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CAPITAL STRUCTURE AND PERFORMANCE OF LISTED COMMERCIAL BANKS IN CHINA

Name: LU HONGYU

Student Number: I18014449

Course Code: MGT7998

Award: Dual

Lecturer: Salaar Farooq

FACULTY OF BUSINESS, COMMUNICATION AND LAWS (FOBCAL)
MBADI-MASTER OF BUSINESS ADMINISTRATION

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DECLARATION

I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been duly acknowledged.

Name: LU HONGYU

Student ID: I18014449

Signature: LU HONGYU

Date: 25/04/2019

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ABSTRACT

After the change of China's economic policy, great progress has been made in economic development. In this process, all kinds of commercial banks have contributed to the prosperity of Chinese economy. Commercial banks not only maximize the utilization of idle funds in the development process, but also effectively solve the problem of the ownership of funds, creating a driving force for the growth and progress of enterprises. Judging from the operation of commercial banks this year, most of commercial banks can find the right direction and achieve better results in the financial field. However, with the increasing tension of the economic situation, commercial banks are still facing some problems in the process of development.

Capital is the basis of commercial banks' operation and the guarantee of resisting risks. Reasonable capital structure plays a vital role in achieving the financial objectives and stable operation of commercial banks. Operational performance of commercial banks is a comprehensive reflection of the management ability, profitability, solvency, capital operation ability, asset security ability and bank competitiveness of commercial banks. Therefore, the purpose of this study is to explore the relationship between capital structure and performance of listed commercial banks in China, so as to optimize capital structure of listed commercial banks, improve operating performance and increase competitiveness. This study uses quantitative analysis. Firstly, it introduces the research background, puts forward the research objectives, research questions and research hypothesis. Through studying previous literature, research framework is put forward. Next, the methodology used in this study is described. The process of data analysis is also described in detail. Finally, according to the results of data analysis, the key findings are found and relevant recommendation are given.

Key words: Listed Commercial Banks, Capital Structure, Company Performance, China

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CHAPTER 1 INTRODUCTION

1.0 CHAPTER OUTLINE

This chapter firstly introduces the research background, elaborates the current situation of China's banking industry and the importance of banking industry to the economic system. Then this chapter describes the problem statement, research objectives, research significance, research limitations and research scope one by one.

1.1 RESEARCH BACKGROUND

After the changes in economic policy, economic system in China has undergone significant changes (from collective economy to market economy). At the same time, banking industry in China has undergone many historic changes. At the beginning of the reform (1978-1983), China has restored and rebuilt its special banking system. The banking industry has expanded its business scale, played an economic leverage role and effectively regulated the relationship between supply and demand of funds, which is of great significance to the development of the national economy (Li, 2014). In the late 1980s, the state decided to rebuild the Bank of Communications and set up China Merchants Bank and Shenzhen Development Bank. Since then, the prelude to the reform and development of China's joint-stock commercial banks has been unveiled. In 1993, the state established three policy banks, which separated the banking industry from other financial industries (Xue, 2014). Subsequently, the State Council formally established four wholly state-owned commercial banks. The Ministry of Finance has taken measures to reduce the non-performing loan rate of commercial banks and reduce the financial risk of commercial banks (Li, 2014). In 2000, China began to implement the Interim Regulations on the Supervisory Board of State-owned Key Financial Institutions. The State Council dispatched supervisors to state-owned financial institutions to supervise the quality of assets of state-owned financial institutions and

the preservation and appreciation of state-owned assets on behalf of the state. Since then, state-owned commercial banks have begun to implement five-level classification management of loan quality, dividing the loans of commercial banks into five levels: normal, attention, subordinate, suspicious and loss. And have also formulated the Measures for Assessment and Evaluation of Commercial Banks, strengthened the requirements for information disclosure, and strictly reduced the total amount of non-performing loans and the proportion of non-performing loans in accordance with the rules to control the non-performing loans (Wu, 2012).

After years of continuous reform, banking industry in China has made tremendous achievements. It is gradually changing to a diversified modern banking system. The assets of banking financial institutions grew steadily, their capital strength rose, their asset quality and returns remained stable, their ability to withstand risks was constantly strengthened, and their profitability was constantly improved. Thus, China's banking industry is in a good period of development with rare opportunities and favorable conditions. At the same time, China's banking industry also faces tremendous challenges (Zi and Huang, 2015).

After joining the WTO, a large number of foreign banks poured into the Chinese market. These foreign banks have mature management system and management experience, so China's banking industry is facing tremendous competition and challenges (Cao and Zhang, 2012).

Chinese commercial banks will have greater competitiveness only if they continue to reform, optimize their capital structure, pay attention to the quality of assets and reduce financial risks. Therefore, commercial banks' performance should be caused more attention and the factors that influence the commercial banks' performance should be further studied (Li, 2014).

1.2 PROBLEM STATEMENT

Li (2014) stated that listed commercial banks could provide important basis for enterprises and governments to make economic decisions because they grasp and reflect the information of social and economic activities. Therefore, Zhao and Ling (2014) thought that studied listed commercial bank performance had great significance. With China's full opening of financial markets and the introduction of foreign banks in 2006, China's banking industry is facing enormous competition (Hasan, 2014). Due to the changing external environment, commercial banks should pay more attention to optimizing their internal capital structure to improve their operating performance (Li, 2014). After the outbreak of the financial crisis in 2008, financial housekeeping institutions in various countries began to rethink and study the root causes of financial system vulnerability, which is a great opportunity and a huge challenge for listed commercial banks (Zhao and Ling, 2014). Therefore, Li (2014) stated that studied capital structure and performance of listed commercial banks was necessary.

According to Zhao and Ling (2014), studied the capital structure and commercial bank performance was of great significance to Chinese economic environment. Previous studies（Diamond and Dybvig, 2014; Li, 2014; Zhao and Ling, 2014; Adewuyi, 2016） have found that as two dimensions of capital structure, equity capital and debt capital had important influence on commercial bank performance. These studies regard commercial banks as general enterprises, without considering the particularity of commercial banks. Capital structure of commercial banks should be divided into core capital and supplementary capital.

Up to date, there is no clear indicator has been able to measure the performance of banks in a comprehensive way (Acharya and Mora, 2015). In the past, single index evaluation method (ROA, ROE, EVA, etc.) was used to measure the company performance (Zhang and Ling, 2014). According to Teece (2014), company

performance is not a single index, which should be considered comprehensively from the aspects of profitability, asset liquidity, asset security and growth capability. Therefore, the results of the research could not fully reflect the overall situation of listed commercial banks' performance (Acharya and Mora, 2015).

Therefore, this paper focuses on whether the capital structure including core capital and supplementary capital has influence on the overall performance of listed commercial banks in China.

1.3 RESEARCH OBJECTIVES

Core capital is tier one capital, which is owned by commercial banks. Core capital mainly includes permanent shareholder equity and open reserve. Supplementary capital is also called second-class capital or replacement capital, which refers to debt capital such as long-term junior debt of banks (Li, 2014). The specific objectives will be include：

RO1: to examine whether core capital has a significant relationship with performance of listed commercial banks in China.

RO2: to determine whether supplementary capital has a significant relationship with performance of listed commercial banks in China.

1.4 RESEARCH QUESTIONS

Based on research objectives, the following research questions are used to direct this study:

RQ1: Does core capital has a significant relationship with performance of listed commercial banks in China?

RQ2: Does supplementary capital has a significant relationship with performance of listed commercial banks in China？

1.5 SIGNIFICANCE OF STUDY

1.5.1 Significance to academic

This study is of great significance to the academic community. The results of this study can provide academia with better understanding and knowledge of capital structure factors affecting bank performance.

1.5.2 Significance to industry

This study is of great significance to Chinese banking industry. Till now, Chinese banking industry still lags behind the developed western international banking industry in terms of capital strength and scale, scientific and technological strength and management system. This study focuses on the relationship between the capital structure of commercial banks and their operating performance, provides theory and reference for commercial banks to improve their operating performance in terms of optimizing their capital structure (Zhang, 2017).

1.6 SCOPE AND LIMITATION OF STUDY

1.6.1 Scope of the study

According to Table 1-1, banks can be divided into eight types in China.

Classification of Banks in China	Number or name
Central Bank	People's Bank of China （1）
Policy Bank	National Development Bank, China Export-Import Bank, China Agricultural Development Bank （3）
State-owned commercial banks	China Industrial and Commercial Bank, China Agricultural Bank, Bank of China, China Construction Bank, Communications Bank, China Postal Savings Bank (Hong Kong) (6)
Joint-stock commercial banks	China Merchants Bank, Pudong Development Bank, CITIC Bank, Everbright Bank of China, Huaxia Bank, Minsheng Bank of China, Ping An Bank, Industrial Bank, Zhejiang Commercial Bank (Hong Kong), Guangzhou Development Bank (Unlisted), Hengfeng Bank (Unlisted), Bohai Bank (Unlisted) (12)
City Commercial Banks	144 City Commercial Banks including Beijing Bank, Ningbo Bank and Nanjing Bank
Rural Credit Cooperatives	2265 Rural Credit Cooperatives
Rural Commercial Banks	402 Rural Commercial Banks
Village Banks	635 Village Banks

Table 1-1: Classification of Banks in China

Source: The People's Bank of China (2019)

Among these banks, 16 commercial banks are listed on the mainland stock market for more than 5 years, as shown in Table1-2. This research takes these 16 listed commercial banks as the research object.

NO.	Name of Listed Commercial Banks in China
1	Agricultural Bank
2	China Construction Bank
3	Bank of China
4	Industrial and Commercial Bank of China
5	Bank of Communications
6	Ping An Bank
7	Hua Xia Bank
8	China Citic Bank
9	Shanghai Pudong Development Bank
10	China Minsheng Banking
11	Everbright Bank
12	China Merchants Bank
13	Industrial Bank
14	Beijing Bank
16	Ningbo Bank
16	Nanjing Bank

Table 1-2: List of listed commercial banks in China

Source: The People's Bank of China (2019)

1.6.2 Limitations of the study

Firstly, the selection of relevant indicators to evaluate the performance of listed commercial banks in China is not comprehensive. Many studies (Zi and Huang, 2014; Zhu, 2012; Zhu and Xiong, 2013) only select one or two indicators from four aspects including profitability, asset liquidity, asset security and growth capability to evaluate the performance of commercial banks. This may affect the results of bank performance analysis (Li, 2014).

Secondly, in the empirical analysis, the sample data selected is not large enough. The relatively small number of samples will affect the results of empirical analysis. In addition, many studies (Cao and Chen, 2012; Liu, Ouyang and Wei, 2012; Ma, 2012) only focus on joint-stock commercial banks, but not on city commercial banks. However, the number of city commercial banks in China is increasing, and the performance of city commercial banks must be paid attention to.

Thirdly, when studying the impact of capital structure on operating performance of listed commercial banks in China, although taking into account China's relevant national conditions, it still draws lessons from many mature theories and experiences abroad. These theories and experiences may not be applicable to Chinese complex economic environment (Li, 2014).

1.7 OPERATIONAL DEFINITIONS

Banks' Performance (Dependent Variable)

Bank performance is a comprehensive reflection of bank management ability, profitability, solvency, capital operation ability, asset security ability and bank competitiveness (Li, 2014).

Capital structure (Independent Variable)

The capital structure of enterprises generally refers to the composition of various sources of capital and their proportional relationship, that is, the equity capital and debt capital of enterprises. The introduction of the New Basel Capital Accord makes the study of bank capital structure different from that of general industrial and commercial enterprises (Wu, 2012).

Core capital (Factor 1)

Core capital is tier one capital, which is owned by commercial banks. Core capital mainly includes permanent shareholder equity and open reserve (Li, 2014).

Supplementary capital (Factor 2)

Supplementary capital is also called second-class capital or replacement capital, which refers to debt capital such as long-term junior debt of banks (Wu, 2012).

1.8 ORGANIZATION OF CHAPTERS

The first chapter mainly describes the research background, problem statement, research objectives and research questions. Definitions of some research subjects are also presented in this chapter.

The second chapter describes the previous scholars' research on the relationship between capital structure and bank performance. What's more, gaps in literature are showed. In addition, Agency theory is used to support relevant view. Finally, the theoretical framework and hypotheses of the whole research are listed.

The third chapter introduces the research methods and methodologies in detail, including data sources, data collection and data analysis.

The fourth chapter describes the process of data analysis. This research mainly uses SPSS software. First, descriptive analysis of samples is carried out, and then inferential analysis is used to confirm whether the research hypothesis is correct.

In the fifth chapter, according to the results of data analysis, the key findings of the study are presented, the corresponding recommendations are given, and the limitations of this research are elaborated.

CHAPTER 2 LITERATURE REVIEW

2.0 CHAPTER OUTLINE

The purpose of this chapter is to reviewing what has already been written on the literature about banks' performance and banks' capital structure. Next, this chapter describes the previous scholars' research on the relationship between capital structure and bank performance. What's more, gaps in literature are showed. In addition, Agency theory is used to support relevant view. Finally, the theoretical framework and hypotheses of the whole research are listed.

2.1 BANK PERFORMANCE

Company performance refers to the benefits created by business activities during a certain period, which is mainly evaluated by profitability, asset operation level, debt paying ability and growth (Al-Thuneibat, 2018). Xue (2014) stated that modern commercial banks were essentially the same as other enterprises that the basic goals are all to maximize the value. According to the Ongore and Kusa (2013), commercial banks have to take into account the safety and liquidity of the operation requirements. In addition, commercial banks have a strong influence on economic now, the social requirements for banks' operational risk control capability are higher than the general enterprises (Li, 2016). Xue (2014) defined commercial banks' performance as the operating performance, operational efficiency, risk management and sustainable development ability of commercial banks, which are based on the basic operating principles of profitability, security and development ability, and around the goal of maximizing value by rationally allocating economic resources.

2.1.1 Global view on banks' performance

Banking sector is an important part of the current economy, performance of banks plays a vital role in economic development（Li, 2016）. Ongore and Kusa (2013) stated the same view that accurate assessment and analysis of bank performance could ensure that the financial system is healthy and efficient. Besides, correct evaluation of bank performance can also determine the operating results and overall financial situation of enterprises; measure the quality of assets, management quality and efficiency of enterprises to achieve corporate goals; determine the quality of corporate earnings, liquidity, capital adequacy and banking services (Gerhardt and Vander vennet, 2016).

2.1.1.1 Literature review on the evaluation methods of commercial banks' performance

The quality of business performance reflects the management level of an enterprise (Marques and Santos, 2015). According to Allahham (2015), whether the performance of an enterprise can be evaluated comprehensively and managed scientifically determines the future business situation of the enterprise. There are two commonly used methods for evaluating business performance: single-index evaluation method, and multi-index evaluation method (Uddin and Bristy, 2014). Allahham (2015) summarized that single index evaluation methods included single accounting index method, Tobin Q value method, economic value added method and DuPont analysis method, while multi index evaluation methods included analytic hierarchy process and balanced scorecard. Multi-index evaluation method can more comprehensively reflect the business performance of enterprises, but in the process of application, the introduction of non-financial indicators increases the difficulty of quantifying indicators (Uddin and Bristy, 2014).

Tobin's Q Theory

With the continuous development of capital market, scholars (Ongore and Kusa, 2013; Uddin and Bristy, 2014; Allahham, 2015) began to study the theory of interest rate transmission mechanism. American economist Tobin put forward Tobin's Q theory in 1969. Tobin's Q theory reflects the expected profits of a company very well. It is usually used to measure the company's operating performance and growth, and listed on the market. The market value of corporate securities will have a certain impact on investors' investment enthusiasm, so Tobin Q value is widely used in measuring the company's operating performance, especially in the capital market (Al-Thuneibat, 2018).

Economic Value Added (EVA)

EVA is widely used in the performance measurement mechanism of commercial banks. The expression of economic added value (EVA) in arithmetic angle is as follows:

Economic Value Added = After-Tax Operating Profit - Comprehensive Cost of Debt and Capital

EVA is widely used to measure the company's operating performance, mainly because economic value-added should take into account the comprehensive cost of debt and capital, which makes managers more wise to make decisions, so that the company's decisions and shareholders' profits are consistent. EVA is a reflection of the company's economic added profit value in a certain period of time. If EVA is positive, it means that the company creates value for shareholders in that period; if EVA is large, it means that the company loses the capital of shareholders in that period (Gerhardt and Vander vennet, 2016).

Single Accounting Indicator Method

When measuring the company's operating performance, choose an accounting index to measure, which is the single accounting index method. Common indicators are as follows:

Total Return on Assets (ROA) = Net Profit/Average Total Assets

Return on net assets (ROE) = net profit/total average assets

EPS = net profit / total number of shares issued in the current period

Liquidity ratio = current assets/current liabilities

The above indicators can only unilaterally reflect the company's operating performance. These indicators can be obtained directly from the accounting statements, and can directly express the economic meaning they represent (Uddin and Bristy, 2014).

DuPont analysis method

DuPont analysis is a traditional method to analyze the financial index system. It was first used by DuPont Company to evaluate the level of return on shareholders' equity and profitability of the company. The financial index of DuPont analysis covers all aspects of enterprise operation, and reflects the operation of enterprise through the index of net capital return rate, which is comparable and comprehensive. The advantages of this method are as follows: firstly, it can reflect the performance and financial level of enterprises comprehensively and accurately, can make enterprises wake up to more detailed analysis of various business indicators, timely put forward improvement methods, and then improve the performance level; secondly, DuPont analysis method can quantify all indicators, which is easier to use and understand. This

method also has some shortcomings: firstly, it does not consider non-financial indicators and can not reflect the performance of enterprises comprehensively; secondly, the financial indicators come from the accounting statements of enterprises, which lag behind the data, and the authenticity industry can not be fully guaranteed; thirdly, the method does not take the value of equity into account in the calculation. The cost of equity has not been deducted (Allahham, 2015).

Analytic Hierarchy Process (AHP)

AHP was put forward by Sarty, which was a famous American operational research scientist, in the early 1970s. When solving complex problems, the theory carries out quantitative analysis according to objectives, criteria and schemes, and uses mathematical methods to solve complex decision-making problems. Analytic Hierarchy Process (AHP), which combines qualitative analysis with quantitative analysis, is a simple, practical and systematic analytical method (Berger and Bouwman, 2013).

Balanced Scorecard (BSC)

Starting from the company's strategic objectives, the BSC divides the strategic objectives into four indicators: financial indicators, internal operation indicators, customer indicators, learning and growth indicators. The four indicators are determined according to the company's development strategy, and the company's operational performance is measured. Balanced scorecard fully combines strategy formulation with strategy implementation, so that managers can clearly know the progress of strategy implementation in the process of operation, so as to make more effective response, even if the company's business strategy is adjusted to achieve effective development of the company (Abata, 2017).

According to the Ongore and Kusa (2013), there are many methods to evaluate the performance of commercial banks in academia: financial ratio analysis, balanced scorecard, data envelopment analysis (DEA) and factor analysis. Venkatesh and Suresh (2014) pointed out that Athadeff was the first scholar to use financial ratio analysis to study the operational performance of banks and found the relationship between marginal output and marginal cost in 1954. According to Uddin and Bristy (2014), Farrell in 1957 used data envelopment analysis method proposed that measure the banks' performance evaluation system with multiple inputs and outputs by the principle of cost minimization or profit maximization. Persen and Lezzig stated that the profit margin of sales income, earnings per share, cash flow and other indicators should be regarded as important indicators of bank performance evaluation in 1979 (Venkatesh and Suresh, 2014).

According to Uddin and Bristy (2014), Kaplan and Norton broke the traditional analysis model that based only on financial indicators in 1996, and used "Balanced Scorecard" theory to evaluate the performance of banks more reasonably. On the other hand, Venkatesh and Suresh (2014) stated that West put forward 4 factors that affect the level of bank performance through factor analysis method in 1985.

2.1.1.2 Factors affecting the performance of banks

According to the current literature, many scholars (Acharya and Mora, 2015; Ameur and Mhiri, 2013; Ongore and Kusa, 2013; Teece, 2014) believed that the indicators affecting the performance of commercial banks were mainly selected from the micro-individual factors and macro-economic variables, such as bank capital size, capital structure, bank operations, GDP growth, inflation rate and other indicators.

Berger and Bouwman (2013) found that high capital adequacy ratio is conducive to improving the performance level of banks, and is the guarantee of sustainable and stable

development of banks in complex environment. Ameur and Mhiri (2013) had another finding that the higher the concentration of equity, the better the performance of banks. By using bank value stand for operating performance and equity structure stand for capital structure，Berger and Bouwman (2013) mentioned that large shareholding and concentration of shareholders would increase the value of banks.

Ameur and Mhiri (2013) analyzed the performance of banks in more than 80 countries and regions around the world, and found that bank profits were affected by the degree of inflation, specifically, higher the inflation rate, the greater the bank profits. According to Allahham (2015), the relationship between capital structure and operating performance of commercial banks in economically developed and less developed countries were significantly different. In addition, Al-Thuneibat (2018) pointed out that capital structure in developing countries has a higher influence on bank performance than in developed countries.

Pringle (2012) demonstrated the influence of operational capital and cash flow on bank performance. Accourding to Gulzar (2017), higher CEO's compensation could increase the sensitivity and performance of banks.

2.1.2 Banks' performance in China

Xue (2014) stated that China's banking industry was characterized by monopolistic competitiveness. The key factors that determine the performance of China's commercial banks are the factors on macro level and the factors on micro level (Wu, 2012). Macroscopically, there are interest rate, exchange rate, deposit reserve ratio, GDP growth rate, money supply growth rate, fixed assets investment growth rate and inflation rate; microscopically, the market structure, property rights structure, financial indicators and so on (Peng, 2016).

Li (2014) through empirical tests found that the growth rate of GDP and money supply growth rate had a positive impact on the level of bank profit efficiency. According to Liu, Ouyang and Wei (2012), the proportion of state shares was negatively related to bank performance, and capital ratio was positively related to bank performance.

Zhou (2012) concluded that ownership structure of commercial banks was not related to performance. On the other hand, Wang and Zhang (2015) made a similar study to draw a different conclusion: the greater the concentration of equity, the better the performance.

Feng and Fang (2012) took the financial indicators of 13 commercial banks from 2003 to 2010 as a sample, and measured the performance through data envelopment analysis (DEA), finding that the performance of banks was largely affected by the potential profitability of banks.

Zhu and Xiong (2013) selected 23 commercial banks in China as samples to construct an evaluation system of commercial banks' performance based on asset return rate, non-performing loan rate and other financial indicators, stated that improve profitability and the policy of asset safety management could enhance the performance level of commercial banks.

Zi and Huang (2015) used EVA to study the performance of 11 commercial banks in China, which showed that the salary level of management, especially the salary of senior managers, had a positive correlation with the performance level of commercial banks.

Huang and Tang (2015) studied the relationship between the competitiveness size and the performance of commercial banks in the South Korea, the mainland of China and Taiwan, which found that effective supervision of the financial system helped to

improve the level of banks' performance. According to Cao and Chen (2012)'s research on the relationship between the level of governance and the commercial banks' performance, the level of banks governance was affected by ownership structure and regional environment: improvement of self-management ability of banks can improve the performance of banks.

2.2 CAPITAL STRUCTURE

In a broad sense, capital structure is the capital proportion and composition of an enterprise (Ross, 2013).

2.2.1 Basel agreement

The first Basel Agreement was enacted in 1988, which stated that the capital of commercial banks included not only core capital, but also subsidiary capital (Wu, 2012). According to Orgber and Taggart (2012), core capital is primary capital, the free capital of commercial banks, mainly including permanent shareholders' equity and public reserves; subsidiary capital is also called secondary capital or supplementary capital, which refers to debt capital such as long-term secondary debt of banks.

Core capital

According to Xue (2014), core capital is the self-owned capital that can be permanently used and controlled by financial institutions.

Supplementary capital

According to Li (2014), supplementary capital, also known as secondary capital, is an indicator of bank capital adequacy. The common characteristic of supplementary capital is that it can absorb losses only in a limited time (Xue, 2014).

2.2.2 Optimal Capital Structure

The optimal capital structure is the capital structure that maximizes the shareholder's wealth, minimizes company's capital cost (Ross, 2013).

Since the 1970s, the theory of modern capital institutions has been perfected, and the academia had fully considered the company capital structure, and began to study the operation behavior, forming the corporate capital structure theory (Merton, 2013).

Pringle (2012) stated that in order to maximize the profits of shareholders, company would make extra profits on investments, and when the marginal income from investment equaled the marginal cost of equity capital financing, the capital structure of corporates would be optimal and value of shareholders' equity would be the largest. According to Karaken and Wallace (2014), the higher liabilities and profits, the higher the value of company. However, Buttler (2014) confirmed that increased the level of liabilities would raise the probability of bankruptcy and the cost of bankruptcy, and companies need to find an optimal capital structure.

Merton (2013) argued that companies would choose the right financing structure because of regulatory costs and found that companies would prefer equity financing if had good operating conditions and solvency.

According to Diamond and Dybvig (2014), companies provided liquidity insurance to investors by absorbing investment, which more effective than markets in providing liquidity-demanding funds to the public. On the basis of this conclusion, Buttler (2014) constructed an optimal capital structure model through further study.

According to Li (2014), there is an optimal combination of capital structure of commercial banks to achieve optimal performance. Commercial banks should find their own optimal capital portfolio according to their own conditions

2.2.3 Factors influencing the capital structure

Orgler and Taggart (2012) found that government supervision had an influence on company capital decisions; bankruptcy costs would reduce the financial leverage of companies, but government supervision would increase the financial leverage. Merton (2013) confirmed that regulators restrict the optimal capital structure of companies by limiting the capital adequacy ratio of companies.

Ferreira, Ferreira, and Mariano (2012) summarized the shareholding ratios of major companies and pointed out that governments were among the top controlling shareholders of major companies. According to Zhu (2012), the government's share-holding ratio was inversely proportional to the state's level of development, that is, the lower the level of development, the higher the government's share-holding ratio.

Osterberg and Thomson (2013) selected more than 200 companies as samples and drew following conclusions: corporate income tax had a significant influence on the capital structure, the higher the corporate income tax, the greater the financial leverage.

2.2.4 New capital structure theory

Information Transmission Theory

Western scholars have found that investors and managers have an asymmetric understanding of the company's operating conditions. Managers have a more detailed understanding of the company's operating conditions, including the company's operating status, future planning and development prospects, but investors are not clear about the company. Ross, an American economist, discovered the information asymmetry in his research process and put forward the theory of information transmission. He believes that by studying the company's capital structure and dividend distribution policy, we can deduce the company's operating conditions. According to the

above trade-off theory, the total value of a company with reasonable debt financing is higher than that of a company without debt financing, which is the result of the transmission of capital structure information. In terms of dividend distribution, companies paying higher dividends convey the information that the company is doing well and that future earnings will increase. According to the theory of information transmission, investors can judge the value of a company according to the information transmitted from the capital structure of the company (Abata, 2017).

Preferential Order Financing Theory

In 1984, Myers & Majluf put forward the orderly financing theory on the basis of information transmission theory. The premise of this theory is that the financial market is complete. If a company carries out equity financing, it considers that the company's operation is not optimistic, thus transmitting negative information to the market, while the company's debt financing is better than equity financing. The equity of the company's managers is not diluted, but only needs to pay a certain amount of interest. Internal financing is the best, because the benefits of a company's good operation are entirely owned by the owner of the company. Therefore, the company will choose the following priority order for financing: the first priority is internal financing, the second priority is debt financing, and the last priority is equity financing. The theory shows that the more internal surplus funds, the lower the debt ratio, and the message is that the higher the market value of the company (Berger and Bouwman, 2013).

The theory of orderly financing mainly elaborates the role of financial leverage in the operation of enterprises. The lower the financial leverage, the better the operating efficiency of enterprises. This is because under the premise of better operating performance of enterprises, the profitability of enterprises is relatively strong, the free surplus funds of enterprises will be more abundant, and the conditions for enterprises to carry out endogenous financing will be more sufficient. On the contrary, if the

economic performance of enterprises is not good, the amount of their own funds will be greatly reduced, and enterprises cannot use funds to make more investment, so enterprises will seek opportunities for external financing. According to the orderly financing theory, enterprises mainly seek external financing by debt financing, and the debt ratio of enterprises with poor operating performance will be relatively high (Li, 2016).

Agency Cost Theory

In the study of the optimal capital structure, western scholars found that the agency relationship exists in the process of the company's operation, and this agency relationship will produce agency costs, mainly because of the expenses incurred when the company's shareholders, managers and creditors distribute the company's assets. According to this phenomenon, Jensen and Meekling put forward the famous agency cost theory through research and analysis. They believe that there are two kinds of conflicts in the company's asset allocation. The first kind is the conflict between shareholders and managers. In order to benefit from their investment, shareholders of the company think that the company's earnings should benefit from them. But the company's managers often convert the company's earnings into personal benefits, such as improving their salaries and salaries. The second kind of conflict is the conflict between shareholders and creditors. In the process of company operation, the shareholders of the company often pay attention to what kind of profits the company will get from its operation activities, but the creditors pay more attention to the stable operation of the company. Therefore, when a project with high profitability appears in the course of company operation, even if the project has high risk, the shareholders of the company will still meet. Choose to invest in this high-yield project, if the project succeeds, shareholders will gain huge profits, even if the project fails, creditors will cover the ultimate loss. Because of such conflicts, both sides need to avoid the

expansion of such conflicts through supervision, which results in agency costs. According to agency cost theory, only by determining a reasonable capital structure can the company's value be maximized (Allahham, 2015).

Control Theory

In the late 1980s, western scholars began to study the control rights of capital institutions on the basis of incomplete contracts, so as to seek the best allocation of control rights. Harris-Ray Uyghur model, Ahon-Bolton model, Starz model and so on explore the control right of capital structure from various aspects, determine the reasonable distribution of residual income of the company, so as to maximize the value of the company.

If managers want to change the distribution of shareholders' equity, they can change the capital structure by changing the proportion of voting rights to change the distribution of residual control rights. The quantity and management level of enterprise management ownership is an important criterion to decide whether an enterprise is taken over or not. Generally, there are three main modes of takeover competition among enterprises. The result of comparing the return of ownership with the loss caused by individual holding is the optimal share-holding ratio of managers. Because the adjustment of managerial shareholding ratio is based on the change of enterprise capital structure, the level of enterprise market value is also indirectly affected by the influence of capital structure (Xu, 2018).

Although the development of capital structure control right is not long, it greatly promotes the development of modern capital structure theory. This theory combines the study of capital structure with corporate governance, which makes us understand the essential nature of capital structure and promotes the development of corporate contract theory (Abata, 2017).

2.2.5 The influence of bank capital structure on Performance

According to An (2016), banks were able to publicly issue stocks performed better than all organized banks. However, Xu (2018) put forward the opposite view in the further study, finding that public banks have a higher advantage in competition.

Li (2016) studied the data of 26 banks over the past decade, choosing the controlling proportion of the top five shareholders of major banks and concluded that bank performance was positively correlated with ownership concentration.

An (2016) argued that firms would use the surplus of capital to adjust profits in order to reduce transaction costs.

Jiang and Zhao (2012) took 30 commercial banks as research objects to test whether the profitability of banks is affected by the capital adequacy ratio, and found that the profitability level increased significantly with the increase of the capital adequacy ratio.

Zi and Huang (2012) took the economic value-added (EVA) of commercial banks and the managerial shareholding ratio as the research sample, and concluded that the bank performance level was positively correlated with the managerial shareholding ratio.

According to the Griffith, Fogelberg and Weeks (2012)'s research on the relationship between corporate governance, equity composition and bank performance, different nature of bank shareholders had different influence on bank performance.

As Jiang and Zhao (2012) stated that the profitability of enterprises is largely influenced by capital structure (An, 2016). According to Ma (2012), enterprises could change their performance level by optimizing capital structure. Therefore, taking capital structure as independent variable that influences performance is very necessary.

2.3 GAPS IN LITERATURE

Until now, there is no unified view on the influence of capital structure on corporate performance in China (Li, 2016). In addition, these conclusions are based on the general companies not on the listed commercial banks, the conclusions are not applicable to listed commercial banks (Li, 2014). As a special enterprise, listed commercial banks have their own particularities, and need to do separate studies to find the relationship between capital structure and performance (Zhao and Ling, 2014).

In the past, single index (ROA, ROE, EVA, etc.) was used to measure the company performance (Li, 2014). Xue (2014) stated that most studies (Abata, 2017; Diana, 2016; Wu, 2012) only selected return on equity (ROE) as an indicator and only considered the company profitability, without considering the profitability while ensuring liquidity, security and growth of companies. According to Teece (2014), company performance is not a single index, which should be considered comprehensively from the aspects of financial efficiency (profitability), asset flow, asset security and development capability. For listed commercial banks, liquidity and security are as important as profitability (Li, 2014). To evaluate the performance of listed commercial banks, at least profitability, liquidity and security should be considered at the same time, considering only one indicator influence the accuracy of performance evaluation (Zhao and Ling, 2014). Therefore, future researches should be more comprehensive in evaluating the performance of listed commercial banks (Li, 2014).

2.4 GROUNDED THEORY (AGENCY THEORY)

Agency theory is mainly used to study the contractual relationship between resource owners and resource users (Diana, 2016). According to Abata (2017), the owner of resources is the principal, while the agent is responsible for the use and control of resources. The core of agency theory is to study how the principal designs the optimal

contract to motivate the agent to create maximum profits for the organization under the circumstances of conflict of interest and information asymmetry (Guo, Yan and Zhang, 2012).

In the process of running an enterprise, the interests of the enterprise are not the same (Zhang, 2011). In the process of maximizing their own interests, the interests of the other party are often sacrificed, which is called agency conflict (Abata, 2017). There is agency cost in the execution of agency contract, which is also a part of capital cost (Diana, 2016).

According to Marques and Santos (2015), the optimum capital structure of an enterprise is the capital structure with the highest total value and the lowest capital cost. The application of agency theory in capital structure decision-making is to find the best capital structure by establishing the objective function of the principal (Zhang, 2011).

Hence, all the dimensions within the capital structure will be included into the current study to verify and confirm whether the construct as a whole as well as the individual dimensions respectively will have an influence of the company performance of listed commercial banks in China.

2.5 THEORETICAL FRAMEWORK

According to Li (2016), two factors of capital structure are illustrated in Figure 2-1. In addition, four aspects (financial benefit, liquidity of assets, assets security and development capacity) of evaluating company performance are also shown in the Figure 2-1 (Teece, 2014). This paper analyses the characteristics of core capital of commercial banks from the aspects of ownership nature, ownership concentration and ownership circulation. According to Xue (2014), the main framework in the study is theoretical framework.

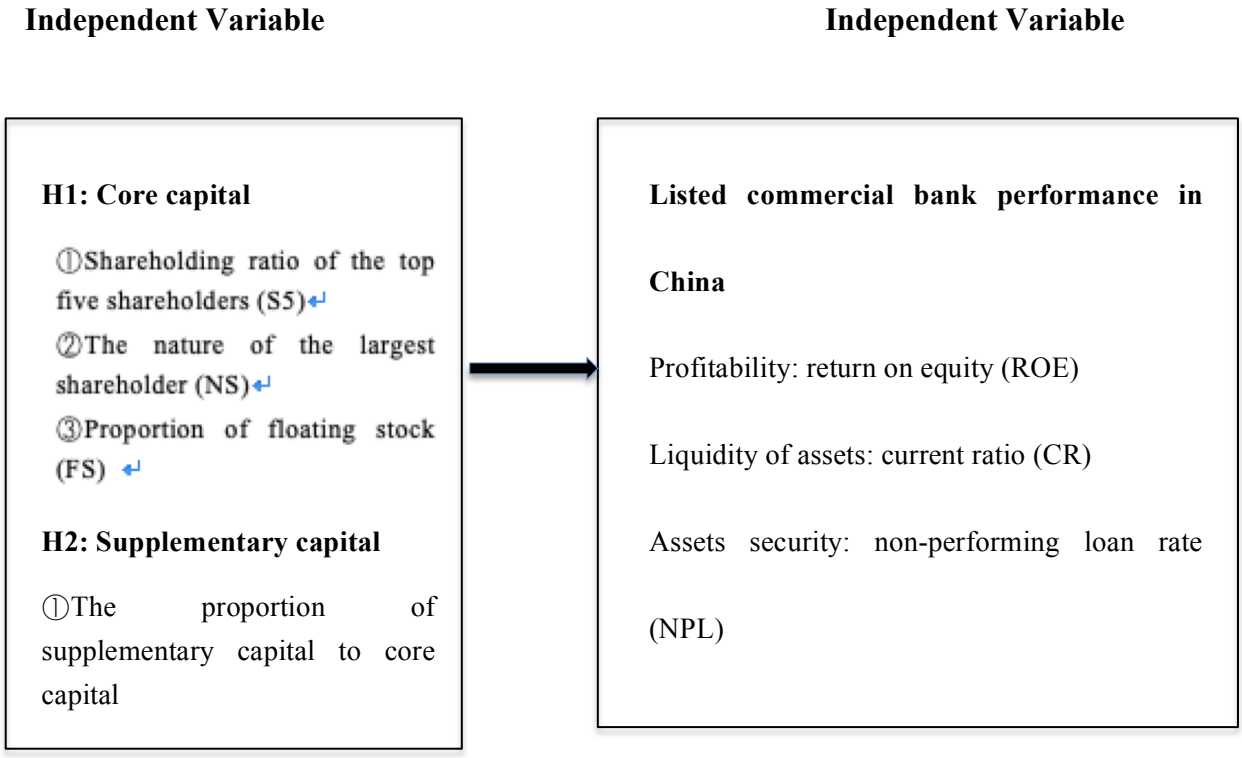

Figure 2-1: Theoretical Framework

Source: Li, 2016; Xue, 2014

2.6 HYPOTHESES

Through above framework, 2 hypotheses are listed in the below:

H1: Core capital has a significant positive relationship with performance of listed commercial banks in China.

H2: Supplementary capital has a significant positive relationship with performance of listed commercial banks in China.

2.7 CONCLUSION

This chapter elaborates the relevant research on capital structure and bank performance, and finds the theoretical framework to support this study and the shortcomings in previous studies. On the basis of these theories, the research hypothesis of this study is put forward.

CHAPTER 3 RESEARCH METHODLOGY

3.0 CHAPTER OUTLINE

This chapter will cover sampling method, data collection, data analysis, and measurement of dependent and independent variables. Reliability test, factor analysis and regression analysis will be used to study the relationship between independent variables and dependent variables also be discussed in this chapter.

3.1 RESEARCH DESIGN

3.1.1 Unit of Analysis and Time Horizon

The title of this research is capital structure and performance of listed commercial banks in China. Population focus on the commercial banks those are listed on mainland stock market in China. By the end of 2018, there were 43 listed commercial banks in China, of which 17 were listed on the Hong Kong Stock Exchange. There are 26 banks listed on the mainland stock market, but only 16 commercial banks have been listed for more than five years. This study chooses these 16 listed commercial banks.

According to Creswell (2013), the unit of analysis is defined that the major entity analyzing in study, any of the individuals, organizations or artifacts all could be a unit of analysis in a study. The unit of analysis in this study is organization. Because the study focuses on performance of listed commercial banks and bank is organization.

This study will collect secondary data for last 5 years of 16 listed commercial banks in China. Based on the previous studies, five-year data can observe the relationship between capital structure and bank performance. This research will collect the same data five times, so time horizon is longitudinal.

3.1.2 Sampling method

The research object of this research is listed commercial banks in China. Therefore, samples can be searched directly on the official website of the stock exchange (Allahham, 2015). Because of the small number of samples that meet the research criteria, the method of census is adopted in this study (Xie, 2010).

Census is a study of every unit, person, or thing in population (Creswell, 2013). Since there are only 16 commercial banks listed on mainland stock market for mare than 5 years, the research uses census.

3.1.3 Data collection

As the object of this study is listed commercial banks in China, the capital structure and bank performance data needed in this study are secondary data. All kinds of financial data are obtained from the annual reports of the official websites of Shanghai and Shenzhen Stock Exchanges and the official websites of companies.

3.1.4 Data analysis

After obtaining the data, input the data into SPSS software and analyze the data. Descriptive analysis is used to analyze the capital structure and operating performance of 16 listed commercial banks. The consistency and stability of the data are analyzed by test retest reliability. Different financial ratios are synthesized into an index to evaluate core capital by factor analysis. The correlation between capital structure and bank performance is obtained by linear regression analysis.

3.2 FORMULA USED

No.	Construct	Formula	Purpose
1	The nature of the largest shareholder	Assuming that the largest shareholder is a state-owned institution, the value is defined as 1. If the largest shareholder is a non-state-owned organization, the value is defined as 0.	In this study, it is one of the indicators for evaluating core capital. This ratio measures the nature of largest of shareholder.
2	Shareholding proportion of the top five shareholders	Total shareholdings of the top five shareholders / Total shares * 100%	In this study, it is one of the indicators for evaluating core capital. This ratio also measures the degree of ownership concentration.
3	Proportion of floating stock	Number of Listed Circulating Stocks / Total shares * 100%	In this study, it is one of the indicators for evaluating the liquidity of core capital.
4	The proportion of supplementary capital to core capital	Supplementary capital / Core capital * 100%	In this study, it is one of the indicators for evaluating supplementary capital. The larger the proportion of circulating shares, the more the stock price can reflect the real value of the company.
5	Return on Equity	Net income / Total assets	It is a measure of the effectiveness of a company's operation using all its capital. The higher rate the higher efficiency of the use of corporate capital. In this study, it is a financial indicator to evaluate the performance of banks, mainly reflecting the

			profitability of banks.
6	Non-performing loan rate	（ Substandard loan + doubtful loan + loss loan）/ All loans * 100%	In this study, it is a financial index to evaluate the performance of banks and mainly reflects the safety of banks' assets.
7	Current ratio	Current assets / Current liabilities * 100%	In this study, it is a financial indicator to evaluate the performance of banks, mainly reflecting the liquidity of banks' assets.
8	Total Assets growth rate	Growth of total assets at the end of the year / Total assets at the beginning of the year * 100%	The main index to analyze the ability of capital accumulation and development of enterprises. In this study, it is a financial index to evaluate the performance of banks and mainly reflects the development capacity of banks.

Table 3-1: List of formula used

Source: (Li, 2014)

3.3 MEASUREMENTS

Measurement is a research method that assigns values to some characteristics of the measurement object according to a certain rule (Xie, 2010).

3.3.1 Factor analysis

Factor analysis synthesizes many original variables into fewer comprehensive indicators. One of the main tasks of factor analysis is to concentrate the original variables, which extract and synthesize the information overlap of the original variables, and ultimately achieve the goal of reducing the number of variables (Xie, 2010).

Factor analysis requires that there should be a strong correlation between the original variables. Therefore, the correlation matrix should be checked before the analysis steps such as extracting factors are carried out. If most of the correlation coefficients in the correlation matrix are less than 0.3, it is not suitable for factor analysis (Creswell, 2013).

3.3.2 Test retest Reliability

After the data collection is completed, the next step is the reliability test. The function of reliability test is to check whether the measurement itself is stable. Reliability refers to the accuracy of a measurement, which includes stability and consistency. Reliability test is helpful for evaluating the "goodness" of measurement. The higher the reliability of facial profile, the more credible the test results are (Sekaran and Bougie, 2013).

This research uses test retest reliability. It refers to the consistency of the results obtained by repeated measurements of the same object using the same method. The correlation coefficient of the scores obtained from the two tests is the retest reliability. It reflects whether the results of two tests have changed or not, that is, the stability of test scores, so it is also called stability coefficient.

3.3.3 Regression analysis

Regression analysis is a method to study the statistical relationship between variables. The commonly used indexes are partial regression coefficient and determinant coefficient R^2. Partial regression coefficient reflects the change of dependent variable value when an independent variable rises by one unit. The determination coefficient R^2 is the square of the corresponding correlation coefficient, which reflects the proportion of all variations of dependent variables that can be explained by independent variables through regression. The closer R^2 is to 1, the better（Zikmund, Babin and Carr , 2013）.

3.4 CONCLUSION

This chapter gives a clear explanation of all aspects of research methods. The research used census method to collect data from 16 listed commercial banks in China. The formula used helps to calculate quickly and obtain the value of bank performance. SPSS software is used for data analysis. Factor analysis used to extract common factor from core capital and operating performance. Reliability test is used to evaluate measurement results, and regression analysis is used to test the relationship between capital structure and bank performance.

CHAPTER 4 DATA ANALYSIS

4.0 CHAPTER OUTLINE

This chapter mainly introduces how to analyze the collected data and get the research results. Firstly, this study uses descriptive analysis to analyze the core capital and operating performance of 16 listed commercial banks. Then, factor analysis is used to extract the common factors from the financial ratios of core capital and bank performance, and find the indicators that can measure the core capital and bank performance. Next, use test-retest to detect the consistency and stability of the data. Finally, this study uses multiple linear regression analysis to find the relationship between core capital, supplementary capital and bank performance.

4.1 DESCRIPTIVE ANALYSIS

4.1.1 The situation of listed commercial banks' capital structure in China

Name	Shareholding ratio of the top five shareholders	The nature of the largest shareholder	Proportion of floating stock	The proportion of supplementary capital to core capital
Bank of Beijing	0.4305	Non-state-owned	0.8631	0.2491
Industrial and Commercial Bank of China	0.9577	State-owned	1.0000	0.1407
Everbright Bank	0.8928	State-owned	1.0000	0.1575
Huaxia Bank	0.6733	State-owned	1.0000	0.3203
Bank for economic construction	0.9633	State-owned	1.0000	0.1310

Bank of Communications	0.7303	State-owned	1.0000	0.1807
Minsheng Bank	0.3932	Non-state-owned	1.0000	0.3347
Bank of Nanjing	0.4458	Non-state-owned	0.9513	0.3797
Bank of Ningbo	0.6024	Non-state-owned	0.8858	0.4437
Agricultural Bank	0.9349	State-owned	1.0000	0.2198
Ping An Bank	0.6291	Non-state-owned	0.9853	0.2199
Pudong Development Bank	0.5998	State-owned	0.9597	0.1692
Industrial Bank	0.3704	State-owned	0.9171	0.2615
China Merchants Bank	0.5301	Non-state-owned	1.0000	0.1887
Bank of China	0.9554	State-owned	1.0000	0.1785
China Citic Bank	0.9720	State-owned	0.9561	0.2465

Table 4-1: Capital structure data at the End of 2017

Source ： Annual reports of banks （2017）

The core capital of a bank can be regarded as the equity capital of a commercial bank, so the characteristics of the core capital of a commercial bank can be analyzed from the aspects of equity nature, equity concentration and equity circulation.

Core capital	Mean	Std. Deviation	Median	Minimum	Maximum
Shareholding ratio of the top five shareholders	0.664191	0.2245351	0.62255	0.3379	0.9725
The nature of the largest shareholder	0.63	0.487	1	0	1
Proportion of floating stock	0.958329	0.0723526	1	0.5857	1
The proportion of supplementary capital to core capital	0.236684	0.0700734	0.236	0.0883	0.4437

Table 4-2: Report of capital structure for 5 years

Source ： Annual reports of banks

As shown in Table 4-1, by the end of 2017, only six commercial banks listed on the mainland of China had the largest shareholder of non-state-owned (foreign capital), while the other 10 banks had the largest shareholder of state capital or state-owned legal person. As far as the current situation is concerned, the state as a major shareholder of the banks is a major feature of China's commercial banks (Li, 2014).

According to Table 4-2 and Table 4-3, the average shareholding ratio of the top five shareholders in 16 listed commercial banks is 66.42%, the highest shareholding ratio is 97.25%, and the lowest shareholding ratio is 33.79%. Most listed commercial banks have more than 50% of the top five shareholders' shareholding ratio, forming an absolute hold controlling interest. In addition, the proportion of the top five shareholders of these 16 listed commercial banks has been increasing year by year. Therefore, the equity of listed commercial banks in China is relatively concentrated.

In 2005, China began the reform of non-tradable shares, lifting the ban on the sale of shares and allowing them to circulate freely in the stock market (Li, 2016). From Table 4-2, we can also see that the average free share circulation ratio of 16 listed commercial banks is more than 95%, of which 9 banks reached 100% in 2017. Therefore, the equity circulation of listed commercial banks in China is very high，and it shows an upward trend.

Core capital	Y2013	Y2014	Y2015	Y2016	Y2017
Shareholding ratio of the top five shareholders	0.643569	0.649963	0.659006	0.675856	0.692563
The nature of the largest shareholder	0.63	0.63	0.63	0.63	0.63
Proportion of floating stock	0.932394	0.948438	0.966294	0.974619	0.9699
The proportion of supplementary capital to core capital	0.242869	0.258963	0.2249	0.217844	0.238844

Table 4-3: Mean value of capital structure's four indicators for five years

Source ： Annual reports of banks

According to Table 4-2 and Table 4-3, the average ratio of supplementary capital to core capital of 16 listed commercial banks is 23.67%, and the maximum ratio is less than 45%. The Basel Accord stipulates that the proportion of supplementary capital is less than 100% of core capital. The above data show that the proportion of supplementary capital of listed commercial banks in China is far below the regulatory standards. This is another characteristic of the capital structure of listed commercial banks in China.

4.1.2 The situation of operating performance of listed commercial banks in China

The four selected financial ratios can reflect the performance of listed commercial banks in China from four aspects: profitability, liquidity, security and growth.

Operating performance	Mean	Std. Deviation	Median	Minimum	Maximum
Return on equity	0.168858	0.0289042	0.1689	0.114	0.2323
Current ratio	0.454085	0.0871547	0.45185	0.2931	0.6567
Non-performing loan rate	0.013276	0.0038441	0.0143	0.0065	0.0239
Total assets growth rate	0.141148	0.078289	0.13235	-0.0427	0.4046

Table 4-4 Report of operating performance

Source: Annual reports of banks

Operating performance	2013 （Mean）	2014 （Mean）	2015 （Mean）	2016 （Mean）	2017 （Mean）
Return on equity	0.199806	0.187269	0.165394	0.149919	0.1419
Current ratio	0.405369	0.451263	0.460625	0.465775	0.487394
Non-performing loan rate	0.009231	0.011263	0.014744	0.015831	0.015313
Total assets growth rate	0.143	0.148769	0.172494	0.172338	0.069138

Table 4-5: Mean value of operating performance's four indicators for 5 years

Source: Annual reports of banks

Table 4-4 shows that the return on net assets of all listed commercial banks is above 11.40%, the highest is 23.23%, the average is 16.89%, and the return on net assets is ideal. Therefore, the profitability of listed commercial banks in China is good. However, from the mean of each year, the return on net assets has a downward trend.

Table 4-5 shows the average current ratio of listed commercial banks in China is 45.41%. The current ratio of each bank is between 29% and 66%, which is higher than the regulatory standard (25%). Therefore, the liquidity of Chinese commercial banks is also ideal.

Name	ROE	Current ratio	NPL ratio	Total Assets Growth Rate
Bank of Beijing	0.1377	0.4128	0.0124	0.1009
Industrial and Commercial Bank of China	0.1435	0.4170	0.0155	0.0808
Everbright Bank	0.1275	0.5993	0.0159	0.0170
Huaxia Bank	0.1354	0.4508	0.0176	0.0648
Bank for economic construction	0.1480	0.4353	0.0149	0.0554
Bank of Communications	0.1140	0.5866	0.0150	0.0756
Minsheng Bank	0.1403	0.3980	0.0171	0.1053
Bank of Nanjing	0.1694	0.4202	0.0086	0.0726
Bank of Ningbo	0.1902	0.5154	0.0082	0.1661
Agricultural Bank	0.1457	0.5095	0.0181	0.0758
Ping An Bank	0.1162	0.5257	0.0170	0.0999
Pudong Development Bank	0.1445	0.5887	0.0214	0.0478
Industrial Bank	0.1535	0.6083	0.0159	0.0544
China Merchants Bank	0.1654	0.4068	0.0161	0.0598
Bank of China	0.1224	0.4710	0.0145	0.0727
China Citic Bank	0.1167	0.4529	0.0168	-0.0427

Table 4-6: Operating performance data at the End of 2017

Source: Annual reports of banks （2017）

According to Table 4-6, only two banks had a non-performing loan rate of less than 1% in 2017, the rest of which were more than 1%, while Pudong Bank had a non-performing loan rate of 2.14%. Table 4-5 shows the average non-performing loan rate has increased year by year, indicating that the quality of credit has declined, but it remains in the controllable range of less than 3%, and the security performance is still good.

According to Table 4-5, the total assets growth rate of listed commercial banks in 2017 is lower than that of other years. CITIC Bank even experienced negative growth. However, the mean of total assets growth rate of 16 listed commercial banks in 5 years was 14.11%, showing a high growth rate.

4.2 INFERENTIAL ANALYSIS

4.2.1 Factor analysis

4.2.1.1 Factor analysis of core capital

According to the factor analysis output result, the Kaiser-Meyer-Olkin's value is 0.588, which is larger than 0.5, and the Bartlett's Test of Sphericity's value is 0, which is less than 0.05. Therefore, there is a strong correlation among the indicators, and this method can be used to calculate the aggregate value of core capital.

Indicators	Initial	Extraction
Shareholding ratio of the top five shareholders (S5)	1.000	0.764
The nature of the largest shareholder (NS)	1.000	0.709
Proportion of floating stock (FS)	1.000	0.387

Table 4-7: Communalities of core capital

Table 4-7 is the initial solution of factor analysis for three characteristic roots. From second column, we can see that their common variance is 1, which shows that the original variable can be explained. According to the data in third column, most of the information of the first two variables (values greater than 50%) can be interpreted. The information of the three variables loss less, and the extraction effect of factors is generally better.

According to the output table of Total Variance Explained, the first set of data items (columns 2-4) describes the initial factor solution. For example, the characteristic root of the first factor is 1.86, which explains 61.994% of the total variance of the three variables. Total variances of the original three variables were explained. From the second group of data items (column 5-7), we can see that the cumulative variance remains unchanged without affecting the commonality of the original variables, but the variance of the three variables is reallocated to change the contribution of the variance so that the factors can be more easily explained. The extracted factor could account for 61.994% of the three variables.

Indicators	Component Score Coefficient
Shareholding ratio of the top five shareholders (S5)	0.470
The nature of the largest shareholder (NS)	0.453
Proportion of floating stock (FS)	0.334

Table 4-8: Component Score Coefficient of core capital

The factor score function can be obtained from table 4-8:

f_1= 0.470 S5 +0.453 NS + 0.334 FS, (f_1 represents the common factor that extracted from the three financial ratios of core capital)

4.2.1.2 Factor analysis of operating performance

The same steps can be used to analyze the performance of banks by factor analysis.

According to the factor analysis output result, the Kaiser-Meyer-Olkin's value is 0.588 > 0.5, and the Bartlett's Test of Sphericity's value is 0 < 0.05. Therefore, there is a strong correlation among the indicators, and this method can be used to calculate the aggregate value of operating performance.

Indicators	Component Score Coefficient
Return on equity (ROE)	-0.437
Current ratio (CR)	0.275
Non-performing loan rate (NPL)	0.447
Total assets growth rate (TAG)	-0.234

Table 4-9: Component Score Coefficient of operating performance

The factor score function can be obtained from table 4-9:

f_2= -0.437ROE + 0.275CR + 0.447NPL - 0.234TAG, (f_2 represents the common factor that extracted from the four financial ratios of operating performance)

4.2.2 Test Retest reliability

Year	Y2013	Y2014	Y2015	Y2016	Y2017
Y2013	1	.919**	.636**	.451**	0.191
Y2014	.919**	1	.768**	.634**	.426**
Y2015	.636**	.768**	1	.916**	.731**
Y2016	.451**	.634**	.916**	1	.858**
Y2017	0.191	.426**	.731**	.858**	1

Table 4-10: Test retest

This study uses test retest reliability to measure the reliability of the same indicators for five years. According to Cohen (1992), the coefficient > 0.8 is good reliability; the coefficient between 0.7 and 0.8 is acceptable reliability; the coefficient <0.5 is poor reliability.

According to Table 4-10, Pearson correlation coefficients of the data for two consecutive years are more than 0.7, which indicates that the same test method is applied to the same group of data for two times, and the results show that the data have high consistency and good stability.

4.2.3 Multiple regression analysis

4.2.3.1 Multiple regression analysis of capital structure and performance

The output of model fitting table shows that the correlation coefficient of the model is 0.476, the decision coefficient is 0.227, the adjustment decision coefficient is 0.207, the standard error is 0.89075973, and the Durbin-Watson Value is 1.616.

The output of ANOVA[a] table shows p value is 0.000 < 0.05. In the case of the significance level of 0.05, there is a linear relationship between the operating performance and the core capital and the supplementary capital.

Variables	B	Sig.
Constant	0.952	0.13
Core capital	0.301	0.006
Supplementary capital	-4.024	0.01

Table 4-11: Coefficients[a] of capital structure and performance

Let Z1 stands for core capital and Z2 stands for supplementary capital. The multiple linear regression equation of reward according to the model is as follows:

Operating performance = 0.952 + 0.301 Z1-4.024 Z2

The data in the table 4-14 shows that the P values are 0.006 and 0.010 respectively, which are significant at a given significance level of 0.05.

This linear equation can be concluded that the operating performance of listed commercial banks in China is positively correlated with core capital and negatively correlated with supplementary capital.

4.2.3.2 Multiple regression analysis of core structure and performance

The same method (multiple regression analysis) is used to examine the relationship between core capital and operating performance of listed commercial banks.

Variables	B	Sig.
Constant	-3.399	0.18
Shareholding ratio of the top five shareholders (S5)	1.258	0.046
The nature of the largest shareholder (NS)	0.072	0.795
Proportion of floating stock (FS)	2.627	0.093

Table 4-12: Coefficients[a] of capital structure and performance

According to Table 4-12, only one p value (Sig.) < 0.05, so only shareholding ratio of the top five shareholders has significant relationship with operating performance. However, the table shows that all the financial ratio of core capital in this study are positive with operating performance. The multiple linear regression equation of reward according to the Table 4-12 is as follows:

Operating performance = -3.399 + 1.258 S5

4.3 CONCLUSION

Data shows that most of the largest shareholders of listed commercial banks in China are state-owned, and the capital structure has the characteristics of high ownership concentration and liquidity and low proportion of subsidiary capital. This study shows that factor analysis can be used to comprehensively measure core capital and operating performance of listed commercial banks in China. Multivariate linear regression analysis shows that the operating performance of listed commercial banks in China is positively correlated with core capital and negatively correlated with supplementary capital.

CHAPTER 5 CONCLUSION AND RECOMMENDATION

5.0 CHAPTER OUTLINE

This chapter introduces the conclusions of the research, the important findings, the limitations, and the relevant recommendations based on the results of the research.

5.1 RESEARCH CONCLUSION

Research Question	Research Objective	Hypothesis
1. Does core capital has a significant relationship with performance of listed commercial banks in China?	1. To examine whether core capital has a significant relationship with performance of listed commercial banks in China.	H1: Core capital has a significant positive relationship with performance of listed commercial banks in China.
2. Does supplementary capital has a significant relationship with performance of listed commercial banks in China?	2. To determine whether supplementary capital has a significant relationship with performance of listed commercial banks in China.	H2: Supplementary capital has a significant positive relationship with performance of listed commercial banks in China.

Table 5-1 RQs, ROs and Hypothesis

In this study, 16 commercial banks listed on the mainland of China are taken as samples, and relevant financial data for five consecutive years are selected. Factor analysis, reliability analysis and multiple linear regression analysis are carried out with SPSS software to draw conclusions.

1. The performance of listed commercial banks in China is positively correlated with core capital. According to the data analysis and detection in chapter 4, the correlation coefficient is 0.301.

2. The performance of listed commercial banks in China is negatively correlated with subsidiary capital. According to the data analysis and detection in chapter 4, the correlation coefficient is - 4.024.

5.2 KEY FINDINGS

The linear regression equation and the factor score function derived from factor analysis of core capital can draw the following conclusions:

1. The operating performance of listed commercial banks is positively correlated with the proportion of the top five shareholders, and the correlation coefficient is 1.258. That is to say, the higher the proportion of the top five shareholders, the better operating performance of commercial banks. Therefore, improving the degree of equity concentration can improve the operating performance. China's listed commercial banks prefer a relatively centralized form of ownership structure, that is, there are multiple controlling shareholders checking and balancing each other at the same time, which helps to protect the interests of small and medium-sized shareholders and play the role of agency competition mechanism.

2. The operating performance of listed commercial banks is positively correlated with the nature of the first shareholder. Although the impact is not significant, it still shows that the existence of state-owned shares will improve the performance of listed commercial banks. Most of China's listed commercial banks, the state has an absolute controlling position, which helps the state regulate the banking industry, reduce the risk of banks, and thus make the performance of commercial banks better.

3. The operating performance of listed commercial banks is positively correlated with the liquidity of core capital, but the effect is not significant. This shows that the operating performance of listed commercial banks can be improved slightly by improving the liquidity of core capital.

4. The operating performance of listed commercial banks is negatively correlated with the proportion of subsidiary capital, and the correlation coefficient is -4.024. This shows that the higher the proportion of subsidiary capital, the worse the operating performance of banks.

5.3 LIMITATION

The limitations of this study are as follows:

1. The sample data selected in the empirical analysis is not large enough. This paper chooses the annual report data of all commercial banks listed in mainland China from 2013 to 2017 as the sample data source, but since there are only 16 commercial banks listed on the mainland stock market for more than five years by the end of 2017, so only 80 sets of sample data are selected, the number is relatively small, which affects the empirical analysis results.

2. When studying the capital structure of banks, this paper only considers the two aspects of core capital and subsidiary capital, but does not consider the capital adequacy. That is to say, the particularity of the capital structure of banks, which is different from that of ordinary enterprises, has not been fully considered. This may affect the results of regression analysis.

3. In the process of data collection and collation, the selection of financial indicators has certain subjectivity. The selection of relevant indicators affecting the performance of listed commercial banks in China is not comprehensive. When choosing the relevant

indicators representing the comprehensive performance of banks, this paper chooses four indicators from four aspects of financial performance, asset flow, asset security and growth ability. Generally speaking, it can represent the overall performance level of banks. However, there are other indicators that cannot be included, which may affect the results of factor analysis and regression analysis.

4. In factor analysis, the value of KMO is just over 0.5, and the information of variables is lost relatively a lot when factor extraction, which leads to the unsatisfactory effect of factor extraction, and may also affect the results of regression analysis.

5. Theoretic analysis and research hypothesis put forward by more mature foreign theories and experience, which may not be in line with the actual situation of China's listed commercial banks. In this paper, the impact of capital structure on business performance of listed commercial banks in China is studied. Although the relevant national conditions of China are taken into account, the complex economic environment of China is not considered. Future research should fully consider the complexity of the economic environment and the characteristics of China's listed commercial banks, so as to make the research more in line with China's specific national conditions.

5.4 RECOMMENDATIONS FOR COMMERCIAL BANKS' PERFORMANCE IMPROVEMENT

5.4.1 Effectively increase core capital

According to the empirical analysis in Chapter four, we can see that the increase of the proportion of subsidiary capital will reduce the performance of banks. Therefore, China's listed commercial banks should reduce the proportion of subsidiary capital appropriately. In order not to affect the total capital, commercial banks should increase core capital. Core capital is the capital that can be used permanently by commercial banks, and can absorb all losses of banks when risks occur. To a large extent, it can

resist risks. However, the number of core capital is limited, so how to improve the number of core capital has become the main problem at present.

1. Create intermediary business and improve endogenous financing capability. Intermediary business mainly refers to the business that banks charge fees in the process of providing comprehensive financial services to customers. That is, in this process, commercial banks do not bear any risks, but use the advantages of technology, information and other aspects to handle various services for customers. The main source of profit of commercial banks in China is the deposit-loan gap, but in the face of interest rate marketization, the deposit-loan spread has been reduced seriously. Commercial banks need to transform and actively expand innovative business. The risk of intermediary business is relatively low, and it can also bring huge profits to banks, which will increase the surplus reserve and undistributed profits of banks. These two parts are also the important content of core capital. Moreover, after commercial banks make profits, they will consider endogenous financing, because the cost of endogenous financing is relatively low, which can further improve the performance of banks, thus forming a virtuous circle (Abata, 2017).

2. Increase capital and share to achieve capital market financing. Capital increase and share increase mainly refers to the way that listed joint-stock banks increase bank capital by issuing additional shares and attracting new shareholders to invest. At this time, in order not to dilute equity, the original shareholders have the priority to subscribe, and if they give up subscription, the new shareholders will enter. This method is to increase the proportion of common shares, which play an important role as a typical bank capital that can be used for a long time (Li, 2016).

5.4.2 Optimizing the Core Capital Structure of Listed Commercial Banks in China

1. Establishing a more centralized ownership structure

Generally, the highly centralized ownership structure is to accuse shareholders of holding more than 50% of the bank's shares, which can absolutely control the wake-up of the bank, typical of the Japanese and German commercial banks. The highly decentralized ownership structure means that the proportion of shareholders in the bank is very small, below 20%, and the shareholders' control over the bank is weak, resulting in the separation of shareholders' ownership and management's management rights. The model of British and American commercial banks is the most representative. Relatively centralized ownership structure means that the ownership structure is between highly centralized and highly decentralized.

Ownership concentration is too low, small shareholders are lazy, and the enthusiasm and ability to improve bank performance are not strong. Relatively centralized ownership structure, shareholders, managers and shareholders themselves form a good mutual checks and balances mechanism, and make joint efforts to improve the performance level. At present, China's capital market is not perfect, and it is not suitable to adopt the Anglo-American model with highly decentralized ownership structure. Through the analysis of the present situation of equity concentration of listed commercial banks in China, we can see that the ownership structure of most listed commercial banks is relatively centralized. According to the previous empirical analysis, it can also be seen that improving equity concentration can improve the performance of banks. However, excessive concentration of equity is also unreasonable, which is not conducive to the improvement of performance level. Ownership concentration is too high, the power given to large shareholders is too large, large shareholders often play the role of operators, which can easily lead to the lack of internal control, failure of supervision mechanism, weak external restraint mechanism, and reduce bank

performance. Therefore, the best way is to establish a more centralized ownership structure within the appropriate scope (Allahham, 2015).

2. Strengthen the governance effect of state-owned shares and properly increase the proportion of state-owned shares. The empirical analysis of Chapter four shows that there is a positive correlation between the nature of shares and operating performance of listed commercial banks in China. The high proportion of state-owned shares in China's commercial banks is determined by China's national conditions (An, 2016).

3. Increase the proportion of floating stock. Empirical analysis shows that although the effect is not significant, there is still a positive correlation between the proportion of circulating shares and the operating performance of listed commercial banks. According to the previous research in this paper, the proportion of circulating shares of most listed commercial banks in China has reached 100%, which may be the reason why the correlation is not significant. However, there are still some listed commercial banks that need to increase the proportion of circulating shares.

5.4.3 Strengthening the Non-performing Loan Rate Management of Commercial Banks

The accumulation of non-performing assets of commercial banks has seriously hindered the improvement of capital adequacy and operational efficiency of commercial banks. Strengthening the management of non-performing assets and speeding up the disposal of non-performing assets of commercial banks can effectively reduce their credit risk. In recent years, with the impact of domestic and foreign financial environment, the non-performing assets of Chinese commercial banks have shown an upward trend. The emergence of a large number of non-performing assets has made commercial banks bear a heavy burden of bad debts and bad debts. A large number of non-performing assets have seriously affected their ability to make profits and seriously restricted the

progress of financial system reform. Strengthening the management of non-performing loans in commercial banks is not only to fulfill the requirement of capital adequacy of the CBRC, but also to actively adapt to the capital constraints. It is also an important means to implement all-round risk management (Cao and Chen, 2016).

The clearance, management and resolution of non-performing assets have always been the most important business activities of commercial banks. In the past 20 years, two large-scale financial crises, the Asian financial crisis and the global sub-prime mortgage crisis, have been closely linked with non-performing assets of banks. The most direct reason is the excessive accumulation of non-performing assets in the banking sector. The non-performing assets of banking industry are mainly non-performing loans. The non-performing loans of banking industry in China are mainly concentrated in commercial banks. At present, the dual pressures of the external financial environment and the internal constraints of the Basel Accord, summing up the historical lessons of the past non-performing loans, actively and effectively managing non-performing loans, and preventing the non-performing loans that may occur after excessive lending under the loose credit policy are the urgent issues for our commercial banks to solve. Since the 21st century, especially in the golden five years, China's commercial banks have been greatly improved in the management of non-performing loans. At the same time, China's non-performing assets disposal companies have emerged from scratch. The non-performing loans disposal methods of commercial banks are more diversified and diversified. Commercial non-performing assets acquisition should also emerge. The disposal experience of non-performing loans has become a valuable business experience of banks, and it is also a valuable experience and reference for the management and disposal of non-performing loans in the future (Huang and Tang, 2015).

5.4.4 Optimizing debt structure

Optimizing debt structure has become one of the key points of modern commercial banks. The debt business of commercial banks in China is mainly bank deposits. They make profits by lending to companies and government projects with capital demand. The high debt rate is the characteristic of commercial banks in China. The phenomenon of high leverage operation is common in the operation mode of commercial banks in our country. The data in the annual reports of 16 listed commercial banks are realistic, and the asset-liability ratio reaches more than 90%. The bank's high leverage operation mode has a good promotion effect on the bank's performance, but the higher asset-liability ratio also reduces the ability of commercial banks to withstand risks. Once the vicious behavior of "run" occurs, banks will face huge operational risks. Therefore, commercial banks should set up risk early warning mechanism, establish large databases, collect national and global bank asset-liability ratio data, pay attention to the relationship between asset-liability ratio and net profit, and find the balance point between risk control and profit maximization (Li, 2016).

Diversified debt structure can effectively reduce the bank's operational analysis and strengthen the liquidity of bank funds. Therefore, it is imperative to optimize the debt structure and increase the proportion of other different debts in total liabilities. In terms of corporate financing, the best financing market is the bond market, which can effectively improve the debt structure of listed commercial banks in China. Compared with western developed countries, the development of China's secondary market is lagging behind, the bond market has a short development time, the policies and regulations are not perfect enough, the financial products of the bond market are relatively one, which can not meet the needs of rapid economic development, and the financing capacity of banks in the secondary market is limited. Therefore, the Chinese government should vigorously develop the bond market, improve laws and regulations,

enrich bond financial products, and enhance the vitality of the bond market. Secondly, commercial banks should innovate their own debt business. With the deepening of financial reform, customer demand has become diversified. Intermediary business has become the second largest business of banks, and the income of intermediary business has become an important indicator of bank income. The emergence of diversified online payment means and financial products has greatly reduced the deposit scale of commercial banks. Under such circumstances, Chinese commercial banks should actively seek changes, learn from the advanced operation of western developed countries in the innovation of debt business, and increase innovative debt business, such as transactional financial liabilities (Zhou, 2016).

5.4.5 Optimizing the External Environment of listed Commercial Banks

Firstly, strengthen the supervision of the banking sector. The governance structure of commercial banks is special. The supervision of banks is not by depositors, but by regulators and providers of deposit insurance. Therefore, supervision plays a vital role in the governance of commercial banks. It guarantees the anti-risk ability of banks and reduces the risk level of deposit insurance institutions (Cao and Chen, 2016).

Secondly, develop and improve the capital market. The low level of development of China's capital market has seriously weakened the external governance effect of circulating shareholders of commercial banks. From the empirical study in Chapter IV of this paper, we can see that there is a positive correlation between the proportion of circulating shares and the performance of banks. In view of this situation, first of all, China should continue to deepen the reform of the separation of powers, improve the corresponding measures of enterprise merger and acquisition and reorganization, and improve the legal and regulatory system to protect the interests of investors; next, China should improve the transparency of the market, timely disclosure of information to the public in order to facilitate public supervision; finally, China should establish and

improve the stock rating system to encourage commercial banks. In order to reduce the information asymmetry between commercial banks and investors, banks attach importance to management (Jiang and Zhao, 2012).

5.5 SUGGESTIONS FOR FUTURE RESEARCH

Although this study has obtained some meaningful conclusions, but there are still many shortcomings, these shortcomings also provide direction for future research.

1. This paper takes listed commercial banks as the research object. Although the assets scale and market share of listed commercial banks are more than 90% of that of China's banking industry, they are representative to some extent, but this paper does not analyze unlisted commercial banks. However, the number of urban commercial banks and rural commercial banks that are not listed in China is increasing, which is of great research significance. This will be one of the directions for further research in the future.

2. This paper mainly elaborates the impact of capital structure on business performance of listed commercial banks in China from an empirical point of view, but there is no relevant theoretical deduction. In order to make the conclusion more convincing and convincing, further research in this area will be the main direction of follow-up research.

5.6 CONCLUSION

The operating performance of listed commercial banks in China can be improved by increasing the concentration of equity, increasing the proportion of state-owned shares, increasing the liquidity of equity, and reducing the proportion of supplementary capital.

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APPENDIX

Appendix 1: MBA Project Log

This is an important document, which is to be handed in with your dissertation. This log will be taken into consideration when awarding the final mark for the dissertation.

Student Name:	LU HONGYU
Supervisor's Name:	Salaar Farooq
Dissertation Topic: Capital structure and performance of listed commercial banks in China	

SECTION A. MONITORING STUDENT DISSERTATION PROCESS

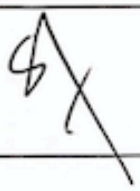
The plan below is to be agreed between the student & supervisor and will be monitored against progress made at each session.

Activity	**Milestone/Deliverable Date**			
	January	February	March	April
Determine the title of the study	21			
Determine the research framework		1		
Elaborate the relationship between IV and DV		11		
Determine the sampling process		18		
Determine the research methodology		25		
Determine the data analysis techniques and tools			4	
Determine the chapter 3			12	
Determine the chapter 4				2
Determine the chapter 5				9
Confirm the PPT slides				12

SECTION B. RECORD OF MEETINGS

The expectation is that students will meet their supervisors up to seven times and these meetings should be recorded.

Meeting 1

Date of Meeting	21/01/2019
Progress Made	Submit the summary of BRM (chapter 1, 2, 3)
Agreed Action	1. Enhance the research background 2. write chapter 1, 1.5-1.8
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 2

Date of Meeting	15/02/2019
Progress Made	Complete chapter 1 and chapter 2
Agreed Action	Add literature review of core capital and supplementary capital
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 3

Date of Meeting	18 / 02 / 2019
Progress Made	Finish the adjustment of chapter 1 and chapter 2
Agreed Action	Enhance the RO. RQ and Hypothesis
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 4

Date of Meeting	25 / 02 / 2019
Progress Made	Complete chapter 1 and chapter 2
Agreed Action	Start ~~the~~ writing chapter 3
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 5

Date of Meeting	4/03/2019
Progress Made	check chapter 3
Agreed Action	Modified the research design
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 6

Date of Meeting	11/03/2019
Progress Made	check PD PPT
Agreed Action	1. Adjust structure 2. modified abstract
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 7

Date of Meeting	25 / 03 / 2019
Progress Made	Feedback of the proposal defend
Agreed Action	Enhance the problem statement : add "gaps"
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 8

Date of Meeting	01 / 04 / 2019
Progress Made	Complete data collection
Agreed Action	write chapter 4
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 9

Date of Meeting	08 / 04 / 2019
Progress Made	check chapter 4.
Agreed Action	1. Enhance the explanation of data analysis 2. prepare for chapter 5
Student Signature	LU HONGYU
Supervisor's Signature	

Meeting 10

Date of Meeting	15 / 04 / 2019
Progress Made	Check chapter 5 and give recommendation for final project presentation
Agreed Action	Add some previous review to support the finding.
Student Signature	LU HONGYU
Supervisor's Signature	

Appendix 2: Example of Spine and Cover of the Thesis

Example of Spine and Cover of the Thesis

LU HONGYU

MASTER OF BUSINESS

CAPITAL STRUCTURE AND PERFORMANCE OF LISTED COMMERCIAL BANKS IN CHINA

LU HONGYU

MASTER OF BUSINESS ADMINISTRATION
FACULTY OF BUSINESS, COMMUNICATION & LAW
INTI INTERNATIONAL UNIVERSITY 2019

Appendix 3: Declaration

DECLARATION

I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been duly acknowledged.

Name: LU HONGYU

Student ID: I18014449

Signature: LU HONGYU

Date: 25/04/2019

Appendix 4: Title Page

INTI INTERNATIONAL UNIVERSITY

MASTER OF BUSINESS ADMINISTRATION

Capital Structure and Performance of Listed Commercial Banks in China

Author: LU HONGYU

Student No: I18014449

Supervisor: Salaar Farooq

Submission Date: 25/04/2019

Final Word Count: 13410

Appendix 5: Initial Research Proposal Paper

INTI International University
Master of Business Administration MGT7998

Initial Research Paper Proposal

STUDENT NAME & ID NO	LU HONGYU I18014449
BROAD AREA	Finance
Concise Title	Capital structure and performance of listed commercial banks in China
Problem Definition	Listed commercial banks raise and distribute funds for Chinese economic construction, which is the link for the smooth development of social reproduction. At the same time, listed commercial banks could grasp and reflect the information of social and economic activities, and provide the necessary basis for enterprises and governments to make correct economic decisions. Listed commercial banks play an important role in Chinese economic development (Zhao and Ling, 2014). • With the change of external economic environment and increasing competition, listed commercial banks need to optimize their capital structure to improve their operating performance in order to increase their competitiveness (Li, 2014). • In the past, single index evaluation method (ROA, ROE, EVA, etc.) was used to measure the company performance (Zhang

	and Ling, 2014). According to Teece (2014), company performance is not a single index, which should be considered comprehensively from the aspects of profitability, asset liquidity, asset security and growth capability. Therefore, the results of the research could not fully reflect the overall situation of listed commercial banks' performance. This study evaluates the performance of listed commercial banks from four aspects: profitability, asset security, asset liquidity and development ability，which is more comprehensive. • Many previous studies (Ma, 2012; Peng, 2016;Wang and Zhang, 2015) have analyzed the capital structure of listed commercial banks by studying equity structure. But equity structure is different from capital structure. It is not accurate to evaluate the capital structure only by studying equity structure (Li, 2014). This research studies the capital structure of listed commercial banks by studying core capital and supplementary capital.
Research Questions/ Objectives	**RQ1:** Does core capital has a significant relationship with performance of listed commercial banks in China?

	RQ2: Does supplementary capital has a significant relationship with performance of listed commercial banks in China? **RO1:** to examine whether core capital has a significant relationship with performance of listed commercial banks in China. **RO2:** to determine whether supplementary capital has a significant relationship with performance of listed commercial banks in China.
Scope of Study	This research focuses on 16 commercial banks that listed on the mainland stock market for more than 5 years in China.
Significance of the Research	**Significance to academic** The results of this study can provide academia with better understanding and knowledge of capital structure affecting listed commercial bank performance. **Significance to industry** This paper focuses on the relationship between the capital and the performance of commercial banks. It provides theory and reference for listed commercial banks to improve their performance in terms of optimizing the capital structure.
Literature Review	Banking sector is an important part of the current economy, performance of banks plays a vital role in economic development（Li, 2016）. Ongore and Kusa (2013) stated the same view that accurate

	assessment and analysis of bank performance could ensure that the financial system is healthy and efficient. Besides, correct evaluation of bank performance can also determine the operating results and overall financial situation of enterprises; measure the quality of assets, management quality and efficiency of enterprises to achieve corporate goals; determine the quality of corporate earnings, liquidity, capital adequacy and banking services (Gerhardt and Vander vennet, 2016).
Research Methodology	**Organization of study**: Listed commercial banks in China **Population & Sample**: By the end of 2018, there were 43 listed commercial banks in China, of which 17 were listed on the Hong Kong Stock Exchange. There are 26 banks listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange (mainland stock market), of which 16 have been listed for more than five years. This study chooses these 16 listed commercial banks. **Data collection method**: Collect secondary data from the annual reports of official websites of Shanghai and Shenzhen Stock Exchanges (mainland stock market) and official websites of banks. **Analysis of the Results /Statistical Analysis**:

	This study will adopt descriptive and inferential statistical analysis (SPSS software). **Descriptive Analysis**: Current Situation of Capital Structure and current situation of performance of these 16 commercial banks. (Mean, Maximum, minimum, standard deviation) **Inferential Analysis**: Factor analysis; Reliability Test; Multiple regression analysis

Appendix 6: Turnitin

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ORIGINALITY REPORT

9%	1%	6%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	"The 19th International Conference on Industrial Engineering and Engineering Management", Springer Nature, 2013 Publication	1%
2	Submitted to University of Birmingham Student Paper	1%
3	Submitted to University of Southampton Student Paper	1%
4	Submitted to Napier University Student Paper	<1%
5	"Experiences and Challenges in the Development of the Chinese Capital Market", Springer Nature, 2015 Publication	<1%
6	eprints.utar.edu.my Internet Source	<1%
7	Submitted to Universitaet Dortmund Hochschulrechenzentrul Student Paper	<1%

Appendix 7: Secondary Research Declaration

Secondary research (use of data previously gathered by others and sometime called "desk research" or "library research") does NOT require ethics approval so you will not be required to apply for UH ethics approval, or obtain a UH ethics protocol number. Throughout the Dissertation writing process, your supervisor will check that you are continuing only to use secondary data. Second markers and other moderators will also check this when the work is submitted. There are penalties for students who are found to have breached ethics procedures.

Students only using secondary sources, and their Supervisors, should sign the declaration below. A copy of this declaration should be submitted with your Dissertation and one copy should be submitted to your Dissertation module leader.

SECONDARY RESEARCH DECLARATION

I declare that my research involves ONLY secondary sources that any member of the public is legitimately free to access and use without obtaining permission.

I understand that should I wish to amend my study and collect data from human participants, I am required to apply for and receive UH ethics approval prior to recruiting participants and collecting data.

I understand that failure to obtain UH ethics approval for the collection of primary data constitutes a breach of ethics and academic penalties may apply.

Programme Title : Capital structure and performance of listed commercial banks in china.	
Dissertation Module Leader's Name : Salman Faroq	
Student's Name : LV HONGYU	Student's ID Number : I 18014449
Student's Signature : LV HONGYU	Date : 25/03/2019
Supervisor's Name : Salman Faroq.	
Supervisor's Signature :	Date : 25 Mar 19.

Appendix 8: SPSS Output

Year		S5	NS	FS	SC
2013	Mean	.643569	.63	.932394	.242869
	Std. Deviation	.2381686	.500	.1146484	.0413349
	Median	.613300	1.00	1.000000	.241350
	Minimum	.3557	0	.5857	.1570
	Maximum	.9725	1	1.0000	.2881
2014	Mean	.649963	.63	.948438	.258963
	Std. Deviation	.2290757	.500	.0720761	.0648166
	Median	.614900	1.00	1.000000	.241950
	Minimum	.3591	0	.8000	.1866
	Maximum	.9608	1	1.0000	.3979
2015	Mean	.659006	.63	.966294	.224900
	Std. Deviation	.2309237	.500	.0615501	.0640786
	Median	.613050	1.00	1.000000	.220600
	Minimum	.3379	0	.8250	.1297
	Maximum	.9598	1	1.0000	.3413
2016	Mean	.675856	.63	.974619	.217844
	Std. Deviation	.2247865	.500	.0459078	.0815886
	Median	.637000	1.00	1.000000	.206500
	Minimum	.3415	0	.8521	.0883
	Maximum	.9689	1	1.0000	.4033
2017	Mean	.692563	.63	.969900	.238844
	Std. Deviation	.2253167	.500	.0449434	.0899239
	Median	.651200	1.00	1.000000	.219850
	Minimum	.3704	0	.8631	.1310
	Maximum	.9720	1	1.0000	.4437
Total	Mean	.664191	.63	.958329	.236684
	Std. Deviation	.2245351	.487	.0723526	.0700734
	Median	.622550	1.00	1.000000	.236000
	Minimum	.3379	0	.5857	.0883
	Maximum	.9725	1	1.0000	.4437

Table 1: Report of capital structure

Year		ROE	CR	NPL	TAG
2013	Mean	.199806	.405369	.009231	.143000
	Std. Deviation	.0238142	.0900303	.0019506	.0718353
	Median	.206500	.430650	.008900	.130900
	Minimum	.1549	.2931	.0065	.0044
	Maximum	.2323	.5964	.0154	.2626
2014	Mean	.187269	.451263	.011263	.148769
	Std. Deviation	.0177696	.0830856	.0016512	.0674792
	Median	.192950	.463300	.011200	.138450
	Minimum	.1487	.3068	.0086	.0516
	Maximum	.2121	.5938	.0154	.3204
2015	Mean	.165394	.460625	.014744	.172494
	Std. Deviation	.0155229	.0879215	.0034547	.0855937
	Median	.170350	.443350	.015050	.151900
	Minimum	.1346	.3406	.0083	.0776
	Maximum	.1889	.6567	.0239	.4046
2016	Mean	.149919	.465775	.015831	.172338
	Std. Deviation	.0168825	.0876564	.0035940	.0749493
	Median	.151900	.461700	.016350	.159550
	Minimum	.1222	.3145	.0087	.0793
	Maximum	.1774	.6318	.0237	.3216
2017	Mean	.141900	.487394	.015313	.069138
	Std. Deviation	.0209140	.0752857	.0033138	.0440489
	Median	.141900	.461950	.015900	.072650
	Minimum	.1140	.3980	.0082	-.0427
	Maximum	.1902	.6083	.0214	.1661
Total	Mean	.168858	.454085	.013276	.141148
	Std. Deviation	.0289042	.0871547	.0038441	.0782890
	Median	.168900	.451850	.014300	.132350
	Minimum	.1140	.2931	.0065	-.0427
	Maximum	.2323	.6567	.0239	.4046

Table 2: Report of operating performance

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.588
Bartlett's Test of Sphericity	Approx. Chi-Square	50.161
	df	3
	Sig.	.000

Table 3: KMO and Bartlett's Test of core capital

Communalities

	Initial	Extraction
S5	1.000	.764
NS	1.000	.709
FS	1.000	.387

Extraction Method: Principal Component Analysis.

Table 4: Communalities of core capital

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.860	61.994	61.994	1.860	61.994	61.994
2	.781	26.020	88.014			
3	.360	11.986	100.000			

Extraction Method: Principal Component Analysis.

Table 5: Total Variance Explained of core capital

Component Score Coefficient Matrix

	Component 1
S5 (x_1)	.470
NS (x_1)	.453
FS (x_3)	.334

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Table 6: Component Score Coefficient Matrix of core capital

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.597
Bartlett's Test of Sphericity	Approx. Chi-Square	54.761
	df	6
	Sig.	.000

Table 7: KMO and Bartlett's Test of operating performance

Communalities

	Initial	Extraction
ROE	1.000	.704
CR	1.000	.278
NPL	1.000	.735
TAG	1.000	.203

Extraction Method: Principal Component Analysis.

Table 8: Communalities of operating performance

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.920	48.002	48.002	1.920	48.002	48.002
2	1.075	26.876	74.878			
3	.625	15.614	90.492			
4	.380	9.508	100.000			

Extraction Method: Principal Component Analysis.

Table 9: Total Variance Explained of operating performance

Component Score Coefficient Matrix

	Component 1
ROE (y_1)	-.437
CR (y_2)	.275
NPL (y_3)	.447
TAG (y_4)	-.234

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Table 10: Component Score Coefficient Matrix of operating performance

Correlations

		Y2013	Y2014	Y2015	Y2016	Y2017
Y2013	Pearson Correlation	1	.919**	.636**	.451**	.191
	Sig. (2-tailed)		.000	.000	.001	.194
	N	48	48	48	48	48
Y2014	Pearson Correlation	.919**	1	.768**	.634**	.426**
	Sig. (2-tailed)	.000		.000	.000	.003
	N	48	48	48	48	48
Y2015	Pearson Correlation	.636**	.768**	1	.916**	.731**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	48	48	48	48	48
Y2016	Pearson Correlation	.451**	.634**	.916**	1	.858**
	Sig. (2-tailed)	.001	.000	.000		.000
	N	48	48	48	48	48
Y2017	Pearson Correlation	.191	.426**	.731**	.858**	1
	Sig. (2-tailed)	.194	.003	.000	.000	
	N	48	48	48	48	48

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11: Test retest

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.476[a]	.227	.207	.89075973	1.616

a. Predictors: (Constant), SC, REGR factor score 1 for analysis 3

b. Dependent Variable: REGR factor score 1 for analysis 4

Table 12: Model Summary[b] of capital structure and performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.904	2	8.952	11.282	.000[b]
	Residual	61.096	77	.793		
	Total	79.000	79			

a. Dependent Variable: REGR factor score 1 for analysis 4

b. Predictors: (Constant), SC, REGR factor score 1 for analysis 3

Table 13: ANOVA[a] of capital structure and performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.952	.372		2.557	.013		
	REGR factor score 1 for analysis 3	.301	.106	.301	2.833	.006	.889	1.124
	SC	-4.024	1.516	-.282	-2.654	.010	.889	1.124

a. Dependent Variable: REGR factor score 1 for analysis 4

Table 14: Coefficients[a] of capital structure and performance

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.414[a]	.171	.138	.92829122	1.519

a. Predictors: (Constant), FS, NO, S5

b. Dependent Variable: REGR factor score 1 for analysis 4

Table 15: Model Summary[b] of core capital and performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.509	3	4.503	5.226	.002[b]
	Residual	65.491	76	.862		
	Total	79.000	79			

a. Dependent Variable: REGR factor score 1 for analysis 4

b. Predictors: (Constant), FS, NO, S5

Table 16: ANOVA[a] of core structure and performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-3.399	1.411		-2.409	.018		
	S5	1.258	.619	.283	2.031	.046	.564	1.773
	NS	.072	.278	.035	.261	.795	.595	1.682
	FS	2.627	1.544	.190	1.701	.093	.874	1.145

a. Dependent Variable: REGR factor score 1 for analysis 4

Table 17: Coefficients[a] of capital structure and performance