is used as a proxy of macroeconomic variable in the models.

b. Interest Rate Spread

The interest rate spread (INTSP) is defined as the difference between lending and borrowing interest rate in Chinese banks.

$$INTSP = Bank\ Lending - \ Bank\ Borrowing\ rate$$

(4) Control Variables

There are three type of control variables are used in the model. One is bank size, second is bank deposit and third is bank taxable profit.

a. Size of a Bank

The size of a bank (SIZE) is computed by taking the natural logarithm of bank total assets.

$$SIZE = Log\ (total\ assets)$$

b. Bank Deposit

Bank deposit (LNDPT) is measured by the total deposit made by customers in Chinese listed commercial banks.

$$LNDPT = Log\ (Total\ Customers\ Deposit)$$

c. Taxable Profit of a Bank

The taxable profit of a bank (LNTPRFT) is measured as the difference between total income of a bank (operating /non-operating) with total expenses (operating/non-operating) before tax.

$$TPRFT = Log(Taxable\ income\ of\ a\ bank)$$

d. Bank Type

The bank type is measured by the dummy variable and it takes value of 1 if a bank is belongs to big four otherwise 0.

5 Result and Discussion

This study analyses and determines the impact of corporate governance, bank reforms and macroeconomic changes on banking sector non-performing loans (NPLs) for China. Empirical results are presented in the following table, in order to determine the impact of corporate governance practices, banking reforms and macroeconomic changes on non-performing loans of Chinese listed commercial banks.

The results show that all four models are significant at 1% level of significance (table 2). The explanatory power of the model 1 is 16% whereas model 2, 3 have 15% and model4 have 20% prediction power.

The corporate governance variable such as board size (BS) has negative and significant impact on banking sector NPLs in China at 10% level of significance. This result is consistent with Lipton and Lorsch, (1992) and Yermack (1996) that document the negative relationship between board size and firms performance However, the impact of board independence (BIND) is positive and significant impact on Chinese banking NPLs at 5% level of significance in model 1 and 10% level of significance in model 4. This result is in line with Klein (2002) which showed a negative impact of board independence on bank performance. However, Rehman et al (2016) found that a board size has a positive and board independence has negative and significant impact on NPLs for Pakistani banks. Moreover, the association among top ten shareholders (ASSSHRD) of the banks has insignificant impact on banking NPLs in China. The proposed hypotheses 1,2,3 related to board size (BS) board independence (BIND), association among top ten shareholders (ASSSHRD) in banks and its impact on Chinese banking NPLs are partially rejected.

The banking reforms variables such as listing of commercial banks (LIST) on stock market has negative and significant impact on banking NPLs in China at 5% level of significance. This result has also accepted the proposed hypothesis 4 related to ownership structure reforms and NPLs in China.

The changes in macroeconomic variables in China have a mixed effect on banking NPLs in China. The interest rate spread (INTSP) has positive and significant impact on banking NPLs at 5% level of significance. This findings support our proposed hypothesis 5B related to interest rate spread (INTSP) and its effect on Chinese banking NPLs. However, GDP growth rate (GDPG) has negative and significant impact on banking NPLs at 5% and 10% level of significance in model 2 and 4 respectively. This result supports our proposed hypothesis 5A regarding GDP growth (GDPG) and banking sector NPLs in China.

The control variables such as, size of a bank (SIZE) has positive and significant impact on Chinese banking sector NPLs. The size of a bank (SIZE) is significant at 10% level of significance. However, the taxable profit (PRFT) and customer deposit (DPT) have negative and significant impact on banking NPLs in China. The taxable profit (PRFT) is significant at 1% level of significant in model 1 and 3 and 5% level of significant in model 2 and 4, while, customer deposit

(DPT) is significant at 10% level of significance in model 1 to 3 and 5% level of significance in model 4.

Table 2 Panel Regression- Chinese Banking NPLs

Variable	Model 1	Model 2	Model 3	Model 4
Constant	1.33	0.21	1.52	0..62
	(1.48)	(1.02)	(1.05)	(0.60)
BS	-1.87*			-2.36*
	(-1.66)			(-1.65)
BIND	10.19**			8.3*
	(2.23)			(1.83)
ASSHRD	0.91			0.95
	(1.39)			(1.48)
LIST			-0.22**	1.91**
			(-2.03)	(2.01)
GDPG		-0.34**		-0.26*
		(-2.10)		(-1.74)
INTSP		4.99***		5.69***
		(2.69)		(2.71)
SIZE	0.92*	0.44*	0.47*	0.891*
	(1.70)	(1.88)	(1.89)	(1.66)
PRFT	-1.37***	-0.84**	-1.25***	-1.14**
	(-3.10)	(-2.05)	(-2.99)	(-2.51)
DPT	-0.065*	-0.05*	-0.064*	-0.067**
	(-1.96)	(-1.73)	(-1.90)	(-2.00)
Obs	223	223	223	223
chi^2	44.91	44.85	35.52	55.67
R^2	0.1636	0.1531	0.1597	0.2036
P-value	0.00	0.00	0.00	0.00

Note: *, ** and *** show the significance level of 1, 5 and 10% level of significance. The value presented in the table against each variable are the regression coefficients of the respective explained variable. The values presented in the parenthesis are t-values

6 Conclusion

The highlight of Chinese banking reform is partial privatization of SOCBs by issuing IPOs and attracted foreign investors by listing these banks on stock markets of the country. The importance of privatization and its positive impact on banking performance is thoroughly discussed and admitted by researchers in banking sector literature. The results of this study are also consistent with the literature that after getting privatized the banking performance of Chines banks has improved significantly. The privatization strategy for SOCBs is not only improved the banking performance but also it helps the banking sector to move toward modernization and adopt modern banking practices with sound financial and good governance structure in place. The role of corporate governance, macroeconomic changes, ownership structure and political environment on banking sector NPLs in China is examined in this study. The Chinese banking sector NPLs are analyzed based on bank specific characteristics, corporate governance practices and macroeconomic changes in the country

The results suggest that the corporate governance practices has some influence on Chinese banking sector NPLs such as, board size and board independence are negatively and positively influence the Chinese banking sector NPLs respectively. This result is rather unusual as banking NPLs literature suggested. The results argue that a large board size may reduce the banking NPLs in China however, the increased board independence works oppositely.

In case of banking sector reforms and its impact on banking sector NPLs in China, it shows a healthy sign for Chinese banking. The listing of Chinese commercial banks on stock market has reduced the banking sector NPLs significantly. It shows that the banking sector reforms help a bank to minimize its NPLs. However, the macroeconomic changes in the country can also influence its banking sector NPLs. The results of this study suggest that the higher interest rate spread in one of the reason of higher NPLs in Chinese banking, while the higher growth rate in GDP decrease the banking NPLs in China.

This finding shows that if a country is on a growth track and economy is performing well then there is less chance of banking sector NPLs accumulation in the country. In case of banking specific variable, it is also observed that the size of a bank in one of the factor of banking NPLs such as a large bank accumulate higher NPLs as compared to small banks in China. It is also found that a higher amount of taxable profit earned by a bank or large deposit made by customers reduce the banking sector NPLs in China.

7 Reference

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