Lending Structure, Risk Management and Performance of Joint-Stock Commercial Banks and City Commercial Banks in China: A Corporate Governance Perspective

Ming Song

Master of Business (by Research)—Victoria University

Bachelor of Economics (Finance)—Central University of Finance and Economics

This thesis is presented for the fulfilment of the requirement of the degree of

Doctor of Philosophy

August 2018

College of Business

Victoria University

Melbourne, Victoria

ABSTRACT

Lending structure, risk management and corporate governance (CG) are important banking management issues and pertinent to banks' performance in terms of profitability and operating efficiency. Although existing research has demonstrated the link between CG, lending structure, risk management and bank performance, limited studies have established such a relationship among fast-growing joint-stock commercial banks (JSCBs) and city commercial banks (CCBs) in China.

This study investigated two sets of relationships between lending structure, risk management, CG and the performance of Chinese JSCBs and CCBs from 2007 to 2014. The two relationships were: (i) between CG factors (identities of influential shareholders, ownership structure, board of directors, CEO duality), lending structure of banks and bank risk management, and (ii) between CG factors, risk management and performance of banks.

The CG mechanisms employed in this study examined the structure and composition of boards, as well as ownership structure. The variables employed were board independence, board size, political connection of boards, CEO duality, nature of influential shareholders, ownership concentration, state ownership and foreign ownership. Lending structure was measured via lending asset allocation in industrial loans, commercial loans and real estate loans. The following variables were also employed to measure bank risk management: (i) capital adequacy ratio (CAR), (ii) loan-to-deposit (LTD) ratio and (iii) non-performing loan (NPL) ratio. Performance of banks was measured using return on average asset (ROAA) ratio, return on average equity (ROAE) ratio and cost-to-income (COI) ratio to reflect the profitability and operating efficiency of JSCBs and CCBs in China.

The data used in this study were manually collected from the disclosed annual financial reports of JSCBs and CCBs. The sample covered 49 JSCBs and CCBs from 2007 to 2014. The two sets of relationships were expressed in a structural model that was further developed into six simultaneous equations. The equations were estimated using both an ordinary least squares (OLS) approach and a generalised method of moments (GMM) approach in EViews. This study reports and discusses the GMM estimation results because of their robustness against the problem of endogeneity.

The estimation results demonstrated that among the CG mechanisms, political connection of boards, ownership concentration and state ownership have a significant effect on bank performance represented by all three measures (CAR, NPL ratio and LTD ratio), while board size does not affect any of the bank performance variables. However, no CG mechanism had a consistent effect on all three risk management variables, with board independence having no effect on any of the risk management variables. In addition, the lending structure variables had a limited effect on the LTD and NPL ratios, while CAR was not affected by any of the lending variables.

The following potential policy implications arise from this study. First, JSCBs and CCBs should focus on strengthening the function of board of directors through a more meritocratic recruitment process based on required expertise and experience. As part of this recommendation, there should be fewer government-appointed directors of JSCBs and CCBs. Second, the government should be cautious about dispersing shares held by government agencies because of the positive effect of government shareholding on bank performance. Third, the public listing of JSCBs and CCBs should be encouraged to promote their performance. Fourth, government and foreign investor block shareholding should be retained to enhance the performance of JSCBs and CCBs, while block shareholding by state-owned enterprises (SOEs) should be discouraged.

DECLARATION OF AUTHENTICITY

I, Ming Song, declare that the PhD thesis entitled 'Lending Structure, Risk Management and Performance of Joint-Stock Commercial Banks and City Commercial Banks in China: A Corporate Governance Perspective' is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signature 

Date: 9th August 2018

Ming Song

DEDICATION

To my loving parents and my best friends

Shun Cheng Song

&

Jun Qing Dong

who have always inspired my growth

ACKNOWLEDGEMENTS

This PhD thesis would not have been completed without the support of many individuals and organisations. I am greatly indebted to my principal supervisor Dr Riccardo Natoli and co-supervisor Professor Terrence Hallahan. I wish to express my greatest appreciation to them for their valuable discussions and comments throughout my doctoral program. I am thankful for their patience, encouragement and support in addition to all of the academic guidance they have provided since 2013.

I thank my mum, Jun Qing, and dad, Shun Cheng, for providing me with enormous emotional and financial support throughout this journey. Mum and Dad, your unconditional love to me and your attitude towards lifelong learning are both nourishing and inspiring.

I thank Professor Colin Clark for his constant encouragement and valuable discussions. I would also like to thank the administration staff of the College of Business and the Graduate Research Centre for giving me great support throughout the completion of this thesis.

I am very grateful for the financial scholarships provided by both the China Scholarship Council and Victoria University, without which I would not have had the opportunity to study in Australia.

Any errors and omissions in this thesis are my own responsibility.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

2SLS	Two-stage least squares
ADB	Asian Development Bank
AMC	Asset management corporation
Basel III	Third Basel Accord of International Convergence of Capital Measurement and Capital Standards
BGROWTH	Bank growth rate
BIS	Bank for International Settlements
BOARDIND	Board independence
BOARDPC	Political Connection of the Board of Directors
BOARDSIZE	Board size
CAR	Capital adequacy ratio
CAS	Chinese Accounting Standards
CBRC	China Banking Regulatory Commission
CCB	City commercial bank
CCC	City credit cooperative
CEO	Chief Executive Officer
CG	Corporate governance
COI	Cost-to-income
CRO	Chief risk officer
CSRC	China Securities Regulatory Commission
CV	Control variables
FTZ	Free Trade Zone
GDP	Gross domestic product
GFC	Global Financial Crisis
GMM	Generalised method of moments
IFRS	International Financial Reporting Standards
IPO	Initial public offering
JSCB	Joint-stock commercial bank
LB	Lending behaviour
LCOI	Natural logarithm form of COI
LGFP	Local government financing platform
LIST	Publicly listed on the stock market

LOANCOM	Commercial loan to total loan
LOANIND	Industrial loan to total loan
LOANRE	Real estate loan to total loan
LRED	Natural logarithm form of regional economic development
LRGD	Natural logarithm form of regional government budget deficit
LROAA	Natural logarithm form of ROAA
LROAE	Natural logarithm form of ROAE
LTD	Loan-to-deposit
MoF	Ministry of Finance
NIM	Net interest margin
NIR	Net interest revenue
NISFOREIGN	Foreign entity as the influential (block) shareholder
NISGOV	Government organisation as the influential (block) shareholder
NISSOE	SOE as the influential (block) shareholder
NPL	Non-performing loan
OBS	Off-balance-sheet
OECD	Organisation for Economic Co-Operation and Development
OLS	Ordinary least squares
OSFOREIGN	Percentage shares held by the foreign shareholder
BLOCK	Percentage shares held by the largest shareholder
OSSTATE	Percentage shares directly or indirectly held by the state
PBoC	People's Bank of China
RCB	Rural commercial bank
RCC	Rural credit cooperative
RED	Regional economic development
RGD	Regional government budget deficit
RMB	Chinese Renminbi
ROA	Return on assets
ROAA	Return on average assets
ROAE	Return on average equity
ROE	Return on equity
SASAC	State-owned Assets Supervision and Administration Commission
SEM	Simultaneous equation modelling
SME	Small- and medium-sized enterprise

SOCB	State-owned commercial bank
SOE	State-owned enterprise
STD	Standard deviation
TYPE	Bank type (JSCB or CCB)
UCC	Urban credit cooperative
UK	United Kingdom
US	United States
WTO	World Trade Organization

CHAPTER 1 INTRODUCTION

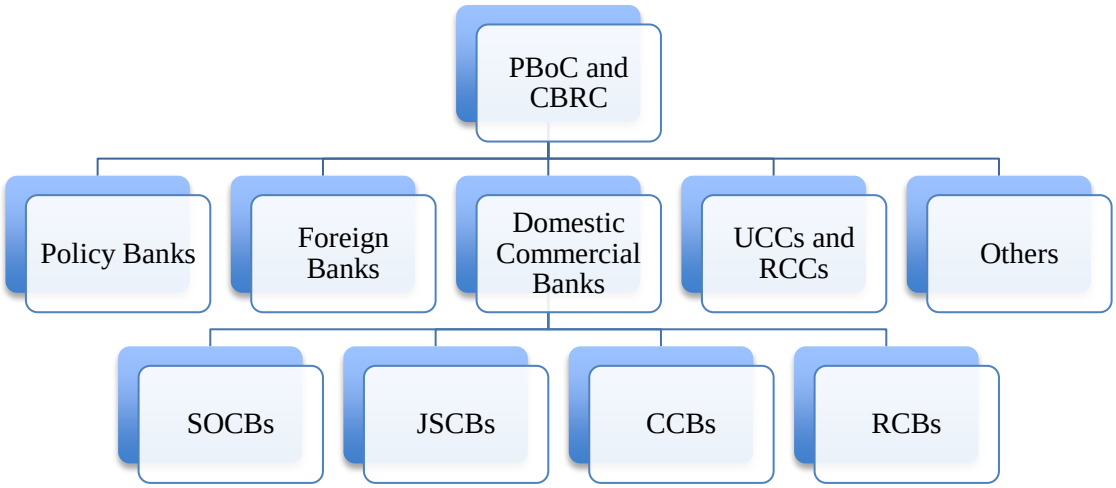
1.1 Research Background

Since the 2007–2009 Global Financial Crisis (GFC), there has been increased academic interest in exploring the risk management and corporate governance (CG) of commercial banks in a global context. Existing research (e.g., Aebi, Sabato & Schmid 2012; Liang, Xu & Jiraporn 2013; Mülbert 2009) seeks to demonstrate a link between lending structure, risk management, CG and bank performance both theoretically and empirically. Although it is generally accepted that CG factors and risk management explain the performance of banks (Aebi, Sabato & Schmid 2012; Andres & Vallelado 2008; Grove, Patelli & Victoravich 2011; Kirkpatrick 2009; Mehran, Morrison & Shapiro 2011; Minton, Taillard & Williamson 2011), there is a lack of consensus on the direction and the extent of these effects under specific institutional settings.

Among the emerging economies, China has attracted much scholarly attention on the aforementioned issues relating to the ongoing economic and financial reform in its banking sector. These reform initiatives aim to improve financial stability and operating efficiency. As in all other aspects of Chinese reform, the commercialisation of the Chinese banking sector followed the important principle of gradualism rather than shock therapy (Lau, Qian & Roland 2000). Recent reforms have reshaped the banking industry in China with respect to ownership structure (Huang, Wang & Lin 2013), market structure, capital restructure, asset reallocation (Podpiera 2006) and bank supervision (Okazaki 2007). As Figure 1-1 indicates, the banking industry in China is under the regulation and supervision of the Central Bank, the People's Bank of China (PBoC) and the China Banking Regulatory Commission (CBRC), which is the supervisory body of the banking industry. The banking system consists of five groups

of banking institutions: policy banks; designated foreign banks capitalised by foreign funds; domestic commercial banks; urban and rural credit cooperatives (UCCs and RCCs); and other non-bank financial institutions such as trust and investment companies, finance companies and leasing companies. Domestic commercial banks can be categorised into four tiers, with five state-owned commercial banks (SOCBs) comprising the first tier, 12 joint-stock commercial banks (JSCBs) comprising the second tier, 134 city commercial banks (CCBs) comprising the third tier and 1,141 rural commercial banks (RCBs) comprising the fourth tier (CBRC 2016).

Figure 1-1 Overview of the Banking Industry in China



Despite being the fastest-growing banks in China, JSCBs and CCBs have been overlooked because of their relatively small sizes compared with first-tier banks. Additionally, existing research that has examined the relationship between CG and the performance of JSCBs and CCBs yields somewhat conflicting conclusions regarding the role of the board of directors and the effect of different ownership structures on bank risk management and performance. This is briefly summarised below.

1.1.1 Risk Management, Corporate Governance and Performance of JSCBs and CCBs

Empirical evidence in China supports the idea that good CG practices are associated with improved risk management and better performance (Hass, Johan & Schweizer 2013; Sami, Wang & Zhou 2011). Past CG research into Chinese banks has focused on the effect of ownership structure on bank performance and risk management. The research has demonstrated that different ownership structures are associated with different levels of risks, and that they have a significant effect on bank performance (Berger, Hasan & Zhou 2009; Ferri 2009; Fu & Heffernan 2007; Jia 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Lin & Zhang 2009; Li & Li 2008; Matthews & Zhang 2010; Shen, Liao & Weyman-Jones 2009). However, the role of the board of directors as an important CG mechanism is lacking in the Chinese literature. There is limited evidence of the effect of board characteristics on bank performance in China, except for studies by Qian, Zhang and Liu (2015) and Jia, Xu and Jiraporn (2013).

Additionally, despite evidence of the negative effect of government shareholding on bank performance (e.g., Berger, Hasan and Zhou 2009; Jia 2009; Lin & Zhang 2009), existing research has overlooked the quantitative relationship between the percentage of government ownership and bank performance. As pointed out by García-Herrero, Gavilá and Santabárbara (2009), the way in which bank ownership has been traditionally measured—through a dummy variable representing different types of ownership (e.g., Berger, Hasan & Zhou 2009; Jia 2009; Jiang, Feng & Zhang 2012; Lin & Zhang 2009)—may not be accurate enough. In line with this, García-Herrero and Santabárbara (2008) have demonstrated that more precise measures of ownership (e.g., actual percentage over total capital) may lead to different results.

Further, the difference between government organisations and state-owned enterprises (SOEs) in terms of their ownership is rarely differentiated for Chinese banks in existing studies except for Dong et al. (2014), who argued that the nature of ownership is pertinent to their performance and lending structure: SOE-controlled banks might have strong relations with industries, while state/local government-established banks might be more affected by politicians connected with the bank. The nature of this influential ownership is yet to be empirically tested against bank performance and risk management among JSCBs and CCBs. Lastly, existing studies have not examined the effect that bank lending structure and risk management practice can have on performance with limited measurements for risk and performance.

1.1.2 Lending Structure and Risk Management of JSCBs and CCBs

Existing research regarding bank lending in the Chinese banking sector has been concerned with the lending bias towards SOEs (Brandt & Li 2003; Cull & Xu 2003; Firth, Lin & Wong 2008; Lu, Thangavelu & Hu 2005; Wei & Wang 1997) and small business (Berger & Udell 1995; Berger et al. 1998). Recent research indicates that lending structure in terms of the allocation of lending assets among different industries may imply various levels of risk for commercial banks. According to Qian, Cao and Li (2011), the growing issuance of real estate loans in banks will eventually increase banks' risk in the form of non-performing loans (NPLs). Similarly, Cebenoyan and Strahan (2004) found that banks with higher commercial, industrial and real estate lending ratios exhibit better credit risk management. Therefore, this research focuses on exploring the relationship between lending structure, CG and the risk management of JSCBs and CCBs.

Currently, a suitable framework for the investigation of this relationship is lacking in the literature. A review of the existing literature indicates several gaps in the field regarding the lending structure and risk management of JSCBs and CCBs, including:

1. Lending structure, as an important aspect of bank lending behaviour, has been overlooked in banking studies in China in terms of its effect on banking risk management and performance.
2. There is inconsistent empirical evidence regarding the effect of CG and risk management on bank performance for Chinese commercial banks as a result of limited empirical risk and performance measurements, variances in study periods and different samplings of banks.
3. Most empirical research fails to combine CG factors, bank lending structure and risk management to study bank performance.

To summarise, the lack of a suitable framework makes it difficult to identify any meaningful evaluations of the effect of CG on the performance and risk management of JSCBs and CCBs. A framework that incorporates risk management, CG and bank performance is yet to be developed specifically for Chinese JSCBs and CCBs.

1.2 Research Problem

The knowledge gap identified in existing studies yields the fundamental research problem this thesis aims to address:

> *To identify whether a relationship exists between lending structure, risk management, CG and performance of Chinese JSCBs and CCBs.*

1.3 Research Questions

As a result of the research problem identified above, two main research questions arise:

Research Question 1: Do CG factors and lending structure of banks have significant effects on the risk management of JSCBs and CCBs?

Research Question 2: Do CG factors and risk management of banks have significant effects on the performance of JSCBs and CCBs?

The two main research questions can be further developed into four sub-research questions as follows:

Research Question 1A: What is the effect of CG factors of banks, if any, on the risk management of JSCBs and CCBs?

Research Question 1B: What is the effect of lending structure of banks, if any, on the risk management of JSCBs and CCBs?

Research Question 2A: What is the effect of CG factors of banks, if any, on the performance of JSCBs and CCBs?

Research Question 2B: What is the effect of risk management of banks, if any, on the performance of JSCBs and CCBs?

The main objective of this study is to empirically examine the effect of various CG factors and risk management on bank performance. The specific research objectives are:

1. To develop a framework that incorporates lending structure, risk management and CG factors to improve the understanding of how these combined factors affect bank performance of JSCBs and CCBs in China.
2. To develop a more comprehensive set of CG variables to more accurately capture their effect on bank performance of JSCBs and CCBs in China.
3. To estimate the effect of CG factors and the lending structure of Chinese JSCBs and CCBs on their risk management.
4. To estimate the effect of CG factors and the risk management of Chinese JSCBs and CCBs on their performance.

To achieve these objectives, this research adopts a quantitative approach to investigate the relationships between the four sets of variables (i.e., lending structure, risk management, CG and bank performance). An overview of the research method is summarised in Section 1.5.

In achieving the above objectives, this study will contribute to the body of knowledge regarding CG and banking from the following three perspectives:

1. This study fills a gap in the literature by systematically investigating the interactive relationship between lending structure, risk management, CG and bank performance. It enhances the current understanding of CG mechanisms, lending structure, risk management and performance of JSCBs and CCBs in China.
2. A set of comprehensive CG measurements covering board characteristics and various ownership structures is developed in this research to provide greater clarity regarding the relationship between bank performance and state ownership. Existing studies that examine state ownership as a CG mechanism for Chinese commercial banks have mostly focused on types of banks and the static/dynamic effect of change of ownership (Berger, Hasan & Zhou 2009; Jia 2009; Jiang, Feng & Zhang 2012; Lin & Zhang 2009). Studies using the actual percentage of government shares are particularly lacking in the literature.
3. The evaluation of lending structure adds to the understanding of the effect of this important aspect of bank lending behaviour on the risk management of JSCBs and CCBs in China.

1.4 Definition of Key Terms

1.4.1 Corporate Governance

Among an array of CG definitions, this research adopts the definition of CG provided by the Organisation for Economic Co-operation and Development (OECD 2004a, p. 11) because it is widely accepted and, more importantly for the present research, adopted by the supervision framework in China:

> *Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.*

Under this definition, a company's objectives and the mechanism of monitoring performance are treated as CG issues rather than being endogenous. From a banking perspective, the OECD definition underpins several guides on CG practice, including the Principles for Enhancing Corporate Governance and the Guidelines on Corporate Governance of Commercial Banks. The OECD definition incorporates substantial senior management issues—particularly risk management in banks and different types of bank ownership: (i) domestic ownership; (ii) foreign ownership; and (iii) state ownership, all of which can be recognised as forms of 'governance'. Thus, governance includes the effects of the goals of different ownership types, as well as the ability of owners to minimise agency costs with management (Berger et al. 2005). This study considers the following CG mechanisms to measure the CG practice of Chinese JSCBs and CCBS: (i) ownership concentration; (ii) influential shareholders in terms of identities and percentage of shares held by these shareholders; (iii) board size; (iv) politically connected directors; and (v) CEO duality.

1.4.2 Risk Management

Risk is defined in the study of finance as ‘the randomness of the return of investments, including both positive and negative outcomes’ (Bessis 2015, p. 2), and risk management is defined as ‘the entire spectrum of risk management processes and risk models that allow banks to implement risk-based policies and practices’ (Bessis 2015, p. xii). This definition comprises all techniques and managerial processes required for monitoring and controlling risks and the required risk models. This study measures risk management of banks using three variables: (i) capital adequacy ratio (CAR), which accounts for capital risk management; (ii) NPL ratio, which measures asset risk management; and (iii) loan-to-deposit (LTD) ratio, which measures liquidity risk management of banks.

1.4.3 Lending Structure

This study uses lending asset allocation to measure bank lending structure. In existing studies, lending behaviour can be described by one (or more) of the following perspectives: (i) lending scale; (ii) lending structure; and (iii) lending prudence. Empirically, risk management and lending prudence sometimes overlap (e.g., Jia 2009), and there is a strong correlation between lending scale and asset growth rate of banks (Qian, Cao & Li 2011), with the latter treated as a control variable in this research. Consequently, lending structure is included in the present study. Previous research has demonstrated the relationship between lending asset allocation among different industries and risk management of banks (Qian 2012). This research therefore examines lending asset allocation among three types of loans: (i) commercial loans; (ii) real estate loans; and (iii) industrial loans.

1.4.4 Bank Performance

In a broad sense, bank performance is concerned with how well financial institutions perform in providing services to consumers and businesses—that is, the contribution made by financial institutions to the common wealth on behalf of consumers and businesses that are interested in the price and quality of financial products. From a shareholder perspective, performance is defined as 'the profit banks made on the behalf of shareholders and the efficiency that is associated with the profit-making' (Bikker 2010, p. 143). In empirical studies, bank performance is often measured by profitability ratios such as net interest margin (NIM), return on average assets (ROAA) ratio and return on average equity (ROAE) ratio, as well as efficiency measures such as X-efficiency [1], cost-to-income (COI) ratio and managerial efficiency. To obtain a comprehensive measure of bank performance, this study employs ROAA and ROAE ratios as profitability measures and the COI ratio as an effiency measure to evaluate bank performance.

Table 1-1 summarises the definitions of the key concepts used in this study.

[1] Fu and Heffernan (2007) calculated X-efficiency as the ratio of the predicted costs that would be used if the bank were as efficient as the best-practice bank in the sample, facing the same exogenous variables to the predicted actual costs and adjusted for random error.

Table 1-1 Definitions of Key Concepts in the Present Study

Concepts	Definition
Corporate Governance	CG involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. CG also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance (OECD 2004, p. 11).
Risk Management	Risk management designates the entire spectrum of risk management processes and risk models that allow banks to implement risk-based policies and practices (Bessis 2015, p. xii).
Lending Structure	Lending structure relates to the percentages of bank loans that are issued based on selected industries: industrial loans, commercial loans and real estate loans (Qian 2012, p. 93).
Board Independence	Board independence is the ability of the board of directors to exercise sound judgment after consideration of all relevant information and views without influence from management (Basel Committee on Banking Supervision 2006, p. 7).
Politically Connected Director	A politically-connected director is the director who is currently serving or formerly served in the government or military (Liang, Xu & Jiraporn 2013, p. 2958).
CEO Duality	The CEO chairs the board of directors or acts as the deputy chair and is an executive director (based on Peng et al. 2010, p. 612).
Ownership Concentration	Ownership concentration refers to the distribution of the ownership among different institutions and individuals and is related to shareholders' controlling power (Dong et al. 2014, p. 121).
Influential Shareholders	Influential shareholders are the largest/block shareholders of the bank (Liang, Xu & Jiraporn 2013, p. 2959).
Bank Performance	Bank performance refers to the profit made by banks on behalf of shareholders, as well as the efficiency associated with the profit-making (Bikker 2010, p. 143).

1.5 Overview of Research Method

To empirically examine the effect of CG on risk management and bank performance, this study collects data on lending structure, risk management, CG mechanisms and bank performance from the annual financial reports of 49 JSCBs and CCBs over 2007–2014. The final sample consists of 296 bank-year observations of 12 JSCBs and 37 CCBs. The primary data source used in this study was annual reports. Data from annual reports were manually obtained from individual bank websites, China Bond

(www.chinabond.com.cn) and Sina Finance (finance.sina.com.cn). When not disclosed in annual reports, senior executive information profiles were gathered from other sources, including Hexun Finance (www.hexun.com), Ifeng Finance (finance.ifeng.com), Baidu Baike (baike.baidu.com) and regional government websites. Regional gross domestic product (GDP) and government budgets/expenditure were acquired from the National Statistics Bureau of China (http://www.stats.gov.cn).

Two sets of relationships that are pertinent to the research questions proposed in Section 1.3 were expressed in a structural model and then further developed into six simultaneous equations. These equations were estimated using the ordinary least squares (OLS) approach and the generalised method of moments (GMM) approach in EViews. The OLS approach is the most common method used in existing CG studies in China (Jia 2009; Lin & Zhang 2009; Qian 2012; Qian, Zhang & Liu 2015), and the GMM approach is applied by CG studies in both developed economies (Andres & Vallelado 2008; Minnick & Noga 2010; Pathan 2009; Pathan & Skully 2010) and emerging economies (Fu & Heffernan 2009; Hasan & Xie 2013; Liang, Xu & Jiraporn 2013). Generally, the GMM estimation method has been widely used to overcome the potential endogeneity problem in CG studies. This method forms the basis of the results and discussion of this study, and it is outlined and justified in Chapter 4.

1.6 Overview of Research Findings

The estimation results in this study demonstrate that among the CG mechanisms, political connection of boards, ownership concentration and state ownership have a significant effect on bank performance represented by all three measures, while board size does not affect any of the bank performance variables. As a comparison, no CG mechanism has a consistent effect on all three risk management variables, and board independence has no effect on any of the risk management variables. Among the risk

management measures, the NPL ratio has a negative effect on all three performance measures, and the CAR tends to have a negative effect on the ROAE and COI ratios. The fact that ROAE is negatively affected by all risk management measures indicates that: (i) shareholders' benefit is mostly guarded when banks have more prudent asset risk management and liquidity risk management; and (ii) when banks increase their risk-weighted capital ratio, the loss of efficiency contributes to a lower ROAE.

Lending structure variables (i.e., commercial, industrial and real estate loans ratios) do not appear to have a consistent effect on all three risk management variables, although commercial loans tend to increase the NPL ratio and real estate loans and industry loans tend to have a positive effect on banks' LTD ratio. Additionally, this study shows that the ongoing bank reforms affect the risk management and performance of JSCBs and CCBs, while the CG mechanisms are not affected, except for board independence.

1.7 Scope of Study

Adopting the OECD's CG definition means that the research framework proposed in this study does not consider the external governance framework suggested by Mülbert (2009) and Denis and McConnell (2003), which relies on the external (or takeover) market and the legal system (i.e., rule-based). The OECD's definition is a valid approach because China is considered to have a relation-based governance environment (i.e., not rule-based), although the transition from relation-based governance to rule-based is slow and painful (Li 2013).

As a result of the increasing market participation of JSCBs and CCBs in China, this study aims to operationalise the measurement of CG factors in the contemporary banking industry in China against the general background of ongoing economic and financial reform. It will use the measurements to evaluate the relationships between

lending structure, risk management, CG and performance of JSCBs and CCBs in China. This study does not investigate foreign banks because they are subject to different regulation requirements under the current banking regulation framework. Additionally, foreign banks comprise a relatively small share of the market compared with domestic banks (see further discussion in Section 2.2.3.1). Further, this study does not examine the aforementioned relationships for RCBs because of poor information disclosure among these banks.

1.8 Organisation of the Study

This study is organised as follows. Chapter 1 introduces the general context of this study and presents the research problem and research questions. It also summarises the key terms and research method used in the study.

Chapter 2 introduces the general context of this study, including the ongoing economic and financial reform in improving CG among generic firms and banks. It then reviews the literature on lending structure and risk management of banks, including how previous studies measure these factors in banking operation and how the measurements are evaluated in terms of their interaction with each other and, more importantly, their effect on the performance of commercial banks, wherever applicable in the Chinese context.

Chapter 3 reviews the literature on CG theories and the empirical evidence of the effect of CG on risk management and performance of banks. It also reviews the CG debate in the banking sector, CG practices in major economies and the particularities of CG issues in China in the context of Chinese economic and financial reform. A multi-theoretic approach is proposed for developing the conceptual framework of this study to identify possible relationships between CG mechanisms and bank performance.

Chapter 4 introduces the conceptual framework of this study and reports the research design and methodology. The chapter starts by developing the conceptual framework following the review of existing literature regarding lending structure, risk management, CG and bank performance in Chapters 2 and 3. Based on the conceptual framework, this chapter constructs the empirical models and discusses the research method.

Chapter 5 reports and discusses the data analysis results of the relationship between lending structure, risk management, CG and performance of Chinese JSCBs and CCBs. The implications of these results are discussed in Chapter 6 in relation to the existing CG theories and findings from previous empirical studies.

CHAPTER 2 LITERATURE REVIEW OF LENDING STRUCTURE AND RISK MANAGEMENT OF CHINESE JSCBs AND CCBs

2.1 Introduction

This chapter initially reviews the literature on lending structure and risk management of Chinese JSCBs and CCBs. The review will focus on measures employed in previous studies and how they were evaluated in terms of their interaction with each other, as well as their effect on the performance of JSCBs and CCBs.

Section 2.2 reviews the ongoing economic and financial reform in China and its effect on market structures, bank ownership, bank capital structure, and bank supervision and regulation. Empirical evidence will then be provided to highlight the effect of the reform on bank performance and bank efficiency. Section 2.3 reviews the lending structure of commercial banks in China as a measure of bank lending activities; although the latter is also measured via lending scale and lending prudence in existing studies, this study uses lending structure over the latter two measures. Consequently, the section also reviews empirical evidence of the correlation between various bank lending behaviour measurements and bank performance. Section 2.4 discusses risk management in the context of the present study and demonstrates empirically the relevance of risk management to bank performance identified in existing studies. Section 2.5 identifies the gaps in the literature, which form part of the motivation of this study, while Section 2.6 concludes the chapter with a summary.

2.2 Banking Reform in China

China's economic reform commenced in 1978 and is recognised as a driving force in the country's transition from a centrally planned economy to an increasingly market-oriented economy. This ongoing transition includes a series of reforms in many areas,

ranging from agricultural to industrial sectors, from product to labour market and from internal monetary market adjustment to external trade balance management (Chow 2006; Okazaki 2007). In light of this, reforms pertaining to the Chinese banking sector are reviewed below.

2.2.1 Overview of Bank Reform in China

The banking system in China has undergone a series of changes concurrent with the economic and financial reform, which has focused on improving efficiency and resource allocation (Heffernan & Fu 2010). As in all other aspects of Chinese reform, the commercialisation of the Chinese banking sector has followed the important principle of gradualism rather than undertaking all steps of reform at once (Chow 2006; Lau, Qian & Roland 2000). Recent reforms include allowing banks to list shares on domestic and foreign stock exchanges, allowing more foreign investor ownership and establishing new rural financial institutions. These reforms have reshaped the banking industry in China with respect to ownership structure (Huang, Wang & Lin 2013), market structure, capital restructure, asset reallocation (Podpiera 2006) and bank supervision (Okazaki 2007).

2.2.1.1 Reforming the Banking Market Structure

After the establishment of the People's Republic of China in 1949, the banking system was centralised under the Ministry of Finance (MoF), which exercised firm control over all financial services, credit and the money supply. The PBoC, which was established in 1948, functioned as both the central bank and a commercial bank. Under the mono-bank system, banks that were taken over, restructured into the PBoC or placed under the administration of the PBoC or MoF were part of the hierarchy to help fulfil national

production plans (Berger, Hasan & Zhou 2009). Consequently, there were no incentives for banks to compete with each other and achieve economic efficiency.

The mono-bank system concluded in 1979, when a two-tiered banking system was introduced with the establishment of four specialised state-owned banks. These four banks were not directly controlled by the PBoC or the MoF. The lending functions were split from the PBoC, while the specialised state-owned banks were limited to serving their designated area of the economy.[2] In 1985, the four banks were allowed to compete with each other in all sectors, but only in a very limited way. This continued until the mid 1990s, with the four banks serving as policy-lending conduits with little incentive to compete (Berger, Hasan & Zhou 2009).

In the mid 1980s, the nature of centrally planned financial resource allocation was revised to enable regional governments to use domestic loans and self-raised funds to fund their own projects. This policy lending blocked competition between the SOCBs until a more dynamic banking system was established in 1995 to meet the country's new financial needs. In 1994, three specialised policy banks—namely, the Agricultural Development Bank of China, China Development Bank and the Export–Import Bank of China—were established to reduce the burden of SOCBs regarding financing state-directed trade and development projects (Okazaki 2007).

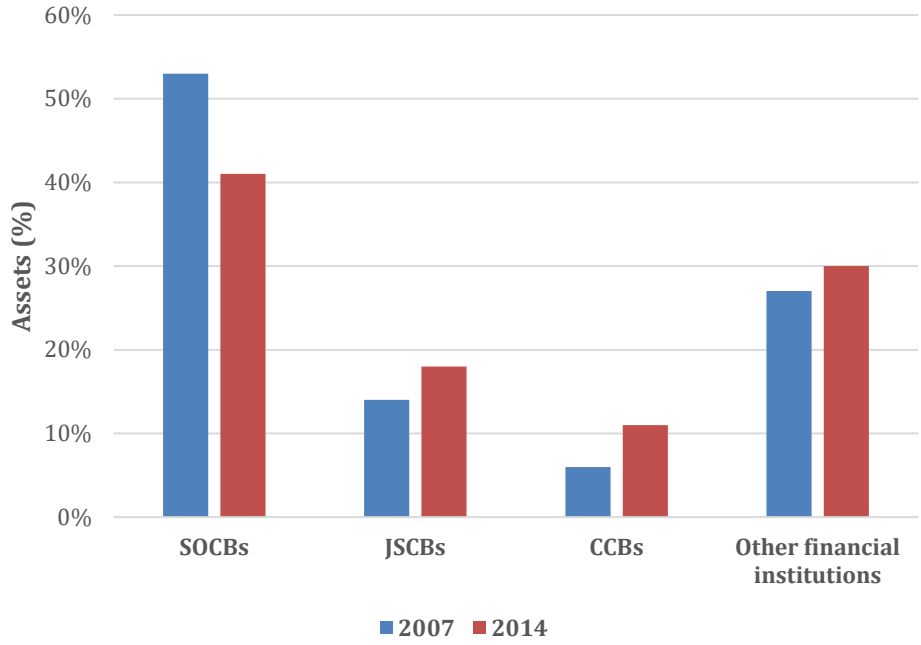
More joint-stock banks were then established, such as Minsheng Bank, which was founded in 1996 and was the first bank in China to be held by private institutional investors. This made it the largest private bank in China. The central government also allowed local governments to establish local CCBs, along with the consolidation of

[2] The Bank of China served foreign trade and foreign exchange, while the China Construction Bank served construction lending. The Agricultural Bank of China served the agricultural sector, and the Commercial Bank of China served industrial and commercial lending.

local UCCs (PBoC 2000). However, the Chinese government has been cautious regarding the entry of foreign banks. Foreign banks were allowed to open a representative office in 1979 and to open operational branches in Special Economic Zones since 1982. In 1994, the government then further relaxed this restriction by allowing the foreign banks to operate in 23 cities upon application (Berger, Hasan & Zhou 2009).

Between 2003 and 2015, the fastest-growing group of banks were CCBs, with an average annual assets growth rate of 24.42%, followed by JSCBs, with an annual growth rate of 20.95%, while the slowest-growing banks were SOCBs, with an annual growth rate of 15.14% (CBRC 2016). Although SOCBs experienced steady growth in assets, market share, as measured by total assets of JSCBs and CCBs, continued to increase. Figure 2-1 shows the market share of each group of banks in 2007 and the first quarter of 2014. The total assets of JSCBs and CCBs increased from 14% to 18% and 6% to 11% respectively, whereas the total assets of SOCBs decreased from 53% to 41%, showing the increasing importance of JSCBs and CCBs.

Figure 2-1 China Banking Industry Structure 2007 and 2014 Assets (%)



Source: CBRC
Note: Other financial institutions include policy banks, RCBs, foreign banks, UCCs, RCCs, corporate financial groups, lease trusts, financial leasing companies and postal savings.

2.2.1.2 Reforming the Ownership Structure of Banks

The ownership structure of commercial banks in China has been greatly diversified by the Chinese economic reform plan. By the end of 2014, only three banks in China remained purely government-owned. Most banks have been transformed into mixed ownership entities in which the central or local government may or may not be the major shareholder in the bank. Public listing and attracting foreign investors are two commonly used strategies to privatise banks (Jiang & Kim 2015).

With respect to public listing, banks are encouraged to list on stock exchanges for additional external monitoring to improve their managerial efficiency. Table 2-1 provides a summary of the listed commercial banks in China. It includes five SOCBs, eight JSCBs, seven CCBs and one RCB.

Two national JSCBs listed some of their shares from as early as 1991,[3] although the major listings of banks took place after 2000, which coincided with China's entry into the World Trade Organization (WTO). Notably, listings outside Mainland China were not subject to the 25% foreign ownership cap. Empirical evidence shows that publicly listed banks, which are subject to monitoring and vetting in capital markets, perform better regardless of their ownership status. This suggests that the privatisation of banks has led to improved performance with respect to revenue inflow and efficiency gains in the short run and the long run (Jiang, Yao & Feng 2013).

[3] In 1991, a JSCB called Shenzhen Development Bank (incorporated by Ping'an Bank Group in 2011) listed on the Shenzhen Stock Exchange and became the first partially public-owned bank in China.

Table 2-1 Overview of Listed Commercial Banks in China (by 2014)

Bank Type	Bank Name	Year Listed	Market Listed
SOCB	Bank of China	2006	H&A
SOCB	Industrial and Commercial Bank of China	2006	H&A
SOCB	Agricultural Bank of China	2010	H&A
SOCB	China Construction Bank	2005, 2007	H&A
SOCB	Bank of Communications	2005, 2007	H&A
JSCB	China CITIC Bank	2007	H&A
JSCB	China Merchants Bank	2002, 2006	A&H
JSCB	China Minsheng Bank	2000, 2009	A&H
JSCB	Industrial Bank	2007	A
JSCB	China Everbright Bank	2010	A
JSCB	Huaxia Bank	2003	A
JSCB	Pingan Bank	1991	A
JSCB	SPD Bank	1999	A
CCB	Banks of Beijing	2007	A
CCB	Bank of Nanjing	2007	A
CCB	Bank of Ningbo	2007	A
CCB	Huishang Bank	2013	H
CCB	Shengjing Bank	2014	H
CCB	Bank of Harbin	2014	H
CCB	Bank of Chongqing	2013	H
RCB	Chongqing Rural Commercial Bank	2010	H

Sources: CBCR annual reports 2006–2013; bank websites
Note: 'H' = listed on Hong Kong stock market; 'A' = listed on Shanghai or Shenzhen stock market.

With respect to introducing foreign investment, China had, upon its entry into the WTO in 2001, committed to opening up its banking market to foreigners. The goal was to improve domestic bank efficiency and meet the standards put forward by the WTO. The earliest foreign investment in a Chinese bank was undertaken by the Asian Development Bank (ADB), which purchased 1.9% of the shares in China EverBright Bank (a JSCB). Regulatory permission for foreign investment in Chinese banks was slow to arrive. This changed in 2005, when foreign investors were allowed to hold a

limited number of shares that were listed on the Hong Kong and Shanghai stock exchanges in three of the four big SOCBs. However, the government continued to hold enough shares to ensure control. Since December 2006, the CBRC has allowed foreign investors to hold up to 25% of the total shares in a Chinese financial institution, with no single foreign financial institution being able to hold more than 20% of the total shares. If foreign investors hold more than 25% of the total shares of a Chinese-listed bank, the bank is designated as a foreign/joint-venture bank (Berger, Hasan & Zhou 2009).

According to the CBRC, five criteria are to be followed when domestic banks try to introduce foreign investors: (i) each strategic investor must hold no less than 5% of the shares of the invested institution; (ii) each strategic investor must hold such shares for at least three years from the date of acquisition; (iii) each strategic investor must, in principle, be represented on the board of directors of the invested institution and is encouraged to send representatives to be appointed as senior managers of the invested institution; (iv) each strategic investor must have management experience and expertise in financial management and good cooperative intentions; and (v) each commercial bank in its capacity as the strategic investor must not participate in more than two Chinese banks of the same nature (CBRC 2003).

These criteria can be summarised as strengthening the governance with a focus on collaboration with business, while avoiding excessive competition with a long-run outlook (CBRC 2006). As experience elsewhere has demonstrated, typically, the introduction of overseas institutional investors not only enhances the capital base of banks, but also diversifies their shareholding structure. A flow-on effect from this is that foreign investors tend to positively affect the CG and management standards of domestic banks to bring them in line with international best practices (Zhao et al. 2014).

2.2.1.3 Asset Reallocation of SOCBs

During the 1990s, the asset quality of SOCBs deteriorated significantly. This was primarily because most SOCBs' clients were major SOEs that had little incentive to repay. The high percentage of NPLs was attributed to a combination of extensive policy lending during the 40 years of the command economy regime and the weak performance of SOEs and lack of effective internal credit risk controls of state-owned banks (Ma & Fung 2002).

To ameliorate this problem, the government undertook two major initiatives. First, it established three policy banks[4] to take over policy lending in 1994. These banks were responsible for financing economic and trade development and state-invested projects (Luo 2016). Second, it established four state-owned asset management corporations (AMCs)[5] in 1999 to buy bad debts from SOCBs with the aim of cleaning up their balance sheets over a period of 10 years. This was the first round of disposals of NPLs to restore the financial health and increase competitiveness of SOCBs. Following these initiatives, in 2003, the State Council set aside US $45 billion from foreign exchange reserves to restructure the Bank of China and China Construction Bank into a shareholding company. In 2005, based on a similar process of these two pilot SOCBs, the state unloaded RMB 705 billion NPLs from the Industrial and Commercial Bank of China and injected US $15 billion capital into the bank. Table 2-2 summarises the disposal of NPLs of SOCBs.

[4] These policy banks were the Agriculture Development Bank of China, China Development Bank and Export–Import Bank of China.

[5] The four AMCs were Cinda Asset Management Company, China Great Wall Asset Management Company, Oriental Asset Management Company and China Huarong Asset Management Company. They were paired with the China Construction Bank, Agriculture Bank of China, Bank of China, and Industrial and Commercial Bank of China respectively to strip off their bad debt.

Table 2-2 Disposal of NPLs of SOCBs

Year	Amount of NPL Uploading or Capital Injection	Assistance Mechanism
1999	RMB 1.4 trillion NPLs of SOCBs	NPLs transferred to AMCs
2003	$45 billion to Bank of China and China Construction Bank	State Council injection of capital
	RMB 56.9 billion NPLs of China Construction Bank	NPLs written off
	RMB 140.0 billion NPLs of Bank of China	NPLs written off
2004	RMB 128.9 billion NPLs of China Construction Bank	NPLs transferred to AMCs
	RMB 149.8 billion NPLs of Bank of China	NPLs transferred to AMCs
2005	RMB 705.0 billion NPLs of Industrial and Commercial Bank of China	NPLs transferred to AMCs
2008	RMB 130 billion NPLs of Agriculture Bank of China	State Council injection of capital

Source: Luo 2016

2.2.1.4 Capital Restructuring of Banks

To recapitalise the SOCBs, the MoF in China issued RMB 270 billion worth of 30-year government special bonds in 1997 (Berger, Hasan & Zhou 2009). By 2006, JSCBs and CCBs had also significantly strengthened their capital resources and improved their capital structure. Their capital adequacy levels were improved via: (i) capital restructuring by the State Council; (ii) domestic and overseas initial public offerings (IPOs); (iii) allowing foreign institutional investors to invest in JSCBs and CCBs; and (iv) increasing capital instruments such as subordinated debts (García-Herrero, Gavilá & Santabárbara 2006). The CBRC first issued its capital regulation rules under Basel I via the Measures for the Management of Capital Adequacy Ratios of Commercial Banks (2007 Amendment) in 2007. At the end of 2007, the weighted CAR of all banking institutions reached the international regulatory level of 8%, while the weighted average CAR of commercial banks reached 8.4%. By the end of 2009, all 239 commercial banks in China had reached the minimum CAR requirement (Chen 2009).

The CBRC further updated the capital adequacy requirement by issuing the regulatory proposals Capital Rules for Commercial Banks under the Basel III framework in June 2012, which came into force on 1 January 2013. The new rules and China's convergence towards Basel III are discussed in Section 2.2.2.3.

2.2.1.5 Supervision and Regulation of Banks

Until 1979, the MoF remained the sole authority of supervision and regulation. This changed when the PBoC became a separate government entity and began overseeing the operation of commercial banks and conducting monetary policy. This gradual erosion of authority occurred during the course of economic and financial reform (Martin 2012). China's banking regulatory system has developed during the course of reform from a single authority (the MoF) to four important government entities, namely: (i) the MoF; (ii) PBoC; (iii) CBRC, which is under the guidance of the Law of the People's Republic of China on Commercial Banks[6] ('Commercial Bank Law'); and (iv) the Law of the People's Republic of China on the People's Bank of China[7] ('Central Bank Law') (Martin 2012).

The MoF's remaining functions regarding banking supervision and regulation include preparing plans for the issuance of treasury bonds and other central government debt, as well as formulating and implementing accounting regulations for businesses operating in China (Martin 2012). The PBoC commenced its operations as the Central Bank in 1983 under the auspices of the State Council. This central bank role was legally

[6] The Law of the People's Republic of China on Commercial Banks was adopted at the 13th Meeting of the Standing Committee of the Eighth National People's Congress on 10 May 1995, promulgated by Order No. 47 of the President of the People's Republic of China on 10 May 1995 and became effective on 1 July 1995.

[7] The Law of the People's Republic of China on the People's Bank of China was adopted at the Third Session of the Eighth National People's Congress on 18 March 1995, promulgated by Order No. 46 of the President of the People's Republic of China on 18 March 1995 and became effective on the date of promulgation.

confirmed in 1995 by the Central Bank Law. Consequently, the PBoC was responsible for managing monetary policy in China and supervising and regulating Chinese banks, including: (i) drafting and enforcing relevant laws, rules and regulations related to fulfilling its functions; (ii) issuing the legal tender RMB and administering its circulation; (iii) regulating financial markets, including the interbank lending market, the interbank bond market, foreign exchange market and gold market; (iv) preventing and mitigating systemic financial risks to safeguard financial stability; (v) making payment and settlement rules in collaboration with relevant departments and ensuring normal operation of the payment and settlement systems; (vi) developing a statistics system for the financial industry to consolidate financial statistics and conduct economic analysis and forecasting; and (vii) engaging in financial business operations in line with relevant rules (Martin 2012). Given the PBoC's jurisdiction, the influence of local government on credit allocation was significantly reduced.

The CBRC was established in 2003 to improve the regulation and supervision of the banking industry in China and protect the interests of depositors and consumers. The main functions of the CBRC include: (i) authorising the establishment and business scope of banks in China; (ii) formulating and enforcing banking regulations; (iii) auditing and supervising all banks' operations; and (iv) compiling and publishing information on China's banking sector.[8] The regulation focus of the CBRC is to educate investors and enhance information disclosure (CBRC 2016). Table 2-3 summarises the key guidelines and laws that have been enacted by both the PBoC and the CBRC since 2002 to improve CG practices and risk management measures.

[8] For a more detailed description of CBRC functions, see http://www.cbrc.gov.cn/showyjhjjindex.do.

Table 2-3 Key Supervision and Regulation Guidelines and Laws for the Chinese Banking Industry

Applies to	Year	Law/Regulation in English	By	Policy No.
All Banks	2002	Interim Measures on Information Disclosure of Commercial Banks	PBoC	Order of PBoC [2002] No. 6
	2002	Guidance on Internal Control of the Commercial Banks	PBoC	Notice of PBoC [2002] No. 19
	2003	Regulation for foreign financial institutions investing in China's financial institutions	CBRC	Order of CBRC [2003] No. 6
	2004	Regulation Governing Capital Adequacy of Commercial Banks	CBRC	Order of CBRC [2004] No. 2
	2005	Guidelines on Market Risk Management of Commercial Banks	CBRC	Order of CBRC [2004] No. 10
	2006	Core Indicators for the Risk Management of Commercial Banks (Provisional)	CBRC	Notice of CBRC [2005] No. 256
	2007	Guidelines for Internal Control of Commercial Banks (2007 Amendment)	CBRC	Order of CBRC [2007] No. 6
	2007	Rules on Information Disclosure of Commercial Banks	CBRC	Order of CBRC [2007] No. 7
	2007	Measures for the Management of Capital Adequacy Ratios of Commercial Banks (2007 Amendment)	CBRC	Order of CBRC [2007] No. 11
	2010	Measures for Evaluating the Performance of Directors of Commercial Banks (Provisional)	CBRC	Order of CBRC [2010] No. 7
	2012	Leverage Ratio Rules for Commercial Banks	CBRC	Notice of CBRC [2011] No. 3
	2012	Administrative Measures for the Loan Loss Reserves of Commercial Banks	CBRC	Notice of CBRC [2011] No. 4
	2012	Implementing Opinions on Encouraging and Guiding of Private Capital into the Banking Sector	CBRC	Notice of CBRC [2012] No. 27
	2012	Guidelines for the Management of Off-Balance-Sheet Business Risks of Commercial Banks	CBRC	Notice of CBRC [2011] No. 31
	2013	Administrative Measures for the Capital of Commercial Banks (Provisional)	CBRC	Order of CBRC [2012] No. 1
	2013	Supporting Policy Documents for the Capital Regulation of Commercial Banks	CBRC	Notice of CBRC [2013] No. 33

Applies to	Year	Law/Regulation in English	By	Policy No.
	2013	Guidelines on Corporate Governance of Commercial Banks	CBRC	Notice of CBRC [2013] No. 34
	2014	Measures for the Administration of the Office-Holding Qualifications of the Directors (Council Members) and Senior Managers of Banking Financial Institutions	CBRC	Order of CBRC [2012] No. 3
	2014	Guideline for Disclosure of Evaluation Index for Global Systemic Importance of Commercial Banks	CBRC	Notice of CBRC [2014] No. 1
	2014	Measures for the Liquidity Risk Management of Commercial Banks (Provisional)	CBRC	Notice of CBRC [2014] No. 2
	2014	Circular on Revising the Basis for Calculating the Loan-to-Deposit Ratios for Commercial Banks	CBRC	Notice of CBRC [2014] No. 34
	2014	Guidelines for Internal Control of Commercial Banks (2014 Amendment)	CBRC	Notice of CBRC [2014] No. 40
	2014	Regulating the Interbank Business Governance of Commercial Banks	CBRC	Notice of CBRC [2014] No. 140
JSCBs	2002	Guidance on Corporate Governance of Joint Stock Commercial Banks	PBoC	Notice of PBoC [2002] No. 15
	2015	Measures for the Administration of the Leverage Ratio of Commercial Banks (2015 Revised)	CBRC	Order of CBRC [2015] No. 1
CCBs	2004	Regulating Joint Stock Commercial Banks' Annual Reports	CBRC	Notice of CBRC [2004] No. 8
	2009	Guiding Opinions on Improving Corporate Governance of Small and Medium Commercial Banks	CBRC	Notice of CBRC [2009] No. 15
	2009	Opinions on the Adjustment to the Market Access Policy for Branches and Sub-Branches of Small and Medium Commercial Banks (Provisional)	CBRC	Notice of CBRC [2009] No. 143

2.2.2 Evaluation of the Effect of Banking Reform on Lending, Risk Management and Bank Performance

This section reviews the effectiveness of the recent banking reform in terms of its effect on bank lending, risk management and performance.

2.2.2.1 Banking Reform and Lending of Banks

Despite the growth of lending assets since the 1990s, bank lending in China has long been criticised as being systematically biased towards SOEs (Brandt & Li 2003; Cull & Xu 2003; Firth, Lin & Wong 2008; Lu, Thangavelu & Hu 2005; Wei & Wang 1997). Lu, Thangavelu and Hu (2005) used a panel dataset of 268 publicly listed companies in China from 1994 to 1999 and found that higher-risk SOEs were able to acquire more credit than lower-risk SOEs and non-SOEs. This lending bias was most likely driven by banks' moral hazard behaviour, because lending in favour of high-risk SOEs was their rational business choice upon the expectation of implicit government guarantees for these loans, especially against the backdrop of the bailout for the four big banks in the late 1980s. With this expectation, Chinese banks were willing to take higher risks for loans lent to SOEs. Such 'gambling for resurrection' behaviour is well discussed in the literature on banking reform in transition economies (Mitchell 1997; Roland 2000).

In regard to the cause of the lending bias, after empirically ruling out the possibility of higher credit risk associated with private enterprises, Brandt and Li (2003) studied bank discrimination against private firms in a sample of 135 firms from 1993 to 1997 using a probit model with fixed-effect estimation. They argued that the government's majority ownership of financial systems inevitably created poor incentives that led to a biased capital allocation policy in favour of state-related enterprises. Although bank managers only marginally benefit from higher bank profitability, they are willing to

sacrifice profitability to lend to state-related firms because they enjoy the perks of their relationships with local government officials, which are maintained through loans to those firms. In a broader sense, Firth, Lin and Wong (2008) suggested that lending bias is caused by the state-bank lending environment in China, in which banks are largely owned by the government. Thus, political connections weigh heavily on lending policies as opposed to a more standard commercial criterion when making lending decisions (Lu, Thangavelu & Hu 2005).

Compared with SOEs, it has been widely recognised that it is extremely difficult for small- and medium-sized enterprises (SMEs) to obtain external financing from formal financial institutions in China. In the case of China, small business lending has attracted particular attention from both the government and academia because of the mismatch between the contribution of SMEs to China's economic growth and the amount of credit they have obtained from formal financial institutions. Shen et al. (2009) argued that banks in China might lack the incentive to identify the most profitable SMEs because of the institutional arrangement of credit allocation and misaligned interests between bank managers and banks. Shen et al. (2009) used a sample of 363 banking institutions between 2001 and 2004 to empirically prove that RCCs are more likely to lend more to SMEs compared with the traditional bigger banks. They estimated a reduced-form model following two-stage least squares (2SLS) estimation and found that weak law enforcement led to less SME lending. They also found that the establishment of small- and medium-sized banks in China, such as RCCs, lent more to SMEs.

However, in contrast with Brandt and Li (2003), some empirical evidence shows that the Chinese banking sector is reasonably efficient in terms of allocating loans to private firms. For example, Firth et al. (2009) found that firm profitability is used as a criterion when granting loans and determining loan size. Meanwhile, Ayyagari, Demirgüç-Kunt

and Maksimovic (2008) showed that financing from bank lending is associated with faster firm growth, whereas fundraising from alternative channels is not. Both studies concluded that banks use commercial judgments other than political connections or relationships when deciding to lend. Their findings can in part be explained by the ongoing commercialisation of China's banking sector, which has somewhat affected banks' lending.

In addition to the commercialisation incentive, the banking regulator in China has introduced further incentives and mechanisms to improve bank credit analysis and risk assessment. These mechanisms include enacting strict internal guidelines for loan operation, such as separating the credit risk assessment and loan operation departments. A checks and balances system was also set up between the credit risk assessment and loan operation departments (Chen, Liu & Su 2013). However, in keeping with the principle of gradualism for reform, Chen, Liu and Su (2013) argued that bottom-tier banks are yet to be fully commercialised and continue to be haunted by the chronic problems of poor governance and bad lending practices. This is evidenced by the actions of local governments, which continue to interfere in banking operations and tend to bypass the good practice of implementing checks and balances between the loan and credit departments.

To summarise, existing empirical research has demonstrated the effect of reform on bank lending in terms of lending bias. Section 2.3 will discuss how lending is measured in the Chinese context generally and how these measurements are employed in different research topics in banking studies.

2.2.2.2 Reform and Risk Management of Banks: Introduction of the Basel Capital Accord

In addition to the establishment of the CBRC, China introduced the international bank capital standards under the global Basel II regime at the beginning of 2007. The 2007 capital requirement framework was developed in accordance with the Basel I Capital Accord (1998) and Basel II Capital Accord (2005). Basel II was introduced to improve bank risk management by reducing the risk of business failure, enhancing risk management culture, reducing volatility, lowering the provision for bad debts, reducing operational losses and improving institutions' external ratings (Zhuang & Wheale 2007).

Basel III was proposed in 2010 to further raise the level of risk management and bank governance against the background of the GFC. China has since issued a series of policies, regulations and drafts, including a consultation draft of new measures of capital management on 15 August 2011, Rules for the Leverage Ratio Management of Commercial Banks on 20 May 2011 and Rules Governing Liquidity Risk Management of Commercial Banks on 12 October 2011 (Zou 2012). According to Lee (2012), Chinese banks have used many subordinate note offerings to satisfy their core capital requirements, but this activity will not qualify under Basel III agreements. Table 2-4 summarises the differences between the Chinese guidelines on bank capital requirement and Basel III.

Table 2-4 Main Supervision and Regulation Indicators Required by the CBRC

Indicator	Definition	Requirement by Chinese Guideline[a]	Requirement by Basel III[b] (Where Applicable)
1. Asset Quality			
NPL ratio	NPLs to outstanding loan	Less than 5%	n.a.
Provision coverage ratio	Loan loss reserves to NPLs	No lower than 150%	n.a.
Loan loss provision ratio	Loan loss reserves to outstanding loan	No lower than 2.5%	n.a.
2. Liquidity[c]			
LTD ratio	Loans to deposits	Less than 75%[d]	n.a.
Current ratio	Current assets to current liabilities	No lower than 25%	n.a.
Liquidity coverage ratio	Stock of high-quality liquid assets to net cash outflows over a 30-day period	No lower than 100%	n.a.
Net stable funding ratio	Available stable funding to required stable funding	No lower than 100%	n.a.
3. Capital Adequacy[e]			
CAR	Net capital to risk-weighted assets	No lower than 8%	No lower than 8% (including 6% tier 1)
Tier 1 CAR	Tier 1 capital to risk-weighted assets	No lower than 6%	No lower than 6%
Core tier 1 CAR	Common equity to risk-weighted assets	No lower than 5%	No lower than 4.5%
Leverage ratio	Tier 1 capital to the adjusted on- and off-balance-sheet assets of the relevant bank	No lower than 4%	No lower than 3%
Capital conservation ratio	Comprising common equity Tier 1; established above the regulatory minimum capital requirement	2.5%	2.5%
Countercyclical buffer capital	Determined by regulators in the case of rising credit and	0–2.5%	0–2.5%

Indicator	Definition	Requirement by Chinese Guideline[a]	Requirement by Basel III[b] (Where Applicable)
	systematic risk		
Additional capital of systematically important banks	Applied to domestic systematically important banks; for internationally systematically important banks, additional capital should conform to Basel III	1%	0–2.5%
4. Performance/Efficiency			
COI ratio	Operating costs to operating income	Less than 45%	n.a.

Source: CBRC website

Notes: (a) CBRC, Core Indicators for the Risk Management of Commercial Banks (Provisional), 2005; (b) Bank for International Settlements, Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, 2010 (see http://www.bis.org/publ/bcbs189.pdf); (c) CBRC, Circular on Revising the Basis for Calculating the Loan-to-Deposit Ratios for Commercial Banks, 2012; (d) CBRC, Measures for the Liquidity Risk Management of Commercial Banks (Provisional), 2014; (e) CBRC, Administrative Measures for the Capital of Commercial Banks (2013 Provisional), 2007.

The side-by-side comparison of the Chinese guidelines and Basel III in Table 2-4 shows that the Chinese guidelines impose stricter requirements on capital bases, leverage, provision and liquidity. The new standards also adopt capital adequacy rules and leverage ratios that are more stringent than those of Basel III. As Lee, Ning and Lee (2015) posited, this is widely known as the 'Chinese version of the new Basel III'. The CBRC regulations are likely to improve SME lending, since the CBRC regulations took account of 100% of loans to SMEs in a bank's core capital, but the percentage was reduced to 75%. This is in line with the central government's call to support the economy instead of the real estate or insurance markets (Lee 2012).

Recent empirical studies have focused on how bank capital reform affects bank risk and bank performance. Wu and Bowe (2010) examined the relationship between the change of market forces as a result of banking reform in China and risk management of Chinese commercial banks measured by the CAR and the NPL ratio. They used an unbalanced panel of 120 banks between 1998 and 2008 and found that full state ownership reduces the sensitivity of changes in a bank's capital buffer to its level of risk, and lower market concentration leads banks to operate with higher capital ratios, indicating that reform is effective. Lee, Ning and Lee (2015) examined the effect of bank capital on bank profitability and risk management and used the dynamic GMM approach with a panel database of 171 Chinese banks. Specifically, when profitability is measured by return on assets (ROA), return on equity (ROE), NIM and net interest revenue (NIR) against total assets, and risk management is measured by variance of ROA, variance of ROE and NPL ratio, bank capital is proven to have a significant influence on these measurements along with the liberalisation initiatives generated from banking reform. That is, different degrees of openness have different effects on profitability and risk. The results indicate that Chinese banks have had to improve their

management capability and operational performance to increase profitability and reduce risk since joining the WTO.

2.2.2.3 Reform and Chinese Bank Performance

Some recent studies on the effect of bank reform on bank performance and efficiency have produced mixed results. Regarding performance between different types of banks, Yao (2007) stated that JSCBs and CCBs are considered more efficient than SOCBs. Using panel data of 22 Chinese banks over 1995–2001, Yao estimated the effects of ownership structure and the implementation of budget constraints on banks and found that JSCBs and CCBs are more efficient than SOCBs under the stochastic frontier production function methodology, revealing a persistence of government intervention in lending decisions after years of reforms. That is, the performance of SOCBs did not improve as much as that of JSCBs and CCBs after the reforms. Another study focusing on SOCBs and JSCBs was conducted by Fu and Heffernan (2009), who used 2SLS regression to explore the relationship between the X-efficiency of a panel of 14 Chinese banks and a set of economic and financial variables over the period 1985–2002. Fu and Heffernan (2009) found that JSCBs are more X-efficient than SOCBs as a result of rising amounts of bad debt caused by SOCBs' lending bias towards SOEs. Their research further revealed that both SOCBs and JSCBs experienced a significant drop in X-efficiency in the second stage (1993–2002) of the study period. This indicates an ineffective reform, which can be explained by state lending policies and a lack of clarity regarding bankruptcy procedures. Contradictory evidence was discovered by Chen, Skully and Brown (2005), who compared regional JSCBs (mainly CCBs) with SOCBs and eight national JSCBs between 1993 and 2000 using a non-parametric data envelopment analysis approach. They found that both SOCBs and regional joint-stock banks are more cost efficient than JSCBs. This can be explained by the fact that joint-

stock banks are relatively new to the Chinese financial market in the process of reform and they are likely to experience high initial setup costs compared with more established banks or small regional banks. In contrast, Shih, Zhang and Liu (2007) used data from four SOCBs, 11 JSCBs and 112 CCBs in 2002 and found empirical evidence that JSCBs exhibit better performance than SOCBs and CCBs. The authors used four performance measurements derived from principal component analysis of 10 financial ratios. They found little correlation between bank size and bank performance because different types of banks are subject to different regulatory environments. However, they suggested that JSCBs outperform other banks because JSCBs are under the purview of both central regulatory authorities and the financial market. As shown in Figure 2-1, recent evidence from the CBRC shows a greater asset growth rate and deposit growth rate for CCBs compared with JSCBs, while SOCBs experienced a growth slowdown.[9]

Regarding the effect of public listing and introducing foreign strategic investors, Lin and Zhang (2009) used panel data of 60 Chinese banks over the period 1997–2004 to assess the effect of bank ownership on performance measured by ROA, ROE, COI ratio and NPL ratio. The regression results indicated that banks subject to foreign acquisition or public listing do not necessarily exhibit better performance, although they exhibit better bank performance. However, using a one-stage stochastic frontier approach with data from 35 Chinese banks over 1995–2005, Jiang, Yao and Zhang (2009) found that strong selection affects both foreign acquisition and IPO. Selection effects measure banks' performance before being chosen for governance changes, and the results suggest that more efficient banks are selected by foreign investors to go public. However, foreign acquisition may benefit domestic banks through efficiency gains in

[9] According to CBRC, SOCBs still hold the most assets among all types of banks, although their annual asset growth rate is lower than that of all other banks.

the long run, and privatisation via IPOs appears to have only some short-term effects. The significance of foreign strategic investors is supported by Berger, Hasan and Zhou (2009), who used cost and income efficiency frontiers, which are measured by the proximity of a bank to the minimum cost of maximum profit determined by the best performers in the example, to assess the relative efficiency of 38 Chinese banks over 1994–2003. They found that minority foreign ownership is associated with higher profit and cost efficiency.

Conversely, using a one-step stochastic frontier approach with data from 47 Chinese banks over 1995–2008, Jiang, Feng and Zhang (2012) found no evidence supporting the notion that foreign minority ownership in domestic banks improves their performance. Rather, Chinese banks with a majority foreign ownership are identified as the most profitable. Jiang, Yao and Zhang (2012) also found that banks with more dispersed ownership are more profit efficient. Their results provide support for the global advantage hypothesis, which argues that foreign institutions can be more efficient because of superior managerial skills and high-quality human capital inherited from foreign owners. Jiang, Yao and Feng (2013) further concluded that although private intermediaries—namely, JSCBs and CCBs—are more efficient than SOCBs, Chinese banks that are publicly listed and therefore subject to multiple monitoring and vetting in capital markets perform better regardless of ownership status. Their study combined the static effect of ownership and the dynamic effect of privatisation on bank performance and measured cost and income frontiers using a one-step stochastic frontier approach with panel data from 49 Chinese banks over 1995–2010. Jiang, Yao and Feng's (2013) results suggest that bank ownership plays an important role in determining bank performance.

To summarise, there is mixed evidence regarding the effect of reform on banking performance. This is mainly because the reform was implemented at several stages consecutively with different foci (e.g., increasing market players, diversifying ownership structure and converging to international regulatory standards).

2.2.3 Recent Reform Initiatives in the Banking Sector

Some recent bank reform initiatives have been put forward by the CBRC to continue to improve governance practice, strengthen risk management and enhance the performance of Chinese commercial banks. These initiatives are summarised below.

2.2.3.1 Banking Sector Privatisation and Internationalisation

According to the CBRC's 2016 annual report, the banking sector in China will be further opened up to domestic private investors while also becoming increasingly internationalised (CBRC 2016). The report adds that private equity that seeks potential opportunities in the Chinese banking industry will be able to access potential new channels to enter the banking sector to support the restructuring and recapitalisation of existing banking institutions. In addition, private investors will be encouraged to set up banking or non-banking financial institutions on a pilot basis. At the end of 2015, more than 100 lower-tier banks (CCBs, RCBs and credit cooperatives) were receiving more than 50% of their capital from private equities, accounting for 70% of banks in that group.

Compared with the increasing significance of joint-stock banks in China, market share measured by total assets of foreign-designated banks has been decreasing despite a general increase in total asset volume. Table 2-5 summarises this trend. As shown, total assets of foreign-designated banks have increased from around RMB 1.25 billion to RMB 2.68 billion, while market share has decreased from 2.38% to 1.38%.

Table 2-5 Total Assets of Foreign Banks in China 2007–2015

Item/Year	Total assets (billion yuan)	Percentage of total bank assets (%)
2007	1,252.50	2.38
2008	1,344.80	2.16
2009	1,349.20	1.71
2010	1,742.30	1.85
2011	2,380.40	1.93
2012	2,380.40	1.82
2013	2,557.70	1.73
2014	2,792.10	1.62
2015	2,682.00	1.38

Source: CBRC annual reports 2013–2015

According to the CBRC's 2013 annual report, the current reform priority is to attract more foreign equity participation in domestic banks while also gradually relaxing the barriers of foreign entry for foreign banks to set up operations in China and to allow designated foreign bank branches to become eligible to conduct RMB business and capital requirements. The Shanghai Free Trade Zone (FTZ)[10] and other financial reform pilot zones[11] were also established to encourage such reform initiatives.

In addition to diversifying the shareholding structure in the banking industry and increasing foreign bank participation, the current stage of reform encourages Chinese commercial banks to establish an overseas presence to finance pilot investment projects led by Chinese companies. At the end of 2015, 22 Chinese commercial banks had established 1,298 branches in 59 countries/regions, mainly providing financial services

[10] The China (Shanghai) Pilot FTZ was established on 29 September 2013 to carry out institutional reform and innovation in investment, foreign trade and finance. It expanded in 2014 to incorporate Lujiazui Financial Area, Jinqiao Export Processing Zone and Zhangjiang High Tech Park. For more information, see http://en.china-shftz.gov.cn/About-FTZ/Introduction/.

[11] On 28 December 2014, the State Council decided to introduce the practices of Shanghai FTZ nationwide and established FTZs in Guangdong, Tianjin and Fujian.

for Chinese companies engaged in international merger and acquisition activities (CBRC 2016).

2.2.3.2 Implementing Deposit Insurance

Although the Chinese government has helped banks to write off bad loans or assume responsibility when bank failures occur, there was no explicit deposit insurance in China's banking system until May 2015. There have been previous signs that the Chinese regulatory body is moving towards building up a formal deposit insurance system, as evidenced by the 'Deposit Insurance Office' that was established in 2005 within the Financial Stability Bureau of the PBoC. In May 2015, the Chinese government implemented the bank deposit insurance scheme, which is designed to return bank clients' deposits if their bank becomes insolvent or bankrupt[12] (Wei 2015).

2.2.3.3 Further Improving Corporate Governance

The CBRC is determined to deepen the banking governance reform by improving CG, business governance and risk governance. Regarding CG, the focus will be on improving the governance structure, including shareholder meetings, the board of directors, the supervisory board and incentive compatibility. Proactive efforts are also being made to improve performance evaluation measures to guide the formation of proper performance and growth values (CBRC 2014).

From the perspective of organisational structures, banks start to incorporate multidivisional structures into their current branch banking system to correspond to the increasing market demand for direct financing activities through the money market and the capital market. The shift of focus from a conventional geographic-based

[12] See the news release from the State Council, People's Republic of China: http://english.gov.cn/policies/latest_releases/2015/03/31/content_281475080811687.htm.

organisational structure to a division-based structure requires the CG mechanism of banks to account for the risk management and governance of related banking activities. This mainly includes the self-regulation of banks guided by the CBRC and industry associations (e.g., China Micro-credit Association), increased market disciplinary requirements regarding information disclosure of risk exposures and more stringent regulation of credit issuing to avoid fraudulent lending and borrowing (CBRC 2014).

2.2.3.4 Financial Innovation

According to the CBRC's 2013 annual report, financial innovation in products and businesses is encouraged to meet customers' needs and make financial services more accessible and fair. Financial innovation is also seen as a way to diversify risk and spur profitability. One focus of financial innovation is rural financial reform, which will examine ways in which technical tools and convenience services can be used to provide basic banking services. The CBRC's 2015 annual report addresses the importance of internet-based services in improving the coverage and efficiency of banking services to remote areas/regions. Securitisation is another focus of financial innovation. The CBRC believes that securitisation will improve market efficiency, invigorate credit stock within the financial system and support economic growth in real sectors (CBRC 2016). The administration process for approving securitisation applications has been shortened, and the procedure is more standardised and transparent.

To summarise the recent reform initiatives in the banking industry in China, it is considered that the reform has: (i) diversified the shareholding structure of banks by introducing private equity to commercial banks; (ii) increased the scope of banks' services by introducing a multidivisional structure; (iii) encouraged internationalisation of the banking industry, which increases the competitiveness of Chinese commercial

banks in general; and (iv) encouraged financial innovation, which also imposes challenges in risk management regulation and supervision (CBRC 2016).

2.3 Bank Lending

The previous section discussed the economic and financial reform in China and related its effect on bank lending, risk management and bank performance. Given that part of the present research aims to examine the effect of the lending structure of Chinese banks on their risk management, a review of the Chinese banking lending structure is undertaken below. Traditionally, banks' lending can be measured from the perspectives of: (i) lending structure, (ii) lending prudence and (iii) lending scale. As stated in Chapter 1, the present study employs lending structure over lending scale and lending prudence. This measure was also used by Qian, Cao and Li (2011) and Cebenoyan and Strahan (2004).

2.3.1 Lending Structure of Banks

The way in which a bank allocates its assets has important implications for economic growth and bank risk management. Research in this area differentiates lending assets based on the business scale of borrowers (Berger & Udell 1995; Berger et al. 1998) and the nature or industry distribution of borrowers (Berger et al. 2005; Ivashina & Scharfstein 2010; Louzis, Vouldis & Metaxas 2012; Qian, Cao & Li 2011).

Small business lending is typically measured by the proportion of lending to SMEs on a bank's balance sheet to the total assets of the bank. Small firms usually depend on financial intermediaries—particularly commercial banks—as their source of funding, while large corporations typically obtain credit in public debt markets (Berger & Udell 1995). Existing research has established a link between banking institution size and the supply of credit towards small businesses, with larger institutions devoting a lower

proportion of their assets to small business loans compared with smaller institutions (Berger & Udell 1995; Berger et al. 1998). Carter and McNulty (2005) found that small business lending by small banks is characterised by relationship development and non-standardised loans. A concept associated with small business lending is relationship lending. Empirical studies of small business lending are often consistent with the importance of strong relationships, which are empirically associated with: (i) lower loan interest rates (Berger & Udell 1995; Degryse & Van Cayseele 2000); (ii) reduced collateral requirements (Berger & Udell 1995; Scott & Dunkelberg 1999); (iii) greater protection against the interest rate cycle (Berlin & Mester 1998); and (iv) increased credit availability (Scott & Dunkelberg 1999). In addition, small businesses tend to have long relationships with their banks, suggesting that these relationships are important (Berger & Udell 2002).

Degryse and Van Cayseele (2000) examined the relationship between the nature of borrowers (extracted from loan contracts) and relationship lending using detailed loan contracts from 18,000 bank loans to small Belgian firms operating within the continental European bank-based system. Their empirical evidence implies that the type of loan had a significant effect on the cost of the loan, which reflects banks' perceptions of risks relating to borrowers. Berger et al. (2005) examined loan distribution among consumer loans, manufacturing loans, public sector loans, agricultural loans and mortgages of Argentinian banks from 1993 to 1999 and found that the CG structure—particularly ownership structure—affected the lending structure because banks reallocate their portfolio between loans and other assets across different types of loans, across industries and across regions after governance changes. Berger et al. (2005) also showed that banks acquired by foreign organisations appear to increase their loans relative to other types of assets, with more of their loan portfolios

allocated to consumer loans and less to manufacturing loans. Using OLS regression, Qian, Cao and Li (2011) investigated the loan allocation of banks between commercial loans, construction loans, industrial loans and real estate loans based on panel data of 81 CCBs in China during 2006–2009. They found that key CG mechanisms, such as shareholding concentration, political connection and officials on the board, and foreign investor shareholding, will affect this allocation, which will in turn affect the NPL ratio in the bank. As suggested by Degryse and Van Cayseele (2000), loan type can proxy for the risk of the borrower. Specifically, in the context of China, according to Qian, Cao and Li (2011), the growing issuance of real estate loans in banks will eventually increase banks' risk in the form of NPLs. Additionally, Cebenoyan and Strahan (2004) found that banks with higher commercial, industrial and real estate lending ratios exhibit better credit risk management in the US banking industry. Blaško and Sinkey Jr (2006) also noted that banks that allocated more of their assets to real estate loans maintained higher ratios of fixed-rate loans to total assets and faced higher probabilities of insolvency in the US banking industry in the 1990s. Based on the discussion above, the following hypotheses are proposed:

There is a positive relationship between industrial loan and bank risk management.

There is a positive relationship between commercial loan and bank risk management.

There is a negative relationship between real estate loan and bank risk management.

2.3.2 Alternative Measures of Bank Lending

Other studies have employed alternative lending measures in the Chinese context. These measures include lending scale and prudent lending measures. As discussed in the following sections, lending structure is a more suitable measure than lending scale

and lending prudence in the context of exploring the relationship between CG, risk management and bank performance of Chinese JSCBs and CCBs. A brief review of the empirical research relating to these measures is provided below.

2.3.2.1 Lending Scale

The lending scale of banks, which is measured by total lending volume in its absolute terms or by its growth rate (Jiang, Yao & Feng 2013; Micco & Panizza 2006; Molyneux, Remolona & Seth 1998) and by its proportion to bank total assets (Li 2013; Lin & Zhang 2009) is of general research interest in the study of monetary policy and finance intermediaries (Micco & Panizza 2006). It is often examined in regard to its response towards monetary policy or business cycles. This response can be affected by ownership type—particularly state ownership (Micco & Panizza 2006)—capital structure (Gambacorta & Mistrulli 2004), bank size, liquidity level and profitability (Gunji & Yuan 2010). In the case of China, bank lending scale is used to examine monetary policy efficiency and economic fluctuations (Chen & Xu 2009; Gunji & Yuan 2010). Since the focus is not on the transmission mechanism of monetary policy in China, this study does not employ lending scale in the framework.

2.3.2.2 Lending Prudence

Prudent lending can be measured by the loan growth rate (e.g., Cebenoyan & Strahan 2004; Shrieves & Dahl 2003), loan loss provision ratio (e.g., Jia 2009) and LTD ratio (e.g., Altunbas et al. 2007; Delis, Hasan & Tsionas 2014; Lozano-Vivas & Pasiouras 2014; Shen, Liao & Weyman-Jones 2009). Empirically, bank prudential lending behaviour has been proven to be associated with bank risk management.

Using sales and purchase data of all US banks over the period 1987–1993, Cebenoyan and Strahan (2004) found that banks use the loan sales market for risk management

purposes rather than to alter their holdings of loans, which enables them to hold less capital and make riskier loans than other banks. Cebenoyan and Strahan (2004) concluded that, holding size, leverage and lending activities being constant, banks that are active in the loan sales market have lower risk and higher profits. However, as Cebenoyan and Strahan (2004) pointed out, although prudent banks tend to have lower loan growth rates, a higher loan and asset growth rate cannot be regarded as a proxy for imprudence.

More recent research that has examined the prudential lending behaviour of banks has focused on the loan loss provision ratio and LTD ratio. In regard to the effect on bank efficiency, using NPLs and loan loss provisions to total loans to proxy risk, Carvallo and Kasman (2005) estimated a common cost frontier of 481 banks from 16 Latin American countries over the period 1995–1999 and found that higher-risk-taking banks are less efficient. In regard to the relationship with credit risk management, Soedarmono et al. (2012) collected data on 686 commercial banks from 12 Asian countries over the period 1992–2009 and found that better credit risk management measured by loan provisions is associated with slower bank loan growth. Further, this relationship between loan provisions and loan growth is dependent on bank market structure. Specifically, the non-discretionary provisions of banks seem to be in highly concentrated markets that have a less significant effect on overall loan growth (Soedarmono et al. 2012). In relation to the effect on liquidity risk management, Correa, Goldberg and Rice (2014) used quarterly data of 95 banks over the period 2006–2012 and found that intrafirm borrowings within US banks that have foreign affiliates are a shock absorber and an effective *ex ante* liquidity management strategy. As a comparison, cross-sectional differences in responses of non-global banks to liquidity risk depend on their share of core deposit funding (Correa, Goldberg & Rice 2014).

These lending prudence measurements have also been used in the Chinese context (e.g., Jia 2009; Li & Qian 2011; Qian, Cao & Li 2011; Qian, Zhang & Liu 2015). Using OLS regression, Qian, Cao and Li (2011) investigated the effect of political connections of the board on bank prudent lending behaviour based on the panel data of 81 Chinese CCBs over the period 2006–2009. They suggested that imprudent lending behaviour of banks, measured as loan loss provision to NPL ratio, is likely to increase the NPLs or credit risk of banks.

The lending prudence variables discussed above are also treated as risk management variables in other studies (e.g., Lee & Hsieh 2013; Lee, Ning & Lee 2015; Zhang, Wang & Qu 2012) and are discussed in more detail in Section 2.4 below.

2.4 Risk Management and Bank Performance

2.4.1 Definitions of Risks

The GFC triggered by the US subprime debt meltdown has led to a growing awareness and need for appropriate risk management for financial institutions. According to Miller (1992, p.311), the term 'risk' is used to describe an 'unanticipated variation or negative variation in business outcome variables such as revenues, costs, profits and market shares' in the strategic management field. Further, the concept of risk as performance variance has been widely used in finance, economics and strategic management (Miller 1992). In finance, risk is specifically defined as 'the randomness of the return of investments, including both positive and negative outcomes' (Bessis 2015, p. 2). This definition reflects the unpredictability of bank outcome variables. However, from the perspective of regulators and risk managers in the finance industry, risk is viewed as uncertainty that has adverse consequences on earnings or wealth, or that is associated with negative outcomes only. As Bessis (2015, p. 2) stated:

> *Regulations aim at enhancing the resiliency of financial firms and of the financial system in stressed conditions. Risk managers see their roles as being accountable for identifying, assessing and controlling the likelihood and consequences of adverse events of the firm.*

From this perspective, risk is perceived as the potential of loss resulting from the interaction of uncertainty.

In quantitative risk management, the research focus is on ways to improve the measurement and management of specific risks. The term ‘risk’ can also refer to a source of risk—for instance, when the word is assigned to factors such as political risk. In this light, financial risks are defined according to their sources. The broad classes of financial risk under this classification are: (i) credit risk; (ii) market risk; (iii) liquidity risk; and (iv) capital/solvency risk, which can be further divided into subclasses relative to the specific events that trigger losses (Bessis 2015).

According to Bessis (2015, pp. 2–3), the aforementioned risks can be defined as follows:

> *Credit risk is the risk of losses due to borrowers’ default or deterioration of credit standing.*
>
> *Market risk refers to the risk of losses due to adverse market movements depressing the values of the positions held by market players.*
>
> *Liquidity risk means the risk of not being able to raise cash when needed, provided one of the fundamental functions of banks is to create liquidity by the mismatch of their assets and liabilities.*
>
> *Capital risk is the risk of being unable to absorb losses with the available capital, which has been the focus of regulation as ‘capital adequacy’.*

Previously, risk was measured narrowly. Therefore, the next section will provide a more comprehensive measurement of risk management in the banking sector used in prior studies. In contrast with quantitative risk management, the issue of how to

integrate multiple financial risks into one single message for senior banking executives has been addressed on a structural level (Aebi, Sabato & Schmid 2012). Consequently, recent academic literature has focused on an integrated view of risk management (Aebi, Sabato & Schmid 2012; Cumming & Hirtle 2001; Miccolis, Shah & Tillinghast 2000; Nocco & Stulz 2006; Sabato 2010).

2.4.2 Risk Management in Banking

At a foundational level, consolidated risk management entails a coordinated process of measuring and managing risk on a firm-wide basis. Bank risk management requires that the risks of banking institutions be identified, measured, assessed and controlled. Sound risk practices define those who should be held accountable for risks and how the risk processes should be implemented (Cumming & Hirtle 2001).

To measure risk, studies in the banking and finance field employ accounting-based ratios that are related to credit and/or liquidity risk, which include: (i) NPLs to total loans or assets (e.g., Epure & Lafuente 2015); (ii) loan loss provisions to total loans or assets (e.g., Shen, Liao & Weyman-Jones 2009); and (iii) ratio of risk-weighted assets to total assets (e.g., Delis, Hasan & Tsionas 2014). Specifically, accounting-based proxies of bank risk management and prudence also examine bank portfolio allocation (Cebenoyan & Strahan 2004; Jia 2009; Jiang, Yao & Zhang 2009). These ratios include: (i) bank excess reserves ratio; (ii) loan-to-asset ratio; and (iii) LTD ratio. In addition to the prudential lending measurements discussed in Section 2.4.3, commercial bank loans are usually more risky than other assets (i.e., government debt and corporate bonds) and a higher loan-to-asset ratio indicates that the bank is less risk averse (Jia 2009).

The use of accounting-based variables has been criticised in the empirical literature because the ratio method is not based on any theoretical basis. In fact, even in its most

elaborated form, the ratio method does not consider the effect of diversification on risk (Lee & Chih 2013). Additionally, these ratios are subject to managerial discretion, providing that banks have incentives to understate these assets so as not to exceed the given threshold by supervisory authorities (Delis, Hasan & Tsionas 2014; Fiordelisi, Marques-Ibanez & Molyneux 2011). There is evidence that such discretion is exercised in a manner that minimises regulatory costs (Altunbas et al. 2007; Shrieves & Dahl 2003). Another limitation associated with using risk variables calculated from accounting data is the assumption that they accurately reflect portfolio quality, which is questionable in the case of China.[13] Finally, these measures are *ex post* informative about how risk evolves over time, but they do not seem to provide a good *ex ante* measure of bank risk.

Against this shortcoming, Fiordelisi, Marques-Ibanez and Molyneux (2011) suggested that Moody's expected default frequency[14] is complementary to NPLs because it is forward-looking and a broader measure of banks' risk, whereas NPLs account for realised credit risk. However, Moody's expected default frequency covers a limited number of banking institutions in China and does not apply to all samples in this study.

A study by Lozano-Vivas and Pasiouras (2014) used non-interest income to total income to measure off-balance-sheet (OBS) activities and banks' risk-taking behaviour. The banking literature has highlighted the association between risk and OBS activities (Hassan, Karels & Peterson 1993), while a related strand of the literature has examined the association between non-interest income and risk (Lepetit et al. 2008). As Lepetit

[13] According to Haβ, Müller and Zhang (2015), corporate fraud is pervasive in the Chinese capital market, and nearly one-fifth of the firms in China have been subject to enforcement action by the CSRC, triggered by a violation of securities laws.

[14] See Expected Default Frequency (EDF) Overview (http://www.moodysanalytics.com/~/media/Brochures/Credit-Research-Risk-Measurement/Quantative-Insight/CreditEdge/EDF-Expected-Default-Frequency-Overview.pdf)

et al. (2008) demonstrated, a bank's expansion into non-interest income activities is associated with less reliance on traditional intermediation activities, a lower leverage rate, a higher equity-to-capital ratio, a higher average profitability and a higher ratio of personnel expenses to total assets. Additionally, greater reliance on non-interest income is associated with higher risk and higher insolvency risk, whereas higher dependence on traditional intermediation activities does not imply higher risk levels (Lepetit et al. 2008).

A more advanced strand of the literature employs the variation in returns or profits as a more comprehensive risk measure. Mitchell (1982) was the first to suggest that the variance of returns or the coefficient of variation can be used as a risk metric in banking. A more recent group of empirical studies used information from a fixed number of periods to calculate the variance in the return or the coefficient of variation as a measure of bank risk (e.g., Delis, Tran & Tsionas 2012; Fang, Hasan & Marton 2011; Jiménez, Lopez & Saurina 2013; Lee & Hsieh 2013; Lee, Ning & Lee 2015). Based on the variance and coefficient measurements, a z-score measurement of risk was formalised by Hannan and Hanweck (1988), Boyd and Runkle (1993) and Barry, Lepetit and Tarazi (2011) to calculate the probability of insolvency. The z-score can be calculated as:

$$E(ROA) + \frac{CAP}{A} \Big/ \sigma_{ROA}$$

where:

$E(ROA)$ = sample mean of bank return on assets

σ_{ROA} = sample estimates of the standard deviation of bank return on assets

CAP/A = the market capital-to-asset ratio.

The index has a negative book value and measures the quantity of capital cushion relative to profit so that a higher measure indicates a safer bank. It can be interpreted as a measure of the probability of technical insolvency and used as an indicator of the riskiness of banks (Matthews 2013).

The most prominent problem with using the variance or the coefficient of variation and the z-score as measures of bank risk is that they do not capture the endogeneity of bank risk to other bank characteristics. Although the endogeneity problem can be resolved by employing the 2SLS method (Laeven & Levine 2009), the calculation of the z-score or variance measures is derived from information of a fixed number of periods in the past to calculate the variance component. Therefore, these measures do not capture the short-term nature of bank risk. This is especially true when only annual data are available to the researcher, which is often the case with bank-level data (Delis, Hasan & Tsionas 2014). Table 2-6 summarises how the risk management of banks is measured in selected non-Chinese studies.

Table 2-6 International Studies of Risk Management of Banks

Authors	Country	Dependent Variables	Sample	Risk Management Variables
Epure and Lafuente (2015)	Costa Rica	Inefficiency; ROA; NIM	Unbalanced panel data of 663 annual observations	NPL to total loan ratio; CAR
Chalermchatvichien et al. (2014)	11 East Asian Countries	Risk variable	68 banks	CAR; liquidity ratio; LTD ratio; net stable funding ratio
Lozano-Vivas and Pasiouras (2014)	84 countries	Truncated mean of inefficiency	Panel data of 84 banks from 1999 to 2006	Loan loss provisions to total assets ratio; non-interest income to interest income ratio
Delis, Hasan and Tsionas (2014)	US	Variance of profit before tax; liquidity and capital ratios	Panel data of all US commercial banks from 1985q1 to 2012q4	Risky assets (risk-weighted assets to total assets ratio), loan loss provisions, problem loans, z-score, coefficient of variation
Hughes and Mester (2013)	US	Asset allocation	842 banks in 2007, 1,855 banks in 2003 and 856 banks in 2010	Equity capital-to-assets ratio, NPL to assets ratio
Lee and Hsieh (2013)	42 Asian Countries	ROA; ROE; NIM; NIR; risk variables	Panel data of 2,276 banks from 1994 to 2008	Variance of ROA; variance of ROE; loan loss reserves
Kasman and Carvallo (2013)	15 Latin American Countries	Cost efficiency; revenue efficiency; risk; equity ratio	Unbalanced panel data of 272 banks from 2001 to 2008	Impaired assets to total assets ratio

Authors	Country	Dependent Variables	Sample	Risk Management Variables
Fiordelisi, Marques-Ibanez and Molyneux (2011)	26 European Countries	Cost, revenue and profit efficiency	Panel data of 1987 banks from 1995 to 2007	Expected default frequency; NPL to total loan ratio
Barry, Lepetit and Tarazi (2011)	12 Western European countries	Asset risk measures and profitability measures	Unbalanced panel data of 249 banks from 1999 to 2005	Standard deviation of ROA; standard deviation of ROE; mean of the ratio of loan loss provisions to net loans; z-score; zp-score
Shen, Liao and Weyman-Jones (2009)	10 Asian countries	Cost efficiency	Unbalanced panel data of 1,890 annual observations	NPL to assets ratio
Iannotta, Nocera and Sironi (2007)	15 European countries	Operating profit to assets; operating income to assets; cost to assets ratio	Panel data of 181 banks from 1999 to 2004	z-score
Altunbas et al. (2007)	15 European countries	Loan loss reserves; equity-to-asset ratio; cost inefficiency	Unbalanced panel data of 2,494 banks from 1992 to 2000	Loan loss reserves
Sullivan and Spong (2007)	US	Standard deviation of operating return on equity	267 bank observations	Standard deviation of operating return on equity
Konishi and Yasuda (2004)	Japan	Risk measures	Panel data of 48 regional banks from 1990 to 1999	Five alternative capital market risk measures: total risk, firm-specific risk, systematic risk, market risk and interest rate risk. Total risk is defined as the standard deviation of a bank's daily stock returns for each fiscal year measured in percentage points. The rest of the risk measures are determined by the return generating process in a two-index model
Gonzalez (2005)	36 countries	Risk measures and Tobin's Q	Unbalanced panel data of 251 banks from 1995 to 1999	NPLs to total bank loans ratio; standard deviation of daily bank stock returns for each year

Authors	Country	Dependent Variables	Sample	Risk Management Variables
Cebenoyan and Strahan (2004)	US	Capital/risk assets; liquidity ratio; lending structure; profit variables; risk measures	All US commercial banks from June 1987 to December 1993	Standard deviation of quarterly ROE; Standard deviation of quarterly ROA; loan loss provision ratio
Shrieves and Dahl (2003)	Japan	Yearly change of loans-to-assets ratio; gain/loss ratio; loan loss provision/assets ratio; net dividends	607 pooled time series and cross-sectional observations from 1989 to 1996	Loan and asset growth
Anderson and Fraser (2000)	US	Risk measures	Panel data of 150 banks from 1987 to 1994	Firm-specific risk (standard deviation of the residuals of the market model for each firm); total risk (standard deviation of the bank's daily returns); systematic risk (difference between total risk and firm specific risk)

In the Chinese context, researchers (Ariff & Can 2008; Fu & Heffernan 2009; Jiang, Yao & Zhang 2009; Zhang, Wang & Qu 2012) have employed individual risk measurements such as credit risk and liquidity risk to account for the risk management of banking institutions. This approach follows the work of Williams and Nguyen (2005). Studies by Sufian (2012) and Wu and Bowe (2010) used accounting-based methods such as loan loss provisions. Portfolio-based measures such as excess reserve ratio, loan-to-asset ratio and LTD ratio were employed by Jia (2009), Kumbhakar and Wang (2007), Qian, Zhang and Liu (2015), Yao (2007) and Zhang, Wang and Qu (2012) to measure different types of financial risk faced by banks. Lee, Ning and Lee (2015) used variance, the coefficient of variation and z-score measures to measure the overall risk management of banks. Meanwhile, Lin and Zhang (2009) used non-interest income to proxy banks' business orientation. Chinese studies have also used the interbank rate to deposit rate or interbank to interbank and total deposit rate to measure OBS activities and banks' risk management (Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Zhang, Wang & Qu 2012). Table 2-7 summarises the main bank risk measures used in studies in China.

Table 2-7 Studies of Risk Management of Banks in China

Authors	Sample Period	Dependent Variables	Risk Management Variables
Qian, Zhang and Liu (2015)	2006–2010	Excess reserve ratio, loan-to-asset ratio and LTD ratio	Excess reserve ratio, loan-to-asset ratio and LTD ratio
Lee, Ning and Lee (2015)	1992–2011	Profitability (ROA, ROE, NIM and NIR)	Variance of ROA; variance of ROE; loan loss reserves
Lee and Chih (2013)	2004–2011	Profit efficiency; z-score	z-score
Matthews (2013)	2007–2008	Bank managerial efficiency	z-score
Zhang, Wang and Qu (2012)	1999–2008	Log of z-score	Credit risk (ratio of NPLs to loans); liquidity risk (LTD ratio); market risk (ratio of interbank funds to the sum of interbank funds and total deposits)
Sufian (2012)	2000–2005	Changes in efficiency	Loan loss provisions
Jiang, Feng and Zhang (2012)	1995–2008	Inefficiency measure	Capital risk (the natural logarithm of equity to total asset ratio); credit risk (the natural logarithm of loan loss reserve to gross loan ratio); market risk (the natural logarithm of interbank interest to interest on deposit); liquidity risk (the natural logarithm of gross loan to customer deposits ratio)
Wu and Bowe (2010)	1998–2008	Total capital ratio	NPLs to loan ratio
Lin and Zhang (2009)	1997–2004	ROE, ROA, NPL and cost-to-operating income ratio (COI)	Non-interest income to total income ratio
Jia (2009)	1985–2004	Excess reserve ratio, loan-to-asset ratio and LTD ratio	Excess reserve ratio, loan-to-asset ratio and LTD ratio

Authors	Sample Period	Dependent Variables	Risk Management Variables
Fu and Heffernan (2009)	1985–2002	ROA, ROE, Herfindahl–Hirschman index, market share, X-efficiency and scale efficiency	Liquidity risk: loans-to-assets ratio; capture solvency risk: equities to assets (unweighted for risk) ratio
Jiang, Yao and Zhang (2009)	1995–2005	Technical inefficiency measure	Capital risk (the equity to total assets ratio); credit risk (loan loss reserve to loan ratio); market risk (interbank borrowing to deposit ratio); liquidity risk (LTD ratio)
Ariff and Can (2008)	1995–2004	Cost and profit efficiency	Credit risk (loan-to-assets ratio); asset risk (provisions to gross loans ratio); capital risk (equity-to-assets ratio); liquidity risk (LTD ratio)
Yao (2007)	1995–2001	Profit before tax; loans	Equity-to-asset ratio
Kumbhakar and Wang (2007)	1993–2002	Truncated mean of error term in the input distance function	Ratio of equity to total assets

Among the risk variables listed in Table 2-7, the commonly used z-score in existing research on Chinese banking is not employed in this study because most of the banks covered in this research are not publicly listed. In measuring capital risk management, it is believed that the CAR is more in line with the regulatory requirement of the CBRC than the equity-to-assets ratio. The preliminary examination in this study reveals very limited correlation between variances of ROAA and ROAE and other variables included in this study for the period covered.

Consequently, the present research includes the CAR as a measurement of capital risk to reflect the effect of changes in the CAR on bank performance. The adjustment of the CAR of Chinese commercial banks was mainly affected by changes to regulatory requirements in banking reform during the study period (see discussion in Section 2.2). A lower CAR measurement indicates that banks are exposed to higher capital risk, which suggests that their risk management is weaker. Further, the present research uses the NPL to total loan ratio to examine lending risk, as suggested by Qian, Cao and Li (2011). A higher NPL ratio represents a higher lending risk and credit risk, and therefore indicates a lower level of risk management. Lastly, following Jia (2009) and Chalermchatvichien et al. (2014), the present research includes the ratio of total loans to total deposits. This ratio shows the percentage of total deposits that is extended out as loans and can be used as a proxy measurement for the liquidity risk faced by banks. The rationale is that if a bank exhibits better risk management, it is likely to disburse fewer loans based on the same deposits. Therefore, a higher loan-to-deposit (LTD) ratio indicates that the bank is less risk averse (Cebenoyan & Strahan 2004; Jia 2009).

2.4.3 Empirical Research on Risk Management of Commercial Banks: International Evidence

Empirical studies have explored the relationship between risk and banks' performance measured by efficiency. Altunbas et al. (2007) assessed the relationship between capital, risk and bank efficiency in a sample of 2,949 European commercial banks from 15 countries over 1992–2000. They found that inefficient banks appear to hold more capital and take on less risk. As a comparison, using a smaller sample of 1,987 commercial banks from 26 European countries over 1995–2007, Fiordelisi, Marques-Ibanez and Molyneux (2011) explored a similar relationship between bank efficiency, capital and risk by employing the Granger-causality method. They found that lower bank efficiency in terms of costs and revenues Granger-causes higher bank risk. This is consistent with Deelchand and Padgett (2009), who used a panel of 263 Japanese cooperative banks over 2003–2006 and found a negative relationship between banks' risk and efficiency. Their research showed that inefficient banks appear to operate with larger capital and take on more risk.

Studies have also examined the relationship between risk and bank performance measured by profitability. Goddard, Molyneux and Wilson (2004) used data from 665 European banks over 1992–1998 to investigate key factors that influence banks' profitability and found a positive relationship between the equity-to-assets ratio of European banks and their profitability measured by ROE. Iannotta, Nocera and Sironi (2007) examined the effect of ownership structure on bank performance in terms of efficiency, cost and risk using a sample of 181 banks from 15 European countries over 1999–2004 and documented that bank capital is associated with positive profitability and risk, with different asset risks associated with different levels of capitalisation. They also found that the coefficient of the GDP growth rate on profit and risk are

significantly positive, which implies that there are exogenous factors that affect banks' risk and performance. These factors will be discussed in Chapter 4.

Post-GFC studies also document the relationship between risk management and bank performance. Aebi, Sabato and Schmid (2012) found that risk management-related CG mechanisms were more positively associated with bank performance during the GFC than generic CG variables. These risk management-related CG mechanisms included the presence of a chief risk officer (CRO) on a bank's executive board and whether the CRO reported to the CEO or directly to the board of directors. Specifically, banks in which the CRO reported directly to the board of directors instead of the CEO or other corporate entities exhibited significantly higher stock returns and ROE during the GFC. In contrast, standard CG variables such as busy board and board attendance were mostly not significantly or even negatively related to banks' performance during the GFC.

2.4.4 Empirical Research on Risk Management of Commercial Banks in the Chinese Context

Existing empirical research has failed to provide conclusive evidence regarding the relationship between risk management and bank performance in China. As mentioned previously in section 1.4.4, the present research measures bank performance via three varaibles: (i) ROAA ratio; (ii) ROAE ratio; and (iii) COI ratio. The first two variables account for the profitability of banks, where a higher ROAA or ROAE ratio indicates higher profitability therefore better bank performance. The third variable, COI ratio, measures the efficiency of banks, where a lower COI ratio suggests a higher operating efficiency hence better bank performance.

Regarding the relationship between capital risk management and bank profitability, as summarised by Berger (1995) and Lee, Ning and Lee (2015), there are two main theories pertaining to the positive effect of capital on bank profitability: (i) the expected bankruptcy cost hypothesis; and (ii) the signalling hypothesis. The expected bankruptcy cost hypothesis states that a better-capitalised bank is less exposed to bankruptcy costs, which in turn decreases the cost of banks' funding and increases their profitability. (Berger 1995). According to the signalling hypothesis theory, having more capital sends a positive signal to the market and is associated with banks' future good performance (Goddard, Liu and Molyneux 2010; Goddard, Molyneux and Wilson 2004). As a contrast, some theories suggest a negative relationship between bank capital and bank profitability. The conventional risk-return hypothesis indicates that that banks with lower capital ratios exhibit less risk and better risk management; therefore, they are more likely to exhibit higher returns (Goddard, Liu and Molyneux 2010).

Regarding the relationship between CAR and bank efficiency, a higher capital ratio may indicate that the bank is operating overcautiously, which may limit the chance of investing in potential opportunities therefore a lower effiency (Goddard, Molyneux & Wilson 2004). Consequently, it is not surprising that existing empirical research offers inconsistent evidence regarding the relationship between capital and bank performance.

Empirically, using variances of ROE and NPL ratio to proxy risk, Lee, Ning and Lee (2015) found a significant positive relationship between capital and profitability of banks using panel data consisting of 171 commercial banks over 1997-2011. Here, capital was positively related to bank profitability as measured by ROA. Similarly, using panel data of 49 commercial banks over 1995–2010, Jiang, Yao and Zhang (2009) found the equity-to-assets ratio as a measure of capital risk to be positively related to the profitability of banks in China over 1995–2005, which is in line with the finding of

Goddard, Molyneux and Wilson (2004). As a comparison, Jiang, Feng and Zhang (2012) used a panel of 112 banks over 1995–2008 and concluded that all risk, except for capital risk, had significant impact on bank performance. Their conclusion of insignificant capital risk contradicts Jiang, Yao and Zhang (2009) and Lee, Ning and Lee (2015). This relationship is yet to be tested for Chinese JSCBs and CCBs, and the present study proposes the following hypothesis between CAR and bank performance:

There is a positive relationship between banks' CAR and bank profitability.
There is a negative relationship between banks' CAR and bank efficiency.

Regarding the LTD ratio, Jiang, Feng and Zhang (2012) found a negative relationship between risk management and bank performance. Using the LTD ratio as a proxy for bank liquidity risk, they found that a bank with better liquidity risk suffers efficiency losses despite the trade-off between liquidity and profitability. Mixed results of the relationship between liquidity risk and performance are documented by Fu and Heffernan (2009), who used the loans-to-assets ratio to proxy liquidity risk and the equity-to-assets ratio to proxy solvency risk and found that although the risk ratios have statistically significant coefficients on bank performance in the regression process, they tend to have different effects on performance at different stages of the statistic test. Consequently, the following hypothesis can be formed in regard to the relationship between LTD ratio and bank performance:

There is a relationship between banks' LTD ratio and bank profitability.
There is a positive relationship between LTD ratio and bank efficiency.

NPLs refer to financial assets from which banks no longer receive interest or instalment payments as scheduled (Lata 2014). Higher ratios of NPLs indicate that banks are less risk averse and lack risk management (Ariff & Can 2008). The immediate consequence of a large number of NPLs in the banking system is bank failure and economic

slowdown (Lata 2014). Empirical studies have explored the relationship between the NPL ratio and bank performance in relation to efficiency and profitability and found that banks with higher NPLs exhibit lower efficiency (Kasman & Carvallo 2013) and lower profitability (Epure & Lafuente 2015). Therefore, this research proposes the following hypothesis regarding the relationship between bank NPL ratio and bank performance:

There is a negative relationship between banks NPL ratio and bank profitability.
There is a negative relationship between banks NPL ratio and bank efficiency.

2.5 Gaps in Existing Studies and Motivation for This Study

Sections 2.3 and 2.4 reviewed bank lending and risk management of Chinese JSCBs and identified knowledge gaps in the existing studies, as summarised below.

2.5.1 Gaps in Existing Studies

The present study is motivated by the limited research examining the lending structure and risk management of Chinese commercial banks in regard to their performance. Moreover, there is no unified framework incorporating lending structure, risk management of banks and their governance characteristics. The review of the existing literature indicated several gaps in the field, including:

1. Lending structure, as an important aspect of bank lending behaviour, has been overlooked in banking studies in China in terms of its effect on banking risk management and performance.
2. There is inconsistent empirical evidence regarding the effect of CG and risk management on bank performance for Chinese commercial banks as a result of limited empirical risk and performance measurements, variances in study periods and different samplings of banks' yields.

3. Most empirical research fails to combine CG factors, bank lending structure and risk management to study bank performance.

2.5.2 Rationale for This Study

Against the background stated in Section 2.5.1, the present research will undertake to:

1. Evaluate the effect of lending structure on bank risk management to deepen the understanding of the relationship between lending structure and risk management for Chinese JSCBs and CCBs.
2. Develop a framework incorporating lending structure, risk management and CG to improve the understanding of how these three factors together affect bank performance.

2.6 Summary

This chapter reviewed the literature on lending structure and risk management in terms of their effects on the performance of commercial banks in China, ending with a summary of the knowledge gaps in existing studies. Along with Chapter 3, Chapter 2 serves as the theoretical and empirical foundation for developing the conceptual framework of this study, which is outlined in Chapter 4.

CHAPTER 3 LITERATURE REVIEW OF CORPORATE GOVERNANCE: THEORIES, PRACTICE AND EMPIRICAL RESEARCH

3.1 Introduction

Chapter 2 examined Chinese commercial banks with a particular focus on JSCBs and CCBs in terms of their lending structure, risk management and performance in the context of economic and financial reform. This chapter provides a critical discussion of the main CG theories and issues faced by Chinese JSCBs and CCBs. Consequently, this chapter will review the most significant and relevant studies that cover this area to identify the gaps in current knowledge and support the research questions put forward in the study. To achieve this, the subsequent sections of this chapter are outlined below.

Section 3.2 reviews the main CG definitions, while Section 3.3 examines the main theories of CG with respect to their relevance to the Chinese banking industry. Section 3.4 extends the discussion of CG to the banking industry and critically reviews the main arguments of the CG of banks. Section 3.5 reviews CG practices in major economies, with a focus on three main approaches (the Anglo-US, German and Japanese models) and their potential implications for Chinese CG of banks. Section 3.6 discusses the reform of CG practice in China. Section 3.7 reviews existing empirical research that has explored the effect of CG on banking operation and performance, with a focus on board characteristics, CEO duality, ownership concentration and ownership structure. Section 3.7 also addresses the particularities of CG issues in China in the context of Chinese economic and financial reform, which forms the basis of a modified CG assessment framework for Chinese JSCBs and CCBs. Section 3.8 identifies the gaps in the literature, and Section 3.9 summarises the chapter.

3.2 Defining Corporate Governance

Although an array of definitions of CG exists in the literature (see Denis & McConnell 2003; Du Plessis, Hargovan & Bagaric 2010; Iskander & Chamlou 2000; Mülbert 2009; OECD 2004; Shleifer & Vishny 1997), there is no generally accepted definition. This study will review the main CG definitions before arriving at an operational definition for this thesis. Shleifer and Vishny (1997, p. 737) defined CG as:

> *Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment.*

Shleifer and Vishny's (1997) definition focused on aligning the economic interests of investors and professional managers. A similar goal of achieving economic efficiency and profitability for a corporation can also be found in Denis and McConnell's (2003, p. 2) definition:

> *Corporate governance is defined as a set of mechanisms—both institutional and market-based—that introduce the self-interested controllers of a company (those that make decisions regarding how the company will be operated) to make decisions that maximize the value of the company to its owners (the suppliers of capital).*

A more direct description of the context of CG was given by Sir Adrian Cadbury[15], who included both the economic and social goals of professional management (Iskander & Chamlou 2000, p.9):

> *Corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The corporate governance framework is therefore to encourage the efficient use of resources and equally to require accountability for the*

[15] Cadbury was a pioneer in raising awareness and stimulating the debate on CG. He produced the Cadbury Report, which is a code of best practice that served as a basis for reform of CG around the world. For more details, see: University of Cambridge (http://cadbury.cjbs.archios.info/report).

> *stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society.*

The OECD (OECD 2004a, p. 11) defined CG as:

> *Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.*

Under this definition, a company's objectives and the mechanism of monitoring performance are treated as CG issues rather than being endogenous (Mülbert 2009). The OECD's definition of CG reflects Cadbury's description of CG in terms of aligning the interests of individuals, corporations and society. It also includes stakeholders in a broader context of CG; however, the focus of CG is the relationship between managers and disconnected shareholders.

In relation to including stakeholders, Du Plessis, Hargovan and Bagaric (2010, p. 10) defined CG as:

> *The system of regulating and overseeing corporate conduct and of balancing the interests of all internal stakeholders and other parties (external stakeholders, governments and local communities…) who can be affected by the corporation's conduct, in order to ensure responsible behaviour by corporations and to achieve the maximum level of efficiency and profitability for a corporation.*

Du Plessis, Hargovan and Bagaric's (2010) definition adds more precision to CG because it considers both internal and external stakeholders' interests, and the main objective of governance is to hold corporations responsible for their conduct. This is in contrast to Denis and McConnell's (2003) and Shleifer and Vishny's (1997) definitions,

which focused on aligning the interests of investors and professional managers whose decision-making would affect the value of the company.

According to Mülbert (2009, p. 413), such decision-making occurs at the board level, and the mechanisms involve internal and external governance, thereby ensuring the alignment of interests between different parties:

> *Corporate governance deals with the decision-making at the level of the board of directors and top management (i.e., the management board in a two-tier system and the different internal and external mechanisms that ensure that all decisions taken by the directors and top management are in line with the objective(s) of a company and its shareholders, respectively.*

The internal and external governance dichotomy is also supported by Denis and McConnell (2003), Gillan (2006) and Du Plessis, Hargovan and Bagaric (2010).

From a banking perspective, the OCED's definition underpins several guides on CG practice, including the Principles for Enhancing Corporate Governance (Basel Committee on Banking Supervision 2010b) and the Guidelines on Corporate Governance of Commercial Banks (CBRC 2011). This study adopts the OECD's definition of CG because it is widely accepted and, more importantly for the present research, it has been adopted by the supervision framework in China.

The OECD's definition incorporates substantial senior management issues—particularly risk management in banks and different types of bank ownership: (i) domestic ownership; (ii) foreign ownership; and (iii) state ownership, all of which can be recognised as forms of 'governance'. Thus, governance includes the effects of the goals of different ownership types, as well as the ability of owners to minimise agency costs with management.

The adoption of the OECD's definition means that the research framework proposed in this study does not consider the external governance framework suggested by Du Plessis, Hargovan and Bagaric (2010), Mülbert (2009) and Denis and McConnell (2003), which relies on the external (or takeover) market and the legal system (i.e., rules-based). This is a valid approach because China is still considered to have a relation-based governance environment (i.e., not rule-based), although the transition from relation-based governance to rule-based is slow and painful (Li 2013). Not surprisingly, the various definitions of CG are attributable to a wide variety of CG theories, which are reviewed below.

3.3 Theories of Corporate Governance

CG theories are drawn from a variety of disciplines, including finance, economics, accounting, law, management and organisational behaviour. Given this complexity, some theories may be more appropriate and relevant to some countries/forms of organisations than others (Mallin 2010). Given the context of this study, the following sections provide a critical review of theories pertinent to CG issues with banks and emerging markets.

3.3.1 Agency Theory

Agency theory arises from the separation of ownership and control. As firms grow in size, they require more capital. When firms raise capital from the capital market through debt/securities, a wider shareholder base is established and the problem of separation of ownership and control arises (Mallin 2010). Agency theory is considered the dominant theoretical perspective applied in CG studies (Daily, Dalton & Cannella 2003). The theory views the firm as a nexus of contracts and identifies the agency relationship whereby the principal delegates work to the agent. These contracts are the

essential mechanisms that monitor the governance of directors and managers to minimise the disadvantages associated within the agency relationship, which are also inherent in the opportunism of the agent.

Typically, the agent's misuse of power and information asymmetry are the main problems identified in this framework (Fama 1980; Fama & Jensen 1983; Jensen & Meckling 1976). Ross (1973) formulated the agency paradigm that agency problem is the principal's problem when the agent acts for the principal while the goals of cooperating parties differ. Jensen and Meckling (1976) further identified agency cost as a form of agency problem, which can be defined as the sum of: (i) monitoring expenditures by the principal (to align agents' interests); (ii) bonding expenditures by the agent (to prove they are acting in the principals' best interests); and (iii) residual loss (incurred by the divergence between agents' decisions). Additionally, Jensen (1983) identified another stream of agency problems that examines the general principle–agent relationship via logical deduction and mathematical proof. In this principal–agent paradigm, the focus is on determining the optimal contract that needs to consider behaviour versus outcome between the principal and the agent (Eisenhardt 1989). Previous studies adopting this focus have demonstrated that: (i) well-developed information systems, outcome uncertainty, agents' risk aversion, task programmability and length of agency relationship are positively related to behaviour-based contracts and negatively related to outcome-based contracts; and (ii) risk aversion of the principal, goal conflict between principal and agent and outcome measurability are negatively related to behaviour-based contracts and are positively related to outcome-based contracts (Eisenhardt 1989).

The popularity of agency theory in CG studies can be attributed to two factors: (i) simplicity of analytical units; and (ii) widespread human assumptions (Daily, Dalton &

Cannella 2003). However, criticisms of the theory abound. The most pertinent criticisms include: (i) assumptions of the nature of contracts are problematic—specifically, they are oversimplified for mathematic modelling purposes; (ii) assumptions that complex organisational structures and networks can be reduced to dyads of individuals are not realistic; (iii) assumption of the solitary principal and agent will invariably be extended to multiple principals and agents in a single firm; (iv) assumption that principals are dominant in specifying preferences, creating incentives and making contracts that agents must follow is not realistic; (v) assumption that individual agents' moral and collective behaviour are self-seeking and focused on obtaining power and wealth is one-sided; and (vi) assumption of a non-contextual, ahistorical and static relationship between principal and agent is not realistic, as individualistic utility motivations resulting in principal–agent interest divergence may not hold for all managers (Davis, Schoorman & Donaldson 1997a, 1997b; Mitnick 1992; Shapiro 2005; Sharma 1997; Van Slyke 2007).

Despite the abovementioned criticisms, alternative theories have stemmed from agency theory, including transaction cost theory (Williamson 1979), stewardship theory (Donaldson & Davis 1991) and stakeholder theory (Donaldson & Preston 1995). These theories are intended to complement agency theory. Altogether, they help to formulate key hypothesis relationships between CG and bank performance (Daily, Dalton & Cannella 2003).

3.3.2 Transaction Cost Theory

In contrast to agency theory, transaction cost theory views the firm as a governance structure instead of a nexus of contracts that aligns the interests of the principal and agent (Williamson 1979, 1981, 1984). The theory builds on Coase's (1937) work on the description of firms. Coase examined the rationale of firms' existence in the context

of a framework of the efficiencies of internal contracting as opposed to external contracting. Coase suggested that firms are alternatives to markets serving to reduce and control transaction costs (Woodward 1988). According to transaction cost theory, the expansion of large companies and conglomerates will provide their own internal capital market. Hence, it is via judicious governance structure, as opposed to contracts that realign and price incentives out, that misaligned actions are prevented (Williamson 1988). Hart (1995) identified three types of transaction costs in the transaction cost theory literature: (i) the cost of thinking about all of the different eventualities that can occur during the course of the contractual relationship, and planning how to deal with them; (ii) the cost of negotiating with others about these plans; and (iii) the cost of writing the plans in an appropriate way that is (legally) enforceable. The implication is that governance structure acts as a mechanism for making decisions that have not been specified via contracts.

Williamson's (1988) microanalytical framework of transaction costs rests on two key assumptions of human behaviour: (i) bounded rationality; and (ii) opportunism. Bounded rationality is the assumption that humans have constraints on their cognitive capabilities and limits on their rationality. Opportunism assumes that, given the opportunity, humans will unscrupulously seek to serve their self-interest (Barney 1990).

Studies of transaction cost theory have developed along two lines. The first examined internal organisations and management practices within firms (i.e., generalised principal–agent conflicts focusing on moral hazard and adverse selection). The second examined the reasons why firms vertically integrate (Woodward 1988). The analytical unit is transactions, which leads to a focus on whether economic organisations economise on their costs of transactions and governance structures for the mutual interest of contracting parties (Williamson 1984). Transaction cost theory regards the

board of directors as a governance structure, but only one of several, and the choice of an appropriate governance structure can help to align the interests of shareholders and directors (Mallin 2010). Under agency theory and transaction cost theory, some important mechanisms that stop managers from pursuing their own goals at the cost of shareholders include: board of directors, proxy fights, large shareholders, hostile takeovers and financial structure, statutory rules, and Cadbury report/CG codes (Hart 1995).

Transaction cost theory has spread to the discipline of finance and financial intermediaries. Given that banks are in the transaction business and banking institutions are designed to minimise transaction costs, Woodward (1988) argued that deposit insurance might be an efficient institution in cost minimising despite the moral hazard cost that it entails. Soon and Straub (1998) found that transaction cost, together with production cost and financial slack, affects the outsourcing decision of banks. In addition, Polski (2000) found a statistically significant link between transaction costs and institutional change, which reinforces the importance of the theory's assumption that the alignment of governance structures and transaction costs is embedded in a higher-order governance structure.

3.3.3 Stewardship Theory

While agency theory and transaction cost theory claim that executives and directors are self-serving and opportunistic, stewardship theory sees them as having interests that are isomorphic with those of shareholders (Daily, Dalton & Cannella 2003; Davis, Schoorman & Donaldson 1997a, 1997b). These interests include a sense of worth, altruism, a good reputation, a job well done, a feeling of satisfaction and a sense of purpose (Donaldson & Davis 1991). Later stewardship theorists recognised that, instead of viewing executives and managers as altruistic, there are many situations in

which managers conclude that serving shareholders' interests also serve their own interests (Lane, Cannella & Lubatkin 1998). Stewardship theorists believe that managers are inclined to maximise financial performance indicators to protect their reputation as experts in decision-making (Daily, Dalton & Cannella 2003).

Stewardship theory is based on a 'model of man', whereby managers of firms are seen as stewards who have a pro-organisational, collective outlook that possesses a higher utility than individualistic, self-serving behaviour espoused by agency theory. The implication of such an assumption is that there is no inherent problem of executive motivation, and the principle CG problem is how to determine the organisation structure to best align the motivations of managers and shareholders.

The analytical unit of stewardship theory is the firm. Stewardship theorists argue that the performance of a steward is affected by whether the structural situation in which they are located facilitates effective action (Davis, Schoorman & Donaldson 1997b). Empirically, Donaldson and colleagues investigated the agency–principal problem under the stewardship theory framework and argued that the alignment of managers' motivation and principals' expectation is affected by role (Davis, Schoorman & Donaldson 1997b; Donaldson & Davis 1991). The implication of stewardship theory is that CEO duality, which is the practice of one person serving as both a firm's CEO and the board's chair, can lead to higher returns to shareholders not merely because of the spurious effects of long-term compensation as implied by agency theory (Donaldson & Davis 1991).

The nature of the internal control mechanism is an important issue for bank regulation, and empirical studies have explored the effect of the internal control mechanism on bank performance (e.g., Aebi, Sabato & Schmid 2012; Andres & Vallelado 2008; Gleason & Simpson 1999; Pathan 2009). Their research has contributed to the main

debate in current studies of banks regarding whether a specific analytical framework for CG of banks is required as opposed to an all-encompassing CG framework for generic firms. A more detailed discussion of this argument is presented in Section 3.7.

Albanese et al. (1997) criticised the misinterpretation of the divergence of interest between owners and managers by stewardship theory. Further, Arthurs and Busenitz (2003) pointed out that stewardship theory fails to articulate what determines the alignment of interests and is of no practical use when the interests of stewards and principals are aligned.

3.3.4 Stakeholder Theory

Stakeholder theory incorporates a wide range of constituents, including employees, providers of credits, customers, suppliers, shareholders, government and the local community. This is in contrast to the sole focus on shareholders by agency theory. Consequently, the maintenance of shareholder value is not as paramount as under agency theory, and the overriding focus on shareholder value becomes less self-evident (Mallin 2010). Stakeholder theory assumes that the basic objective of a firm is to create value for its stakeholders. Hence, a business is a set of relationships among groups that have a stake in the business activities (Parmar et al. 2010).

Stakeholder theory has been proposed as a contrasting model to the conventional input–output model of organisations assumed by agency theory (Donaldson & Preston 1995). A fundamental thesis of stakeholder-based arguments is that organisations should be managed in the interests of all constituents rather than only shareholders. This is consistent with the fact that some companies strive to maximise shareholder value while trying to consider the interests of a wider stakeholder group (Donaldson & Preston 1995). Freeman (1984) was the first to elaborate the details of stakeholder theory and

urged organisations to recognise the significance of stakeholders to achieve superior performance (Laplume, Sonpar & Litz 2008). Friedman and Miles (2002) introduced compatible/incompatible interests and necessary/contingent connections as additional attributes to elaborate the relationships between stakeholders and organisations.

The analytical unit of stakeholder theory is the relationship between a business and the groups and individuals who can affect or be affected by it (Parmar et al. 2010). The fundamental basis of stakeholder theory is normative and identifies who benefits from a firm in terms of their interests in the corporation. Combined, the normative and descriptive aspects form the modern treatment of stakeholder theory (Li 2014). The theory does not imply that all stakeholders should be equally involved in all CG processes, although they might all be identified (Donaldson & Preston 1995). The significance of differentiating these stakeholders is that managers must have knowledge of the entities in their environment that hold power and aim to impose their will upon the firm.

Stakeholder theory has been broadly employed to examine the *guanxi*-based business environment in China.[16] Su, Mitchell and Sirgy (2007) constructed a hierarchical stakeholder model of *guanxi* relationships based on Mitchell, Agle and Wood's (1997) stakeholder salience theory and Anderson's (1982) constituency theory. They argued that not all *guanxi* are necessary for the survival of firms, and not all necessary *guanxi* relationships are equally important. Their conclusion is consistent with Dunfee and Warren's (2001) advocacy that a particularistic analysis of the different forms of *guanxi* is necessary instead of simply accepting it as a Chinese norm. Additionally, stakeholder

[16] Guanxi means 'interpersonal connections'. In essence, it is considered a network of resource coalition-based stakeholders that share resources for survival. It plays a key role in achieving business success in China (Su, Mitchell & Sirgy 2007). It may serve as a means of signalling trust and integrity in a system that lacks strong background institutions (Dunfee & Warren 2001).

theory is used to explain the increased incidence of bribery and corruption associated with the misuse of *guanxi* relationships. For example, increased demand for corporate social responsibility from stakeholders requires firms to respond to environmental pressure (Huang & Rice 2012).

The main criticisms of stakeholder theory focus on its conceptual limitations—specifically, the difficulty of appropriately examining the ethical considerations of business behaviour conducted by different stakeholders (Phillips, Freeman & Wicks 2003). Another limitation refers to the fact that the involvement of multiple stakeholders, along with little constraint on obligations towards managers, may make it convenient for managers with special interests to abuse their power, thus exacerbating agency problems (Jamali 2008). A major criticism is the fact that stakeholder theory uses two competing aspects: (i) the normative and descriptive aspect; and (ii) the empirical aspect. Given that both of these aspects require different approaches, which reflects the divergent streams of stakeholder theory, it is impossible to arrive at a fully integrated framework (Donaldson 1999; Donaldson & Preston 1995; Jensen 2010; Jones 1995; Orts & Strudler 2002).

3.3.5 Resource Dependence Theory

The notion of power–dependence relations, which refers to inter- and intra-organisational powers influencing and controlling the governing of an organisation, was populated by Pfeffer and Salancik (1978) and led to the development of resource dependence theory. The theory considers internal and external resources major contingencies for organisational performance. Internal resources may include inputs, management knowledge, production and marking capabilities, board of directors, employees' morale and satisfaction, owners' family networks and managers' networks. External resources may include customers, investors, suppliers, competitors, regulators,

community and the environment. Resources are considered critical to organisations under resource dependence theory, and the resources that one organisation needs are therefore often in the hands of other organisations (Li 2014). The theory assumes that a firm's power over its external environment is critical to earning a competitive advantage for the firm. The external environment, including suppliers, customers and the board of directors, are contingencies of the organisation's power. By applying multiple strategies, the firm can combat the contingencies and minimise uncertainty and interdependence on the environment (Hillman, Withers & Collins 2009). The central ideas of resource dependence theory are: (i) external environment, (i.e., the social context in which a business operates), which may have a direct effect on how resources are allocated; (ii) organisations are to develop strategies to enhance their autonomy of acquiring and allocating resources to improve their performance; and (iii) market power is important in understanding the internal and external actions of organisations (Pfeffer & Salancik 1978).

The stress on market power sets resource dependence theory apart from paralleling theories of CG. Meanwhile, resource dependence adds to agency theory by considering the board of directors a mechanism to curb managerial self-interested behaviour and provide a valuable resource for the organisation. The selection of directors is based on a series of criteria, ranging from technical skills, interpersonal skills and motivation of managing to their connections with external resources such as customers, suppliers and financiers. In this sense, the board can be considered a nexus between the internal and external environments (Hillman & Dalziel 2003). Further, the theory posits a positive stance on external directors because their views are independent and they serve as an extra source in understanding customers' needs despite their limited effect on key business decision-making (Hillman, Withers & Collins 2009).

Hillman, Withers and Collins (2009) criticised resource dependence theory as offering a weak theoretical foundation for explaining the dynamics of interdependence among contingencies because it only recognises those contingencies and their relationships. Additionally, the interaction of the internal and external constraints on organisations remains empirically under-considered (Morris 2007).

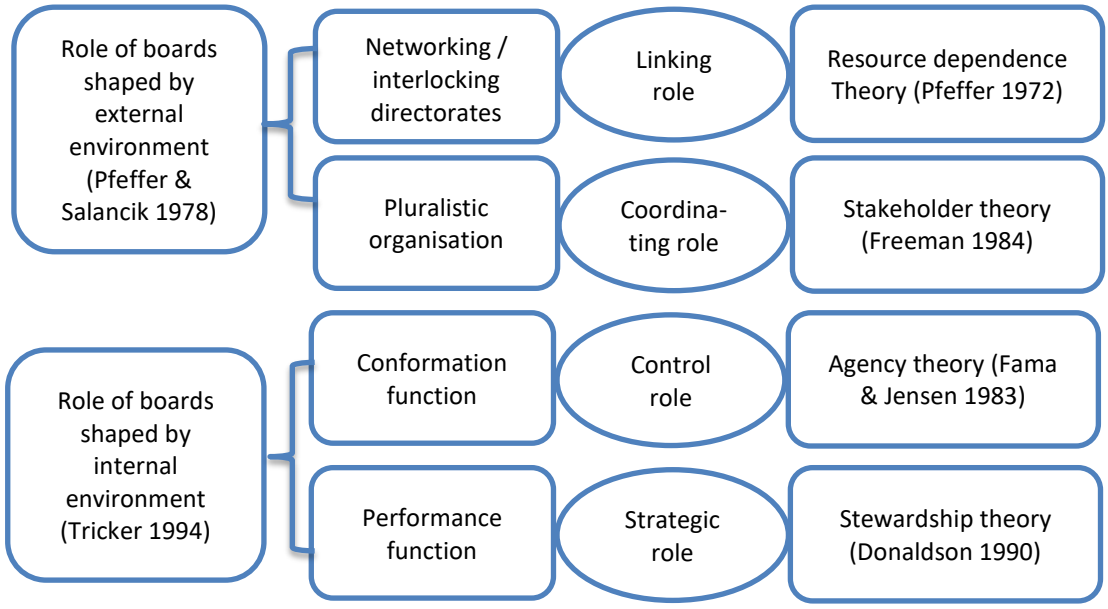
Existing research into research dependence theory has focused on explaining how organisations reduce environmental interdependence and uncertainty through: (i) mergers and vertical integration; (ii) joint ventures and other inter-organisational relationships; (iii) boards of directors; (iv) political actions; and (v) executive succession (Hillman, Withers & Collins 2009). In China, resource dependence theory is mainly applied to the study of boards of directors (Peng, Sun & Markóczy 2015; Sun, Hu & Hillman 2016; Zhou, Han & Wang 2013) and the *guanxi*-based business environment (Park & Luo 2001). In regard to banking research, banks are deemed to have 'power' over firms because they control resources, and the firm–bank relationship is regarded as a CG mechanism under resource dependence theory (Keister 2002; Pfeffer & Salancik 1978).

3.3.6 Multi-Theoretic Approach to Corporate Governance for Chinese JSCBs and CCBs

Empirically, the abovementioned theories take different stances on a number of CG issues regarding the justification of various CG mechanisms and the explanation of firm governance issues. A good example is the role of the board of directors, which is considered one of the most important internal CG mechanisms. While agency theory is pertinent to explaining the controlling and monitoring role of directors, additional and even contrasting perspectives are needed to explain directors' resources, services and strategic roles (Johnson, Daily & Ellstrand 1996; Zahra & Pearce 1989). Hung (1998)

provided a typology of CG theories of the role of boards and identified different roles reflecting different streams of CG theories, including agency theory, stewardship theory, stakeholder theory and resource dependence theory[17] (see Figure 3-1).

Figure 3-1 Contingency Perspective of the Role of Governing Boards



Note: Figure modified from Hung (1998).

As far as the theoretical limitations of the theories are considered, the abovementioned theories covered various aspects of CG issues. Agency theory is concerned with mitigating conflicts between agencies and principals via CG mechanisms such as boards of directors. It is also extended to cover conflicts between block shareholders and minority shareholders. In the Chinese context, it is recognised that the public nature of state ownership in JSCBs and CCBs results in their ultimate owners not being allowed to operate the asset directly. Where there is a lack of vitality and profit, these companies are unencumbered of the agent's incentive problems (Li & Dai 2009). Agency costs are high because of managers' lack of accountability, while political costs

[17] Hung (1998) also reviewed institutional theory and managerial hegemony. Given that institutional theory is increasingly used for entrepreneurship research (Bruton, Ahlstrom & Li 2010) and managerial hegemony is rarely used in the Chinese context, this research does not review these two theories.

are high because of political government interference (Qian 1996). These issues are a specific form of the conflict between majority shareholders (the state) and minority shareholders (private sector). Transaction cost theory also regards the board of directors as a governance structure. In China, transaction cost theory also helps to explain the perpetuation of China's relationship-based business practice, and it helps to justify Chinese firms attracting foreign investment and establishing joint ventures with foreign investors (Fan 1998; Hu & Chen 1993), which is also a common practice for commercial banks. Stewardship theory is concerned with managerial power; however, it proposes a conflicting implication of CEO duality to agency theory. Altogether, these various, and even conflicting, purposes derived from different theories require a multi-theoretic approach to recognise the many CG mechanisms and structures that might contribute to performance differences (Daily, Dalton & Cannella 2003). As Clarke (2007) posited, adopting and synthesising different theoretical perspectives may begin to provide a fuller understanding of the mechanisms and processes of corporate governance. In this, Clarke is in line with the call from Stiles and Taylor (2001) for reconciliation between economic and organisational perspectives in the belief that seemingly contradictory approaches can coexist as theoretical explanations.

Table 3-1 summarises the five main CG theories and their relevancy to China and commercial banks.

Table 3-1 Summary of Corporate Governance Theories

	Agency Theory	Transaction Economy Theory	Stewardship Theory	Stakeholder Theory	Resource Dependence Theory
Analytic unit	Contracts between agents and principals.	Transactions.	Firms.	Relationships between a business and its stakeholders.	Firm.
Problem of governance	Agent acts for the principal, while the goals of cooperating parties differ.	Transaction cost is caused by misaligned managers.	Skewed or non-alignment of principal and stewards' interests.	Absence of stakeholders' involvement.	Environmental interdependence and uncertainty.
Cause	Separation of ownership and control.	Contracts are incomplete tools.	Social and psychological causes.	Key stakeholders' interests are overlooked.	Corporations are constrained by their external environment.
Key tenets	Self-interested individuals, conflicts between agencies and principals, and information asymmetry.	Bounded self-interested individuals; conflicts between agencies and principals, and information asymmetry.	Managers are self-interest-oriented and they act rationally to maximise their personal gain.	Optimise stakeholder wellbeing to create value and strategic advantage.	Organisation has interdependence and uncertainty, which can be minimised by the organisation's actions.
Main propositions	When the principal has information to verify agent behaviour, the agent is more likely to act in the interest of the principals.	Principle purpose of an economic organisation is to economise on the costs of transactions; governance structures can promote mutual interests of contracting parties.	Performance of a steward is affected by the structural situation of the organisation.	Advocates participation of certain stakeholders in CG to arrive at a socially optimal outcome.	Organisational change is a response to internal and external constraints.

	Agency Theory	Transaction Economy Theory	Stewardship Theory	Stakeholder Theory	Resource Dependence Theory
Relevancy to China	Agency theory addresses: (a) the multilayer conflicts between principals and agents in Chinese SOEs; and (b) how interfirm transactions can be effectively carried out in China in the absence of a contract enforcement system.	Transaction cost theory addresses: (a) the capital structure of Chinese-listed firms; and (b) why China has been successful in attracting foreign investment and establishing joint ventures with foreign investors.	Stewardship theory addresses the structural situation pertaining to China, with empirical evidence providing strong support for stewardship theory in China.	Stakeholder theory addresses the *guanxi*-based business environment in China.	Resource dependence theory is mainly applied to the study of the board of directors and the *guanxi*-based business environment in China.
Relevancy to bank	Agency cost studies show that: (a) heavily regulated banks will have higher debt–equity ratios for equivalent levels of risk compared with generic firms; and (b) incentive contracts for top management ameliorate agency problems in banks.	Transaction cost studies demonstrate a strong link between transaction costs and institutional change among banks in emerging markets.	Stewardship studies identify that the nature of the internal control mechanism is an important issue for bank regulation.	Stakeholder studies identify the issue of legitimacy of banks among the general public because their perceived profit levels in banks.	Banks are deemed to have ‘power’ over firms because they control resources, and the firm–bank relationship is regarded as a CG mechanism.

3.4 Corporate Governance of Banks

This section reviews the theories and the main empirical debate regarding CG of banks, starting with a discussion of the particularities of banks when compared with generic firms.

3.4.1 Particularities of Banks

According to Macey and O'Hara (2003), a corporation is a set of contractual arrangements among the various claimants to the products whereby earnings generated by the business and the legal manifestation of these contracts are the fiduciary duties of care and loyalty that officers and directors owe to shareholders. In the case of banks, 'these claimants also include the regulators in their roles as insurers of deposits and lenders of last resort and in their capacity as agents of other claimants' (Macey & O'Hara 2003, p. 92). That is, in a broader sense of CG as advocated by Shleifer and Vishny (1997) and stakeholder theorists alike, CG of banks should encapsulate depositors and shareholders because of the peculiar contractual form of banking (Arun & Turner 2004). According to Redmond's (2000) illustration of business association, banks are an institution of trust with distinctive features. Given the particularities of bank activities and the fact that banking institutions face particularly acute moral hazard problems, one may consider that bank directors should hold to a higher standard of care than directors in generic firms, and that a more stringent regulatory environment is needed (Macey & O'Hara 2003). These particularities of banks are discussed below.

3.4.1.1 Liquidity Production Role

The principal attribute that makes banks special as financial intermediaries is their liquidity production function role. By holding illiquid assets and issuing liquid liabilities, banks inject liquidity into the economy. This mismatch between their terms

of assets and liabilities may cause a collective action problem among depositors, which could develop into a bank run in an unusual situation. Essentially, banks only keep a fraction of total deposits on reserve at any time, which means that all depositors cannot obtain their repayments simultaneously because there are not enough funds to satisfy all withdraw requirements at once. In a classic prisoner's dilemma, a bank run can even affect a solvent bank when large unanticipated withdrawals begin for any reason (Macey & O'Hara 2003). One justification for stringent regulation and special treatment of bank governance arises from the fact that collective actions can cause the failure of a solvent bank. Deposit insurance is often used to solve this problem by eliminating the incentive for any depositors to rush to demand repayment of their deposit. It is believed that deposit insurance in the US has been effective in preventing bank runs and has kept the failure of individual banks from affecting the whole financial system. However, it also poses a regulatory risk of its own because it gives incentives to managers of insured banks to engage in excessive risk-taking investment as well as fraud and self-dealing (Macey & O'Hara 2003). The same regulatory structure that creates a problem of excessive risk-taking by banks also leads to a reduction in normal levels of monitoring within the firm, resulting in increasing systematic risk. The Chinese banking industry adopted deposit insurance in May 2015.

3.4.1.2 Governance Monitoring Role

The firm–bank relationship has been explored regarding its effect on firms' business (see Diamond 1984; Fama 1980; Vesala 2007), which treated banks as delegated monitors and effective information producers (Yang, Chi & Young 2011). As stated previously, many firms have bank representatives on their boards because they can both monitor the firm for their lender and provide financial expertise. This role has been stressed in the German and Japanese CG frameworks, whereby 'main banks' (Japan)

and ‘universal banks’ (Germany) as block shareholders take an active management role in mitigating managerial shirking and misconduct. According to Macey and Miller (1995), bank oversight replaces the market for corporate control in these markets. In general, the purpose of bank monitoring is to reduce a bank’s risk by preventing the opportunistic behaviour of borrowing firms, which is associated with information asymmetries between the bank and the firms. Empirically, bank monitoring plays an important role in the CG of bank-dependent firms, which sees the borrowing firm’s earnings behaviour generally decrease as the strength of bank monitoring increases (Ahn & Choi 2009). Booth and Deli (1996) and Byrd and Mizruchi (2005) found that a firm’s overall debt ratio is lower when a director is affiliated with the bank that is lending to the firm. Their finding is consistent with the view that banks align themselves with the interests of incumbent management and oppose the interests of shareholders (Adams, Hermalin & Weisbach 2008).

3.4.1.3 Unique Capital Structure

Although many non-bank firms such as mutual funds and non-bank credit card companies issue the equivalent of a cheque transaction account, banks are distinguished from these firms by their unique capital structure in two ways (Macey & O’Hara 2003). First, banks exhibit higher debt–equity ratios for equivalent levels of risk than generic firms for which they are heavily regulated. Banks typically receive 90% or more of their funding from debt, whereas generic firms raise more funds via equity (Macey & O’Hara 2003). This is because the freedom of bank managers to take up riskier projects is severely constrained. Banks are highly leveraged firms and are therefore susceptible to risk-shifting agency problems (Jensen & Meckling 1976). Thus, the objective of CG is not to align top management with equity holders, because depositors are the primary claimholders. Shareholders of banks therefore have an incentive to monitor to prevent

self-dealing and fraud in banks; however, such monitoring has been notoriously ineffective because individual shareholders have insufficient incentives to engage in monitoring (Macey & O'Hara 2003). It is argued that top management should be given incentives to act on behalf of debt-holders to an adequate degree. The role of incentive contracts for top management in ameliorating agency problems has been documented for banks (John & Qian 2003). Second, banks' liabilities are largely in the form of deposits, which are available to their creditors/depositors on demand, while their assets take the form of loans that have longer maturities. This mismatch between the terms of assets and liabilities may cause a bank run in extreme conditions (see Section 3.4.1.1 for a more detailed discussion of bank runs).

3.4.2 Corporate Governance of Banks: Current Empirical Debate

In relation to CG bank studies, researchers are somewhat divided as to whether there is a need for a specific analytical framework for the CG of banks or whether more stringent regulations on commercial banks are required.

The assertion that CG issues of banks should be treated differently from industrial firms is evidenced by comparing the principles of sound CG between the OECD CG Guidelines and the Basel Principles. In the Basel Committee's report on CG for banks, the scope of CG is broader than the more generalist OECD guide.[18] Primarily, this is because of the expectation that banks, unlike industrial firms, need to protect the interests of depositors (Basel Committee on Banking Supervision 2010b). Such differences between banks and industrial firms include the banks' liquidity-producing function, higher leverage, larger number of dispersed creditors, opaque balance sheets in terms of valuations of different assets and vulnerability to creditor runs (Macey &

[18] The OECD's definition is used in this study because it is adopted by the supervision framework in China.

O'Hara 2003). Consequently, banks are subject to stringent prudential regulation of their capital risk compared with firms in other sectors of the economy, which limits the risks that a bank may take.[19] These differences are reflected in the theories and practices surrounding the CG of banks.

Macey and O'Hara (2003) argued that commercial banks pose unique CG problems for managers and regulators, as well as for claimants on firms' cash flows (e.g., investors and depositors). Starting from the perspective that paradigms of CG should be differentiated on the basis of the indigenous characteristics of the firms being governed instead of national boundaries, Macey and O'Hara (2003) suggested that the scope of the duties and obligations of corporate officers and directors should be expanded in the case of banks. Given the unique liquidity production role of banks, the deposit insurance fund, conflicts between fixed claimants and shareholders, and the assets structure, which is highly related to the risk-taking behaviour of banks, Macey and O'Hara (2003) believed that banks should be treated differently from industrial firms, and that bank directors should owe fiduciary duties to fixed claimants and equity claimants.

Mülbert (2009) built a principal–agency framework to analyse banks' CG, which identified conflicts associated with the following particularities of banks: a bank's ability to rapidly change its risk profile to benefit management or shareholders; the opaqueness of a bank's balance sheet, which makes incentive contracts less effective in aligning the interests of managers and shareholders; and stringent regulations, such as a minimum capital requirement, which may induce higher compensation for capital

[19] For instance, under Pillar 1 of Basel II, a bank's exposure to risk is limited by stipulating risk-adjusted minimum capital requirements. Basel III enhanced Pillar 1 by introducing a stressed value-at-risk capital requirement, more common equity (minimum 4.5% in lieu of 2%) and more Tier 1 capital (6% in lieu of 4%). Basel III also introduced countercyclical buffers, a capital conservation buffer and a mandatory leverage ratio.

and therefore create a bias towards riskier business strategies. Mülbert (2009) indicated that these particularities tend to exacerbate the multiple agency conflicts present within banks and reduce the effectiveness of some of the mechanisms for mitigating these conflicts. This raises doubt over whether the CG mechanisms of banks—particularly the remuneration of bankers—should be a reference for the CG framework of generic firms.

Empirically, Mülbert's (2009) suggestion is in line with Aebi, Sabato and Schmid's (2012) research. They specifically examined CG mechanisms and bank performance during the 2007–2009 GFC and found that risk management-related CG mechanisms, such as the CRO reporting to the board of directors, had a positive effect on bank performance. In contrast, standard CG variables (e.g., CEO ownership, board size and board independence) were either insignificantly or negatively related to bank performance during the crisis. Their research supports the idea that a different approach is required to evaluate banks' CG issues to effectively measure how their governance affects their performance.

Conversely, Caprio, Laeven and Levine (2007) and Levine (2003) presented different views on the CG issues of banks. While affirming the two special attributes of banks (i.e., greater opaqueness and greater supervision and regulation), they argued that the same core CG control mechanisms that influence generic firms also influence bank operations because bank valuation is influenced by shareholder protection and ownership structure. Consequently, they concluded that any government intervention into a bank's operation should be aimed at increasing the transparency of bank disclosure, increasing market competition and protecting investors through a more efficient legal and bankruptcy system (Caprio, Laeven & Levine 2007). Levine (2003) also analysed the adverse implications of strict government regulation for the CG of

banks. For instance, restrictions on purchasing bank equities, which aim to limit the family dominance of banks, actually protect existing owners from competition for control, while deposit insurance reduces the incentives of depositors to monitor banks, which may induce banks to undertake more risky investment projects. Further, state-owned banks remove the government as an effective independent monitor, which weakens the incentives of the private sector to monitor banks. This is in contrast to those who argue that the most important CG mechanism in banking is regulatory intervention (Prowse 1997), reinforcing Williamson's (1984, p. 1226) review that 'a robust approach to the study of economic organisation will apply equally well to both capitalist and non-capitalist forms'.

Polo (2007) summarised these two contrasting views on the CG of banks as: (i) those that advocate a set of core CG control mechanisms that influence all firms (including banks); and (ii) those that state the need for specific CG bank mechanisms. Polo (2007) compared these arguments from a government regulation context. Those who argue for a bank-specific CG mechanism tend to focus on the expanded set of fiduciary duties for bank directors and examine empirical differences in governance-related variables between banks and industrial firms. For those who affirm the universal CG framework for banks, increased disclosure requirements corresponding to Pillar 3 of Basel III are examined via increases in related flows of information. In addition, the multilateral regulatory aspect for domestic banking regulation is considered.

3.5 Corporate Governance Practices: International Evidence

Differences in cultural, legal, ownership and economic structures have affected CG practices. CG practices in different countries/regions are guided by local governance codes that encompass a variety of legal backgrounds (e.g., civil law v. common law), cultural and political background (e.g., democracy v. communist), business forms (e.g.,

public corporations v. family owned business) and ownership structures (e.g., privately owned corporations v. SOEs). In line with the study of Tsui (2010), Jiang and Kim (2015) and Yang, Chi and Young (2011) identified three common CG models in developed capital markets: (i) the Anglo–US model, (ii) the German model; and (iii) the Japanese model. These models are reviewed to examine the alignment of Chinese CG practices to common CG practices in developed economies, because no Chinese-specific model was developed during the economic and financial reform.

3.5.1 Anglo–US Model

The Anglo–US model is characterised by share ownership of individual or institutional investors operating within a well-developed legal framework that defines the responsibilities of key players in a developed capital market that favours the equity financing of corporations. Under this framework, CG is concerned with ensuring that the firm is operated in the interests of shareholders, and its main objective is to create wealth for them (Allen & Zhao 2007). Therefore, this model is also known as the 'shareholder model' (Ooghe & De Langhe 2002). The fact that stock exchanges play an important role in the Anglo–US model reflects the underlying notion of the free market, which was outlined by Adam Smith (1776) in his seminal text, *An Inquiry into the Nature and Causes of the Wealth of Nations*, as the 'invisible hand'. Thus, the Anglo–US model is akin to a 'market-oriented' model (Antoniou, Guney & Paudyal 2008). For the market-oriented model to work, there are some strong requirements including, but not limited to: (i) perfect/complete market with no transaction cost or other similar frictions; (ii) no externalities; and (iii) no information asymmetry. Although it is unlikely that all of these conditions will hold for any economy, it is considered that, under the Anglo–US governance framework, mild deviations are not sufficient to invalidate the basic notion of the free market or 'invisible hand'.

The Anglo–US model is mainly adopted in US and the United Kingdom (UK), where the legal framework is designed in such a way that it advocates fiduciary responsibility among managers and has high disclosure standards for publicly traded firms (Allen & Zhao 2007). From a banking perspective, most financial institutions in Anglo–US countries are not allowed to hold shares in publicly listed companies because of strict regulations; instead, they can only act as agents in the stock market (Macey & Miller 1995; Ooghe & De Langhe 2002). Under the Anglo–US CG framework, important governance mechanisms include incentive–compensation contracts such as stock option plans and direct management equity ownership, large shareholders' monitoring, external capital markets, independent directors, legal frameworks, hostile takeovers and proxy contests (Denis & McConnell 2003; Kang & Shivdasani 1999; Shleifer & Vishny 1997).

According to Useem and Zelleke (2006), criticisms of the Anglo–US CG model focus on the board of directors and executive remuneration. They added that state corporation laws assign ultimate responsibility for company affairs to the governing body, which permits the board to delegate the company's operation to management, although they are the sovereigns of their realm. Thus, management is the de facto dominant party in the company, with the board typically subordinate to them. For example, over-powerful CEOs can manipulate boards to prevent any challenge to their power or autonomy under the commitment to *esprit de corp*[20] (Clarke 2009). Despite continuing efforts to link CEO compensation to firm performance, CEO pay remained at 'incredibly' high levels regardless of whether their company performed well. Most executives enjoyed

[20] *Esprit de corp* is a French term that is used to describe the common spirit existing in the members of a group and to inspire enthusiasm, devotion and strong regard for the honour of the group.

the experience of becoming multimillionaires, while workers observed no measurable improvement in their wages (Clarke 2009).

In relation to the US banking and finance industry, Erkens, Hung and Matos (2012) analysed 296 US financial firms and found that firms with a more independent board and higher institutional ownership experienced worse stock returns during the crisis period than firms with less board independence and lower institutional ownership, which further contradicts the conventional CG mechanism in the Anglo–US CG model.

3.5.2 Japanese Model

In the Anglo–US model, which focuses on shareholders and narrowly defines the goal of corporate operation as creating more value for owners, CG in the Japanese model has traditionally been concerned with ensuring that firms are run in such a way that resources are employed efficiently and more stakeholders are included in the decision-making (Allen & Zhao 2007). Thus, managers do not have a fiduciary responsibility to shareholders, and directors may be liable for gross negligence in the performance of their duties (Scott 1998). However, the rights of shareholders in Japanese models are, in theory, greater than those of shareholders in the Anglo–US model because shareholders can directly nominate and elect directors, while management remuneration must be decided at general meetings of shareholders (Allen & Zhao 2007).

The Japanese model features a high level of stock ownership by affiliated banks and companies, which are supported by the industrial policy framework. The bank system and financial–industrial network complements each other in facilitating equity financing. Here, the main banks and affiliated companies act as key players in CG, especially in times of financial distress. This is referred to as a ‘bank-oriented’ model (Kang & Shivdasani 1999). Proponents of the Japanese model suggest that effective

monitoring of financial institutions could ameliorate the agency problem. The dominant idea is that commercial banks, if allowed to function free of regulation, are able to monitor and influence the business affairs of borrowing corporations (Macey & Miller 1995). Empirical evidence of the effectiveness of bank monitoring is mixed, although it appears to be of more significance in times of financial distress (see Ahn & Choi 2009; Allen & Zhao 2007; Kang & Shivdasani 1999).

Many Japanese corporations also have strong financial relationships with a network of affiliated companies. These affiliations contribute to a larger board composition in the Japanese model, with more independent directors. However, the board of directors plays a less significant governance role compared with the Anglo–US model (Allen & Zhao 2007; Berglöf & Thadden 1999). The main CG mechanism—senior executive compensation—depends on managers performing two motivating forces: stock prices and accounting-based performance measures, as well as dismissal for bad performance. Senior executives in Japan are among the lowest-paid in the world, and relatively little is tied to the stock price of the company, while US firms pay executives above average, and a greater proportion of their compensation is performance-related (Allen & Zhao 2007).

In relation to the CG practice of Japanese banks, external governance appears to be inactive. For example, there were fewer mergers, failures and other changes in terms of ownership and control after the 1990s Japanese banking crisis. In contrast, internal governance activity was observed to be more effective during the same period when measured by executive turnover and profitability (Anderson & Campbell 2004).

3.5.3 German Model

The German CG model resembles the Japanese model in that banks are also important shareholders of firms and have representatives on boards; however, unlike the Japanese model, representation in the German model is constant. In the Japanese model, bank representatives are only elected in times of financial crisis. In contrast, Germany's three largest universal banks (banks that provide a multiplicity of services) play a major role in many firms (Baums 1992). It is argued that the German universal bank system and the Japanese main bank system allow banks to exert more influence in CG matters than the Anglo–US model. According to Macey and Miller (1995), banks have tended to use this influence to reduce risk-taking among borrowers and to set back the market for corporate control. Consequently, German and Japanese banks should be more profitable than banks in the Anglo–US models because they are better able to monitor and control borrowers' moral hazards. However, the German model approach has meant that bank investment has prevented firms from undertaking profitable investment opportunities, and it has prevented the future development of robust primary and secondary capital markets (Macey & Miller 1995).

The German model also features a dual board system—namely, a management board and a supervisory board (Talaulicar & Werder 2008). It also emphasises the protection of all stakeholders, especially employees and lenders, which resembles the Japanese model in terms of the stakeholder approach to CG matters. This special relationship with employees is known as 'co-determination', which acknowledges the role of labour in decision-making (Meier & Meier 2014). The German CG system relies exclusively on institutional precautions, and not on a takeover market as a means of management control, because market capitalisation in Germany is different from the Japanese and Anglo–US contexts (Macey & Miller 1995; Meier & Meier 2014).

The German model is adopted by a wide range of countries in Europe and Latin America, and it is similarly recognised as the continental European model or 'stakeholder model'. The main features of the CG frameworks in these countries include: (i) high ownership concentration rate; (ii) small proportion of publicly listed companies; (iii) high percentage of ownership held by private companies; (iv) low stock market liquidity; and (v) strong personal relationship between management and shareholders (Ooghe & De Langhe 2002).

3.5.4 Summary of Coporate Governance Models

The global convergence in accounting standards towards a universal system has raised awareness regarding whether economies will converge towards a common CG system or sustain the present diversity of institutions. It is one of the key issues facing countries in Europe, the Asia-Pacific and throughout the rest of the world (Clarke 2009; Meier & Meier 2014), and it is necessary for any unified capital markets to emerge (Meier & Meier 2014). Although overall financial development is positively linked to economic growth, empirically, there is no support for either the bank-based financial systems, such as the German model and Japanese Model, or the market-based financial system, such as the Anglo-US model, for promoting long-run economic growth better than the other (Levine 2002). As a result of institutional differences, governance practices adopted by developed economies might not be entirely applicable in the context of emerging economies[21] (Rajagopalan & Zhang 2008).

In the case of China, the CG system resembles the German model insofar as a dual board system is required by Company Law regardless of the type of company for which

[21] According to Rajagopalan and Zhang (2008, p. 56), 'significant differences in ownership structure, business practices and enforcement standards imply major gaps between formal adoption of progressive and sophisticated governance codes and the actual implementation of these codes'.

the board is acting. Further, Article 123 of the Company Law[22] mandates the independent director institute for listed companies, while the 2001 'Guidelines for Introducing Independent Directors to the Boards of Directors for Listed Companies'[23] established the institution of the independent director in China, which details relevant terms and procedures. The independent director institution was established to effectively monitor the governance of the company and protect small shareholders against both management and dominant shareholders. This aspect reflects the spirit of the Anglo–US model (Tsui 2010). The next section provides a detailed discussion of CG practice in China.

3.6 Corporate Governance in China

CG reform and current CG practice in China forms an important context for the present study, which is discussed in this section.

3.6.1 Corporatve Governance Reform in China

According to Rajagopalan and Zhang (2008), the driving forces of privatisation and globalisation are behind CG reform in China. Before the overall economic and financial reform in late 1970, there were almost no financial markets in China. It was not until the early 1980s that some small SOEs and collectively owned enterprises started to experiment with a joint-stock system (Huang, Wang & Lin 2013). After several pilot experiments of securities transfer and distribution, the China Shanghai and the Shenzhen Stock Exchange Market were launched on 19 December 1990 and 3 July

[22] The Company Law of the People's Republic of China, Fifth Session of the Standing Committee of the Eighth National People's Congress on 29 December 1993, revised at the Tenth Session of the Tenth National People's Congress of the People's Republic of China on 27 October 2005; State Administration for Industry and Commerce (PRC) Trans, The Company Law of the People's Republic of China (2005), http://wzj.saic.gov.cn/zcfg/fl/200511/t20051101_51877.html.

[23] Guidelines for Introducing Independent Directors to the Board of Directors of Listed Companies (People's Republic of China) No. 102 of 2001 (CSRC trans, Notice on Issuing the Guidelines for Introducing Independent Directors to the Board of Directors of Listed Companies 2001), http://www.csrc.gov.cn/pub/newsite/xxfw/fgwj/bmgz/200803/t20080305_77981.htm.

1991 respectively. This represented a significant step towards market-oriented reform and privatisation. According to Huang, Wang and Lin (2013), these markets were considered particularly premature in their early years. This led to some serious incidents involving the purchase of stocks, which caused serious political and social instability.[24] The government initially exercised strict controls over stock issuance, especially the IPO process, which included selecting the companies for issue and setting their prices and allocation. These administrative or restrictive controls were either replaced or relaxed during the course of economic reform over 1990–2009. This has led to rapid development of the stock markets.

One unique feature of Chinese stock issuance is that the shares were split into tradable and non-tradable shares, resulting in 'equal shares with unequal rights', 'equal shares with unequal prices' and 'equal shares with unequal dividends. The non-tradable shares were further divided into: (i) state-owned shares; (ii) legal person shares; and (iii) employee shares. The share-splitting system was established to ensure state control of joint-stock companies. However, the non-tradable shares reduced the number of shares available to the capital market, and the price inequality provided the opportunity for price manipulation.

Early attempts to reform the equity division problem were to make state shares and legal person shares tradable; however, such efforts seriously dampened the stock prices because it meant possibly doubling or even tripling the volume of available shares in the markets. The government started the experiment of equity division in 2005. There were 1,303 listed companies that either completed the reform or commenced the reform process by 2006. This had an aggregate value of approximately RMB 6 trillion, which

[24] Some stock investors attacked the Shenzhen municipal government on 8 August 1992 and caused serious political and social instability.

accounted for 98.5% of the total value of the Shanghai and Shenzhen Stock Exchange Market. The equity division reform was deemed to have achieved a major accomplishment (Huang, Wang & Lin 2013).

As part of the reform process, China established new commercial and securities laws, introduced accounting and disclosure standards and established specialised regulatory agencies to supervise and regulate CG. Specifically, laws were enacted that sought to establish property rights and protect investors' interests. To help enforce these laws, and to encourage good governance practices, the China Securities Regulatory Commission (CSRC) was established in November 1992 with the purpose of unifying supervision and making laws and regulations uniform throughout the country. Stipulated by The Security Law, the state reorganised the regulatory agencies that covered companies and the securities business into the CSRC in 1998, thereby taking over the supervisory responsibilities for securities companies from the PBoC (Huang, Wang & Lin 2013).

The CSRC commenced a series of reforms to improve the CG of listed companies. It issued the Administrative Measures on Information Disclosure by Listed Companies in 2007, which aimed to enhance information disclosure, protect investors' legitimate rights and interests, raise the quality of listed companies and promote the development of the stock market in a sound way. In 2008, the CSRC deepened the reform by focusing on the following aspects: (i) regulating influential shareholders and the actions of their de facto controllers to encourage independent decision-making of listed companies; (ii) consolidating the debt payoff and establishing mechanisms to prevent large shareholders from impropriating the assets of listed companies; and (iii) strengthening the mechanism of internal investigation and information disclosure to further regulate

listed companies. These institutional changes were designed to reduce uncertainty for investors and deter or reduce the agency problems (Chen et al. 2006).[25]

3.6.2 Corporate Governance of Banks in China: Regulation and Supervision

In general, CG practices in the Chinese banking sector are mainly regulated by The Company Law, The Law of the People's Republic of China on Commercial Banks[26] ('Commercial Bank Law') and The Law of the People's Republic of China on Regulation of and Supervision over the Banking Industry[27] ('Banking Supervision Law'). On 19 July 2013, the CBRC issued the Guidelines on Corporate Governance of Commercial Banks ('CBRC CG Guidelines') to further improve the CG of commercial banks. This replaced all previously issued guidelines on the CG practices of commercial banks, including the Corporate Governance of Stated-Owned Commercial Banks and Relevant Supervisory Guidelines (2006), Guidelines on Corporate Governance of Joint Stock Commercial Banks (2002), Guidelines on the Independent Directors and External Supervisors of Joint Stock Commercial Banks (2002), Guidelines on Due Diligence of Board of Directors in Joint Stock Commercial Banks (2005), Guidelines on Corporate Governance of Foreign-Funded Banks (2005) and Guidance on Further Improving Corporate Governance of Small and Medium-Sized Commercial Banks (2009).

[25] The regulation and supervision of Chinese JSCBs and CCBs is addressed in Chapter 2.
[26] The Law of the People's Republic of China on Commercial Banks (People's Republic of China) No. 11 of 2003, Thirteenth Session of the Standing Committee of the Eighth National People's Congress on 10 May 1995, revised at the Sixth Session of the Tenth National People's Congress of the People's Republic of China on 27 December 2003 [Legislative Affairs Commission of the Standing Committee of the National People's Congress of the People's Republic of China (PRC) Trans, The Law of the People's Republic of China on Commercial Banks (2005), http://english.gov.cn/laws/2005-09/07/content_30005.htm.
[27] The Law of the People's Republic of China on Regulation of and Supervision over the Banking Industry (People's Republic of China) No. 11 of 2003, Sixth Session of the Standing Committee of the Tenth National People's Congress of the People's Republic of China on 27 December 2003 [Legislative Affairs Commission of the Standing Committee of the National People's Congress of the People's Republic of China (PRC) Trans, The Law of the People's Republic of China on Commercial Banks (2005), http://english.gov.cn/laws/2005-09/07/content_30005.htm.

The main advantages of a code/guideline compared with a mandatory approach to regulating CG is greater knowledge dissemination and increased flexibility of corporate practice and transparency (Wong 2008). Specifically, codes disseminate information about CG best practices and the knowledge gained from implementing these practices. The second aspect is especially important for emerging and developing economies such as China, which has few examples of best practices (Wong 2008). Codes/guidelines recognise that each company exhibits distinct institutional profiles; therefore, it does not mandate that all companies adopt these practices. The scope of CG, as well as a board's responsibility, in the Basel Principles is broader than the more generalist OECD guide, although the OECD has supplemented its principles to consider the experience of the 2007–2009 GFC (see: OECD 2010). However, principles listed in China's Banking CG Guidelines are quite concise compared with the six principles listed in the OECD's guide and the 14 principles listed in the Basel Principles, although the actual guidelines on CG practice in some way reflect the spirits of those principles. Such ambiguity can be partly explained by the differing CG frameworks in operation in China (see discussion in Section 3.7.5).

3.7 Empirical Research of Corporate Governance of Commercial Banks

Existing research has identified four types of CG mechanisms in Chinese commercial banks: (i) board of directors; (ii) CEO duality; (iii) ownership concentration; and (iv) ownership structure. This section reviews existing empirical research with a focus on these CG mechanisms.

3.7.1 Board of Directors

In Gillan's (2006) CG framework, research into the board of directors can be divided into three categories: (i) board roles such as advising, monitoring, supervising and

networking (see Adams, Hermalin & Weisbach 2008; Hung 1998; Johnson, Daily & Ellstrand 1996; Zahra & Pearce 1989); (ii) board composition, which consists of board size, board independence, board expertise, board subcommittees and board meetings (see Adams & Mehran 2012; Coles, Daniel & Naveen 2008; Kiel & Nicholson 2003; Minton, Taillard & Williamson 2011; Muth & Donaldson 1998); and (iii) board incentives, which include board ownership and board compensation (see John & Qian 2003; Laux 2010; Perry 2000). This study focuses on board composition because information on board roles and board incentives are often undisclosed in the financial reports of unlisted Chinese banks.

3.7.1.1 Board Size

Under agency theory, board size is positively correlated with firm performance because board size is associated with more independent board members involved in decision-making (Fama & Jensen 1983). Resource dependence theory also favours a large board because it considers boards important boundary spanners[28] that can be used as a mechanism to form links with the external environment. Therefore, a large board is associated with more connections to firms' external environment and more influence over other constituencies on behalf of the focal organisation (Pfeffer & Salancik 1978). However, stewardship theory considers that small boards promote increased participation and social cohesion. As a result, small boards have higher company performance (Muth & Donaldson 1998).

[28] According to Muth and Donaldson (1998), boards can be used as a mechanism to form links with the external environment. Inter-organisational linkages, such as the appointment of outside directors and board interlocks, can be used to manage environmental contingencies. Directors who are prestigious in their professions and communities can be a source of timely information for senior executives. They become involved in helping the organisation by influencing their other constituencies on behalf of the focal organisation.

Empirically, Coles, Daniel and Naveen (2008) found that large boards positively affect firm performance, particularly for firms requiring high-level advice, such as complex firms that operate in multiple segments. It is argued that larger boards may improve firm performance by facilitating manager supervision and bringing more human capital to advise managers. However, for small firms, Jensen (1993) argued that large corporate boards are less effective because of problems relating to coordination, control and flexibility in decision-making, as well as excessive control given to CEOs. The researcher proposes that a smaller number of board members may produce a more effective control mechanism for those firms. Eisenberg, Sundgren and Wells (1998) provided support by showing that firms with small boards had superior financial performance.

In the banking sector, board size has been proven to have a positive relationship with the scope of operations (Pathan & Skully 2010) and a negative relationship with bank risk-taking behaviour (Pathan 2009). This research therefore proposes following the hypothesis regarding the relationship between board size and bank risk management:

There is a positive relationship between board size and bank risk management.

Despite empirical evidence of a negative relationship between board size and firm performance in the literature (Hermalin & Weisbach 2001), Andres and Vallelado (2008) found an inverted U-shape with bank performance using the panel data of 69 banks from six OECD countries over the period 1996–2006. A post-GFC study of banks in the US showed an insignificant relationship between board size and bank performance (Aebi, Sabato & Schmid 2012). In China, empirical evidence tends to show a negative relationship between board size and firm performance (Hu, Tam & Tan 2010; Liu et al. 2015), although this relationship does not seem to be consistent

with various performance measures. Additionally, firm performance can be improved if a large board size is determined by the directors' ownership stakes (Yu 2003) or if the size of the supervisory board is larger relative to the board size (Firth, Fung & Rui 2007). In the Chinese banking sector, Liang, Xu and Jiraporn (2013) found that board size has a negative effect on bank performance using a sample of the 50 largest Chinese banks during the period 2003–2010. Similarly, using an unbalanced panel data set of 139 firm-year observations over the 1999-2009 period, Shan and Xu (2012) found that board size had a negative impact on the performance of listed financial institutions in China. This is yet to be empirically tested for the case of JSCBs and CCBs, which are mainly medium- and small-sized banks that are not necessarily listed on the stock exchanges. Consequently, this research proposes the following hypothesis regarding the relationship between board size and bank performance:

There is a negative relationship between board size and bank performance.

3.7.1.2 Political Connection of Boards

This study considers that a director is politically connected if the director is a current or former officer of the central government, local government or the military force. In the global context, the notion of 'political connection' has been used in the literature following a quite consistent definition. Faccio (2006) considered a firm politically connected if at least one of the firm's largest shareholders or one of its senior managers is a member of parliament, a minister, a head of state or closely related to a top official. Fan, Wong and Zhang (2007) and Liang, Xu and Jiraporn (2013) defined a politically connected CEO or board member as being a current or former officer of the central government, local government or military in China. Bertrand et al. (2006) considered a firm politically connected in France if its CEO attended elite schools and was employed

as a civil servant or had a government position. The definition of a politically connected director in this study takes into consideration that politicians are able to extract rents even when they are not directly in power.

Theoretically, politically connected directors on a board can be justified from three perspectives. According to resource dependence theory, politically connected directors on a board can influence the operation of banks because they are well connected with the external environment (e.g., market condition, supervision, regulation) in which the banks operate (Pfeffer & Salancik 1978). Additionally, the political connection of boards and CEOs can be seen as another form of government intervention in the firm in addition to state ownership. It can provide subsidies directly or can encourage private banks through regulation and persuasion to lend to politically desirable projects. Further, whether it is via regulation or imposing political pressure on commercial banks, local government officials can affect credit supply. It is believed that in countries that have weak legal institutions and poorly protected property rights, such as China, informal institutions such as political connections play a dominant role in firms' decisions (Qian, Zhang & Liu 2015). On the demand side, Li et al. (2008) and Firth et al. (2009) found that politically connected firms can obtain more loans and loans with longer maturities in China's private sector. On the supply side, the tenure of officials and the pressure of promotions have been proven to affect the credit supply and lending activities of CCBs in China (Li 2013; Qian 2012; Qian, Cao & Li 2011; Qian, Zhang & Liu 2015). In addition, board officials affect bank lending behaviour, with empirical evidence from CCBs in China demonstrating that the higher the administrative rank of the official on the board, the larger the effect (Qian, Zhang & Liu 2015). Therefore, the hypothesised relationship between board political connection and risk management can be formed as:

There is a negative relationship between board political connection and bank risk management.

Empirical evidence from China shows that firms with politically connected CEOs underperform compared with those without politically connected CEOs (Fan, Wong & Zhang 2007). This negative relationship between board political connection and performance is also documented for Chinese banks (Liang, Xu & Jiraporn 2013). Therefore, this research proposes the following hypothesis:

There is a negative relationship between board political connection and bank performance.

3.7.1.3 Board Independence

In a broader sense, the notion of board independence is associated with the ability of boards of directors to influence management to independently achieve maximum performance. To improve the governance structure of listed companies, the CSRC introduced the independent director system in August 2001 and made specific requirements regarding the professional qualifications and competency of independent directors to improve the governance structure of listed companies. This required that listed companies should give full play to independent directors, and that there should be at least one professional accountant among the independent directors. In China, the CSRC introduced the independent director system in 2001, entitled Guidelines for Establishing an Independent Director System for Listed Companies. These guidelines stipulated that one-third of the directors of listed companies should be independent and non-executive.

The level of board independence can be evaluated in a number of ways, such as leadership structure, board composition, board size, average age, average tenure,

interest alignment and CEO power. Empirically, board independence can be measured using the proportion of reported independent directors to board size. This research follows the latter because it is more in line with the Chinese institutional context and it is consistent with existing empirical studies.

Under agency theory, company directors mainly play a role in decision-making management and decision-making control (Fama & Jensen 1983). Independent directors are considered a mechanism to monitor managers because independent directors value maintaining their reputation in the directorship market. As a result of their independence from company management, independent directors can supervise company management more effectively relative to inside directors, and they can also protect minority shareholders from being invaded by managerial opportunism. Consequently, agency theory implies that a higher proportion of independent directors on boards leads to higher company performance (Fama & Jensen 1983). Similarly, under resource dependence theory, independent directors are regarded as a mechanism to form links with the external environment, and they can be used to manage environmental contingencies and reduce resource dependence (Pfeffer & Salancik 1978). Therefore, a higher proportion of independent directors is associated with better performance of firms. In contrast, stewardship theory predicts that a majority of insider directors, rather than independent directors, is associated with better company performance because it allows the building of trust and empowerment of management, which facilitates clear-cut leadership for strategy formulation and implementation.

Empirically, the existing literature offers no conclusive evidence regarding the role of independent directors. Some argue that an independent board of directors has fewer conflicts of interest when monitoring managers, and that they are more effective in reducing the agency problem. Thus, when the monitoring function is prevalent, a

positive relationship is expected between board independence and bank value (Andres & Vallelado 2008; Klein 2002; Nguyen & Nielsen 2010). Others argue that while independent directors increase the quality of monitoring, they may lack sufficient firm-specific knowledge, which may lead to less optimal decision-making (Adams & Mehran 2012; Harris & Raviv 2008). Consequently, there is no statistically significant effect (Adams, Hermalin & Weisbach 2008; Coles, Daniel & Naveen 2008) or even a negative effect of board independence on firm performance (Agrawal & Knoeber 1996).

From the perspective of the banking industry, regulators try to mitigate these risk-taking incentives by imposing capital requirements and restrictions on certain types of investments and behaviour. If independent directors are also acting in the interest of regulators and depositors, board independence may be associated with less risk-taking. This negative relationship between board independence and risk management of banks was observed by Pathan (2009). Recent research in the Chinese context by Qian, Zhang and Liu (2015) showed that independent directors can weaken the effect of government-appointed officials on boards, but they are associated with better risk management. This research therefore proposes the following hypothesis:

> *There is a positive relationship between board independence and bank risk management.*

The effect of independent directors on bank performance in the context of Chinese JSCBs and CCBs (and China, generally) is quite vexed. Some, like Tsui (2010), contend that the institution of independent directors is more 'symbolic rather than practical' because independent directors and boards of supervisors enjoy simultaneous supervisory rights, whereby 'functional criss-cross and repetition is inevitable in execution' (see OECD 2005). Empirically, Liu et al. (2015) and Firth, Fung and Rui (2007) found a positive relationship between board independence and firm performance

among listed firms in China. Additionally, Liu et al. (2015) suggested that this relationship is stronger among government-controlled firms and firms with lower information acquisition costs. Some evidence from the Chinese banking industry suggests that board independence has a positive effect on bank performance at the 10% confidence level using data from the 50 largest banks in China (Liang, Xu & Jiraporn 2013), which is consistent with a study by Andres and Vallelado (2008). Some evidence, however, suggests that board independence has no impact on bank performance (Shan and Xu 2012). Evidence outside China tends to support a positive relationship between board independence and performance of financial institutions (e.g., Minton, Taillard & Williamson 2011). Consequently, this research forms the following hypothesis regarding the relationship between board independence and bank performance:

> *There is a positive relationship between board independence and bank performance.*

3.7.2 CEO Duality

CEO duality, which is the practice of one person serving as both a firm's CEO and the board chair, can influence board monitoring and may have contrasting effects on firm performance under different theories. Agency theory suggests that CEO duality is bad for performance because it compromises the monitoring and control of the CEO. In contrast, stewardship theory argues that CEO duality may be good for performance because of the unity of command it presents (Peng, Zhang & Li 2007). Empirical evidence also offers mixed results. Pathan (2009) examined the relevance of banks' board structure on bank's risk-taking behaviour using a sample of 212 large US banks over the period 1997–2004 and argued that CEO duality negatively affects banks' risk-taking because CEOs prefer lower risk given their non-diversifiable wealth. Aebi, Sabato and Schmid (2012) specifically examined CG mechanisms and bank

performance during the GFC with panel data from 372 US banks. They found that standard CG variables such as CEO duality were insignificantly related to bank performance during the GFC.

CEO duality has been tested in the Chinese context, and existing research offers no conclusive results (Bai et al. 2004; Chen, Firth & Xu 2009; Hass, Johan & Schweizer 2013; Sami, Wang & Zhou 2011). Hass, Johan and Schweizer (2013) found that CEO duality significantly reduced performance persistence using panel data of 988 publicly traded firms over 2001–2010. Chen, Firth and Xu (2009) found that CEO duality has a statistically insignificant effect on firm efficiency using an unbalanced panel of 6,113 observations over 1999–2004. Bai et al. (2004) reported a negative relationship between CEO duality and firm performance using publicly listed firms over 1999–2001. Peng, Zhang and Li (2007) argued that existing studies offer stronger support for stewardship theory and relatively little support for agency theory in the case of China. This has not yet been tested for the case of Chinese banks. One reason why CEO power has not been empirically tested against bank performance in the Chinese context is because CEO duality is forbidden by Article 25 of the CBRC CG Guidelines.

Despite the existence of Article 25, in practice, banks have the president/CEO as the vice chairman (and executive, while the chairman is non-executive), which makes it de facto CEO duality for these banks. As Oliver, Qu and Wise (2015) posited, board independence might be weakened as the board is controlled by an insider who also acts as the chairman. This provides an alternative measurement of CEO duality for the Chinese banking context. This study therefore proposes the following hypotheses:

> *There is a negative relationship between CEO duality and bank risk management.*
> *There is a negative relationship between CEO duality and bank performance.*

3.7.3 Ownership Structure

According to Berger et al. (2005), different types of bank ownership—domestic ownership, foreign ownership and state ownership—can be recognised as forms of 'governance'. Studies of US corporations typically refer to 'governance' as the methods used to reduce agency costs, such as board composition, voting rights and shares held by managers (Denis & McConnell 2003). In comparison, studies in developing countries often focus on the role of ownership in reducing these agency problems. There are two justifications for this. First, developing countries tend to have weaker legal infrastructures that often do not adequately protect investors. Second, the assumption of a single overriding operation goal of value maximisation (applied in US corporation studies) may not apply to all ownership types. For example, state owners may be more concerned with social and economic stability, while foreign owners may be more concerned with the value of the entire organisation (Berger et al. 2005). Different ownership structures therefore imply different levels of performance for banks (Barry, Lepetit & Tarazi 2011) and influence corporate risk-taking (John, Litov & Yeung 2008; Laeven & Levine 2009).

Empirically, ownership type has mainly been measured in three distinctive approaches. First, one can use a 'bank type' dummy variable to distinguish between different types of banks (e.g., state-owned banks, private banks, joint-stock banks, foreign banks) (Ferri 2009; Fu & Heffernan 2009; Jia 2009; Jiang, Feng & Zhang 2012; Kumbhakar & Wang 2007). A problem associated with this measurement is that over an extended period, especially during banking reform and restructuring in transitioning economies, a bank's ownership feature may change. Therefore, the 'bank type' dummy variable is sometimes treated as a 'static state/government ownership' variable when the ownership feature of banks does not change throughout the study period (Berger et al.

2005; Lin & Zhang 2009). Second, by examining the shareholding structure, researchers may use dummies such as ‘government’, ‘state’, ‘private’ and ‘institutional’ to describe banks, with the block shareholder (also referred to as ‘controlling shareholder’ or ‘largest shareholder’ in existing studies) being these entities (Berger, Hasan & Zhou 2009; Bonin, Hasan & Wachtel 2005; Dinç 2005; Iannotta, Nocera & Sironi 2007; Liang, Xu & Jiraporn 2013; Micco & Panizza 2006). This measurement allows a change of ownership during the period of study; however, it does not capture the quantitative relationship between state shareholding and bank performance. Lastly, the percentage of shares held by different entities (Jiang, Yao & Feng 2013; Liang, Xu & Jiraporn 2013) allows one to quantitatively explore the relationship (if any) between ownership type and bank behaviour if consistent scopes of defining different ownership types are developed by the researchers. Consequently, this research includes dummy variables for the government, SOEs and foreign institutions, as well as percentage measures to examine the effect of ownership structure on banking performance.

3.7.3.1 State Ownership

State ownership of banks is pervasive around the world (La Porta, Lopez-de-Silanes & Shleifer 1999; Qian, Zhang & Liu 2015). In the case of China, the state government, local government and SOEs hold 60%–70% of the non-tradable shares of JSCBs and CCBs (Fu & Heffernan 2007). Although this figure has substantially reduced during the course of the banking reform (see Section 4.7.4), government organisations and SOEs still hold up to 35% of the shares of JSCBs and CCBs for sample banks over the study period used in this research.

There are two broad views of government participation in the financial industry: the ‘development’ view and the ‘political’ view (La Porta, Lopez-de-Silanes & Shleifer 2002). The ‘development’ view focuses on the necessity of financial development of

economic growth. According to Gerschenkron (1992), privately owned commercial banks play an important role in channelling savings into the industry in several industrialising economies. Conversely, in countries in which economic institutions are not sufficiently developed for private banks to attract sufficient funds, it is necessary for the government to step in and fulfil the function of industrial banks. Government ownership in the strategic economic sector is advocated in development economics (Shleifer 1998). In contrast, the 'political' view is sympathetic to the desire of politicians to control investments by firms from a political perspective. Under this view, the government acquires control of enterprises and banks to provide employment, subsidies and other benefits to supporters (Shleifer & Vishny 1997). The attraction of the political intervention of banks is presumably greatest in countries with underdeveloped financial systems and poorly protected property rights because the government does not need to compete with the private sector as a source of funds (La Porta, Lopez-de-Silanes & Shleifer 2002). Compared with regulating banks or owning projects outright, ownership allows the government to exercise extensive control over the choice of project being financed while leaving the implementation of these projects to the private sector (La Porta, Lopez-de-Silanes & Shleifer 2002).

More specifically, in relation to state-owned banks, there are three theoretical views that explain the role of these banks in the economy—namely, social, agency and political views (Sapienza 2004). In the social view, government-owned banks are established to maximise social welfare, to cure market failure in financial and credit markets instead of achieving maximum profit (Greenwald & Stiglitz 1986; Stiglitz 1993; Stiglitz & Weiss 1981). Agency views, in addition to agreeing with the social welfare-maximising goals of government-established banks, suggest that managers of these banks have low-powered incentives or divert resources for personal benefits,

therefore implying less efficiency in performance (Tirole 1994). The political view assumes that politicians aim to maintain voting support; therefore, government-established banks may provide jobs for political support and transfer resources to their supporters (Shleifer & Vishny 2002).

Empirically, as argued by Micco and Panizza (2006), state ownership is correlated with bank lending activities over the business cycle in the way that lending of state banks is less responsive to macroeconomic shocks than the lending of private banks (Micco & Panizza 2006). There are some possible reasons why state ownership in banks may stabilise credit: (i) the state may internalise the benefits of a more stable macroeconomic environment and credit stabilisation becomes part of the objective function of the banks (Sapienza 2004); (ii) during the time of recession, depositors may think that state-owned banks are safer than privately held banks because of implicit or explicit deposit insurance, which gives the state-owned banks more stable deposits; (iii) lack of incentives for managers in state-owned banks to react to changing business cycles (Micco & Panizza 2006); and (iv) politicians may intervene in the credit issuing of public banks to maximise their probability of re-election (Dinç 2005), extend their tenure or seek promotion (Qian, Cao & Li 2011). The relationship between state ownership and performance has been widely tested in the Chinese banking sector. It is generally accepted that banks with more prudent lending behaviour and better performance exhibit lower state ownership in different periods, and this observation is robust to various measurements discussed at the beginning of this section (Berger, Hasan & Zhou 2009; Ferri 2009; Fu & Heffernan 2007; Jia 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Li & Li 2008; Lin & Zhang 2009; Matthews & Zhang 2010; Shan & Xu 2012; Shen, Liao & Weyman-Jones 2009). Therefore, the hypotheses

regarding the relationship between state ownership, risk management and bank performance can be summarised as:

> *There is a negative relationship between state ownership and bank risk management.*
> *There is a negative relationship between state ownership and bank performance.*

3.7.3.2 SOE Ownership

SOE ownership is sometimes considered state ownership in existing studies (e.g., Berger, Hasan & Zhou 2009; Liang, Xu & Jiraporn 2013) because the government still retains ultimate decision rights regarding mergers and acquisitions, the disposal of shares and assets, and the appointment of CEOs, while largely granting operating decision rights to SOE managers (Fan, Wong & Zhang 2007). However, SOEs are less affected by government social welfare-maximising decisions. According to Dong et al. (2014) and Martin (2012), SOE-controlling shareholders are different from government-controlling shareholders in many ways. First, banks controlled by SOEs have greater autonomy because there is less interference from the government. Further, the board of directors and senior officers are appointed by SOE-controlling shareholders rather than being directly appointed by the organisation department of the Communist Party. Meanwhile, SOEs have become more market-oriented and are now responsible for their own gains and losses during the economic and financial reform (Delios, Wu & Zhou 2006). Second, banks controlled by SOEs have strong financial constraints and do not receive as much financial support from the state as government-controlled banks. Therefore, they have greater incentives to pursue profit-maximising strategies and exercise prudential lending standards. Empirically, Dong et al. (2014) found that banks controlled by SOEs tend to take fewer risks than government-

controlled banks using a panel of 108 banks over 2003–2011. Therefore, this research proposes the following hypothesis:

> *There is a positive relationship between SOE ownership and bank risk management.*

Further, banks controlled by SOEs generally adopt a performance-based remuneration scheme that creates more incentives for managers to pursue a sound and safe operation compared with state-owned banks (Dong et al. 2014). The relationship between SOE ownership and bank performance can be summarised as:

> *There is a positive relationship between SOE ownership and bank performance.*

3.7.3.3 Foreign Ownership

According to Jiang, Feng and Zhang (2012), foreign ownership of banks in China takes two forms: (i) designated foreign banks; and (ii) foreign ownership in domestic banks. There are two contrasting views on the performance of banks with foreign ownership. The home-field advantage hypothesis argues that domestic banks are generally more efficient than foreign-owned institutions as a result of organisational diseconomies operating and monitoring from a distance, as well as limited access to local soft qualitative information. The global advantage hypothesis argues that foreign institutions can be more efficient because of superior managerial skills and high-quality human capital inherited from foreign owners, which allows them to overcome cross-board disadvantages and operate more efficiently than domestic institutions (Berger et al. 2005; Genay et al. 2000). These superior managerial skills may facilitate better policies and procedures, which may in turn lead to obtaining more resources, raising revenues and lowering costs (Kozak et al. 2009). The home-field advantage hypothesis tends to hold in developed countries, while the global advantage hypothesis holds in

developing countries (Claessens, Demirgüç-Kunt & Huizinga 2001). Following this discussion, foreign ownership in Chinese banks is expected to have a positive performance effect by introducing advanced technology, modern banking techniques and superior risk management (Genay et al. 2000).

Since 2003, the CBRC has been introducing foreign strategic investors to Chinese commercial banks by issuing a series of guidelines. For example, the CBRC issued the Regulation for Foreign Financial Institutions Investing in China's Financial Institution on 8 December 2003, which increased the investment ratio of single financial institutions from 15% to 20%, and for all financial institutions from 20% to 25%. In June 2004, the CBRC further encouraged CCBs to undertake foreign strategic investment and improve their competitiveness. In April 2006, the CBRC revised and released Corporate Governance and Regulatory Guidelines for State-Owned Commercial Banks, which stated that SOCBs should follow four principles and five criteria for introducing foreign strategic investors. This has increased foreign ownership to domestic banks: 41 of China's commercial banks had introduced foreign strategic investors by the end of 2010. It is seen as an act that not only enriches the capital level, but also improves CG in China's commercial banks (Zhao et al. 2014).

Empirical research has investigated the relationship between foreign ownership and bank risk management, with most studies concluding that foreign strategic investment improves the CG of Chinese banks and reduces their risk-taking (Berger, Hasan & Zhou 2009; Dong et al. 2014; Hasan & Xie 2013). However, conflicting results were also reported. Some studies found that there is no significant relationship between foreign investment and bank risk management (Jiang, Feng & Zhang 2012), and that the introduction of foreign strategic investors does not affect how prudently the bank behaves (Qian, Zhang & Liu 2015). The inconsistent results may be attributed to an

array of risk management variables used in different studies (see Section 2.3.2 for a detailed discussion of risk management measurements) and various periods covered in the studies. Consequently, this research proposes the following hypothesised relationship between foreign ownership and risk management of banks:

> *There is a positive relationship between foreign ownership and bank risk management.*

Most existing studies also provide evidence of a positive relationship between foreign ownership and bank performance in China. For instance, studies have found improvements in bank performance in terms of profitability and efficiency after foreign investment (Berger, Hasan & Zhou 2009; Lin & Zhang 2009; Sun, Harimaya & Yamori 2013; Zhang, Wang & Qu 2012). However, some studies have documented no significant effect on bank performance (García-Herrero, Gavilá & Santabárbara 2009; Jiang, Feng & Zhang 2012; Shan & Xu 2012), while some even suggest a negative relationship between foreign influential shareholders and bank performance (Liang, Xu & Jiraporn 2013). The mixed results in the relationship between foreign ownership and bank performance may be attributed to the fact that privatisation takes time to yield gains because management needs time to overcome organisational inertia and change the common characteristics of newly privatised firms (Otchere 2005). Another possible reason is that various bank performance measures were employed in different studies, leading to less robust results (Jia 2009). Thus, the present research proposes the following hypothesis regarding the relationship between foreign ownership and bank performance:

> *There is a positive relationship between foreign ownership and bank performance.*

3.7.4 Ownership Concentration

Ownership concentration refers to the distribution of ownership among different institutions and individuals and is related to shareholders' controlling power (Dong et al. 2014). Within the agency theory framework, investors have a choice of two broad strategies: (i) the disciplinary force of external governance systems as protection against managerial opportunism or expropriation by controlling shareholders (Gillan 2006; Heugens, Van Essen & Van Oosterhout 2009); and (ii) ownership concentration as a way to exert direct influence on managers to run the firm in their interest to the cost of minority shareholders (Edwards & Nibler 2000; Shleifer & Vishny 1986). Conversely, dispersed ownership may prevent efficient decision-making (Shehzad, de Haan & Scholtens 2010) and create a free-rider problem in corporate control (Gorton & Schmid 1999). According to Heugens, Van Essen and Van Oosterhout (2009), concentrated ownership enhances corporate control by improving the monitoring of management in regions with less than perfect legal protection of minority shareholders. Therefore, ownership structure and institutional development have a significant effect on the effectiveness of ownership concentration as a CG mechanism (Bouvatier, Lepetit & Strobel 2014; Gedajlovic & Shapiro 1998; Heugens, Van Essen & Van Oosterhout 2009). Existing empirical evidence has shown support for both views: Kwan (2004) found that publicly traded banks tend to be less profitable than similarly privately held bank-holding companies. Others, such as Azofra and Santamaría (2011), Busta, Sinani and Thomsen (2014) and Iannotta, Nocera and Sironi (2007), found positive effects of ownership concentration on bank financial performance in the international context. Further, empirical evidence shows support for the notion that ownership concentration affects banks' risk-taking behaviour, although there is no consensus regarding the sign of this effect across different institutional environments (Chalermchatvichien et al.

2014; Iannotta, Nocera & Sironi 2007; Shehzad, de Haan & Scholtens 2010). Greater ownership concentration may not reduce a bank's riskiness because the interests of large shareholders may conflict with those of minority shareholders (Gomes & Novaes 2005).

Empirically, bank ownership concentration can be measured by using: (i) block shareholding—namely, the percentage of shares held by the largest shareholder (Berger, Hasan & Zhou 2009; Bonin, Hasan & Wachtel 2005; Dinç 2005; Dong et al. 2014; Iannotta, Nocera & Sironi 2007; Liang, Xu & Jiraporn 2013; Micco & Panizza 2006; Wen 2010); (ii) ownership concentration index—for example, the Herfindahl Index (Barry, Lepetit & Tarazi 2011; Bouvatier, Lepetit & Strobel 2014); and (iii) a 'list' proxy to describe the public listing status of the bank because banks that are listed on stock markets have a lower concentrated ownership structure, whereas non-listed commercial banks have higher ownership concentration (Jia 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Lin & Zhang 2009). It is argued that different types of concentrated owners may have different preferences and priorities in relation to corporate risk, stability, growth and performance (Douma, George & Kabir 2006; Gedajlovic, Yoshikawa & Hashimoto 2005; Heugens, Van Essen & Van Oosterhout 2009). Therefore, this study combines block shareholders and their identities to examine whether different categories of block shareholders have a significant effect on bank risk management and performance. Empirically in China, Dong et al. (2014) found that banks controlled by the government tend to take more risks than those controlled by SOEs or private investors when risk is measured by NPL ratio, z-score and the CAR using OLS estimation with data from 108 Chinese commercial banks over the period 2003–2011. Following Beger, Hansan and Zhou (2009), Chen, Firth and Xu

(2009), Dong et al. (2014), Liang, Xu and Jiraporn (2013) and Wen (2010), this study distinguishes the following identities of influential/block shareholders:

- government organisations: the state/local government, their directly controlled investment companies or central/local state-owned assets supervision and administration committees (SASACs)[29]
- SOEs: SOEs that are not fully owned or controlled by a state/local government organisation
- foreign institutional investors: foreign enterprise legal person shareholders
- private investors: mainly domestic enterprise legal person or natural person shareholders.

This study therefore proposes the following hypotheses regarding the relationship between block shareholding with different identities and bank risk management and performance:

> *There is a relationship between government block shareholding and bank risk management.*
> *There is a relationship between SOE block shareholding and bank risk management.*
> *There is a relationship between foreign block shareholding and bank risk management.*
> *There is a relationship between private block shareholding and bank risk management.*
> *There is a relationship between government block shareholding and bank performance.*
> *There is a relationship between SOE block shareholding and bank performance.*

[29] Although SASACs and SOEs are ultimately owned by the state, they are different in many aspects regarding risk and rights associated with these shareholders. Officials of SASACs have the right to select the boards of directors and managers of SOEs and banks, but they bear no risks of the consequences of their selection (Dong et al. 2014). Compared with SOE shareholders, SASACs are less likely to expropriate wealth away from minority shareholders.

There is a relationship between foreign block shareholding and bank performance.

There is a relationship between private block shareholding and bank performance.

Additionally, this study includes a 'list' dummy to proxy ownership concentration because banks that are listed on stock markets have a lower concentrated ownership structure, whereas non-listed commercial banks have higher ownership concentration. Empirical evidence indicates a significant relationship between public listing and bank performance (e.g., Barry, Lepetit and Tarazi 2011; Berger, Hasan and Zhou 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Feng 2013; Jiang, Yao & Zhang 2009) and risk management (Jia 2009; Zhang, Wang & Qu 2012). This research therefore proposes the following hypotheses:

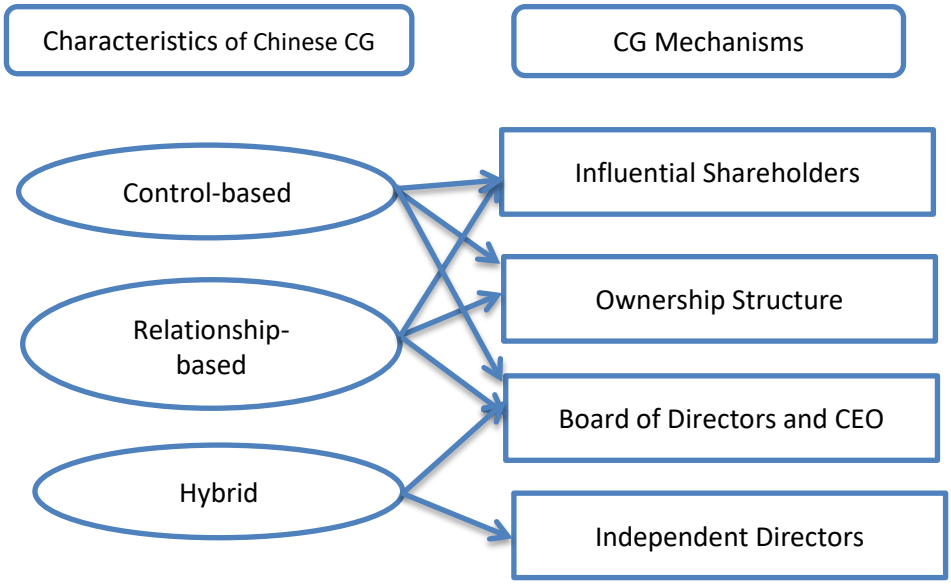
There is a positive relationship between public listing and bank risk management.

There is a positive relationship between public listing and bank performance.

3.7.5 Corporate Governance Practice in China

Recent research into CG practice in China has described current practice as containing characteristics of 'control-based', 'relationship-based' and 'hybrid' practice. Given the conflicting framework approaches to CG measurement, the present research will develop a CG conceptual framework to account for this environment. The foundation for this development is reflected in Figure 3-2.

Figure 3-2 Characteristics of Corporate Governance Practices in China



According to Lau and Young (2013), CG practice in China can best be described as a 'relationship-based' practice that reflects the rich heritage and entrenched value system inherent in China. They added that such discrepancies between the Chinese guidelines with Basel and the OECD results from China having a CG environment that is relationship-based rather than rule-based. This viewpoint indicates unique CG conflicts for China, which is susceptible to exploitation, whereby individuals may take advantage of a relational network for personal gains. Additionally, Tsui (2010) posited that CG frameworks that are applied to China typically adopt a hybrid approach, which incorporates the Anglo–US model and the German model. However, factors such as political interference by the government, the 'symbolic rather than practical' board of supervisors and independent directors, and a lack of legislative details or clarity may hinder the effectiveness of the 'hybrid' practice of CG in China. Tsui's (2010) discussion was supported by Shan and Xu (2012) who found that independent directors and supervisory board size had no impact on the performance of listed financial institutions in China over the period of 1999-2009.

Alternatively, Liu (2006) favoured a control-based CG model that is characterised by a concentrated state-ownership structure, management-friendly boards, inadequate financial disclosure and inactive takeover markets. By nature, state shares cannot be transferred to the private sector freely, which critically affects managerial incentives (Fan, Wei & Xu 2011). Liu (2006) argued that this framework limits firms' long-term performance because it gives controlling shareholders leeway to engage in self-dealing and expropriate minority shareholders. In addition to the perspective of ownership concentration, bureaucrats and politicians intervene in management from many aspects. For example, bureaucrats may use their ownership position to interfere with SOEs to support the economy, politicians may restrict SOEs from transferring wealth to the private sector, and politicians may be appointed as directors or they may appoint directors to fulfil their goals (Fan, Wong & Zhang 2007; Wu, Wu & Rui 2012). This control-based CG model is also seen as the case for the banking sector in China, where the major shareholders are SOEs (Hasan & Xie 2013). In comparison with the control-based model, market-based mechanisms are used to resolve agency problems in a market-oriented governance model. Market-based mechanisms are featured by dispersed ownership, an independent board, a high level of information disclosure and performance-related CEO compensation (Hasan & Xie 2013). Hasan and Xie (2013) summarised key differences between the control-based CG model and the market-based CG model (see Table 3-2). They suggested that the CG model of Chinese banks has been shifting from a control-based model to a market-oriented model during the economic and financial reform. Following Hasan and Xie (2013), the CG mechanisms included in Table 3-2 should be considered when one explores CG-related issues in the Chinese banking sector to reflect changes, if any, of CG model and practice.

Table 3-2 Comparison between Control-based and Market-based Models

Control-based CG Model	Market-based CG Model
1. Bank Ownership	
State as single or majority shareholder	Reduced state ownership
Highly concentrated ownership	Diversified ownership
2. Board Composition	
Small board size without non-executive board members	Improved board size with non-executive board members
Without independent board member	With independent board member
3. Bank Risk Management	
Without independent risk management committee	With independent risk management committee
4. CEO Compensation	
No performance-related CEO compensation	Performance-related CEO compensation

Traditionally, existing research has identified four types of CG mechanisms in Chinese commercial banks: (i) board of directors; (ii) CEO duality; (iii) ownership concentration; and (iv) ownership structure. Given that no single mechanism adequately covers CG practice in Chinese banking, the present study develops a framework that contains CG mechanisms that are pertinent to Chinese JSCBs and CCBs.

3.8 Summary of the Knowledge Gap

3.8.1 Limitation of Existing Knowledge

Research into the CG of Chinese JSCBs and CCBs is still in its infancy. Further, no CG framework has been designed specifically for Chinese JSCBs and CCBs. The lack of a suitable framework makes it more difficult to identify any meaningful evaluations of the effect of CG on the performance of JSCBs and CCBs. The review of the existing literature indicates several gaps in the field:

1. While most empirical studies on CG have focused on SOCBs in the Chinese banking sector, there is limited research on the fast-growing JSCBs and CCBs.

2. Most empirical research on CG in the Chinese banking sector emphasises the role of ownership structure in the context of reforming non-tradable shares, while the role of the board of directors has not been thoroughly examined.
3. Most existing research has overlooked the quantitative relationship between the percentage of government ownership and bank performance. As noted by García-Herrero, Gavilá and Santabárbara (2009), the way in which bank ownership has been traditionally measured using a dummy variable may not be accurate enough. Thus, they suggested that more precise measures of ownership may lead to different results.
4. Although a limited number of studies have examined the relationship between state shareholding and bank performance in China, few have differentiated government organisation and SOE shareholdings for Chinese JSCBs and CCBs to the level of measurement employed in the present study.
5. Most empirical research evaluating the CG practices of JSCBs and CCBs and their effect on risk management and bank performance fails to incorporate lending structure in their framework.

3.8.2 Rationale for This Study

To address the identified gap in the current literature, the present research will undertake the following:

1. This study will develop a conceptual framework designed for Chinese JSCBs and CCBs to more accurately reflect the CG factors of JSCBs and CCBs in China. This framework will deepen the understanding of the operations of JSCBs and CCBs within the CG context by providing an organised and coherent approach for analysing the CG practices of JSCBs and CCBs.

2. This study will empirically test the relationship between CG and risk management against the performance of Chinese JSCBs and CCBs. This will form the basis of policy recommendations for Chinese JSCBs and CCBs and lead to improved policy-relevant results.

3.9 Summary

This chapter reviewed the literature on CG theories and the empirical research on CG in the banking sector generally and within the Chinese context. The chapter concluded by identifying gaps in the current literature. Along with Chapter 2, Chapter 3 serves as the theoretical and empirical foundation for developing the conceptual framework of this study, as outlined in Chapter 4. Chapter 4 discusses the conceptual framework, research methodology and data employed in this research.

CHAPTER 4 CONCEPTUAL FRAMEWORK, METHODOLOGY AND DATA

4.1 Introduction

This chapter starts by developing the conceptual framework following the review of existing literature regarding lending structure, risk management, CG and bank performance in Chapters 2 and 3. Based on the conceptual framework, this chapter constructs the empirical models and discusses the research method.

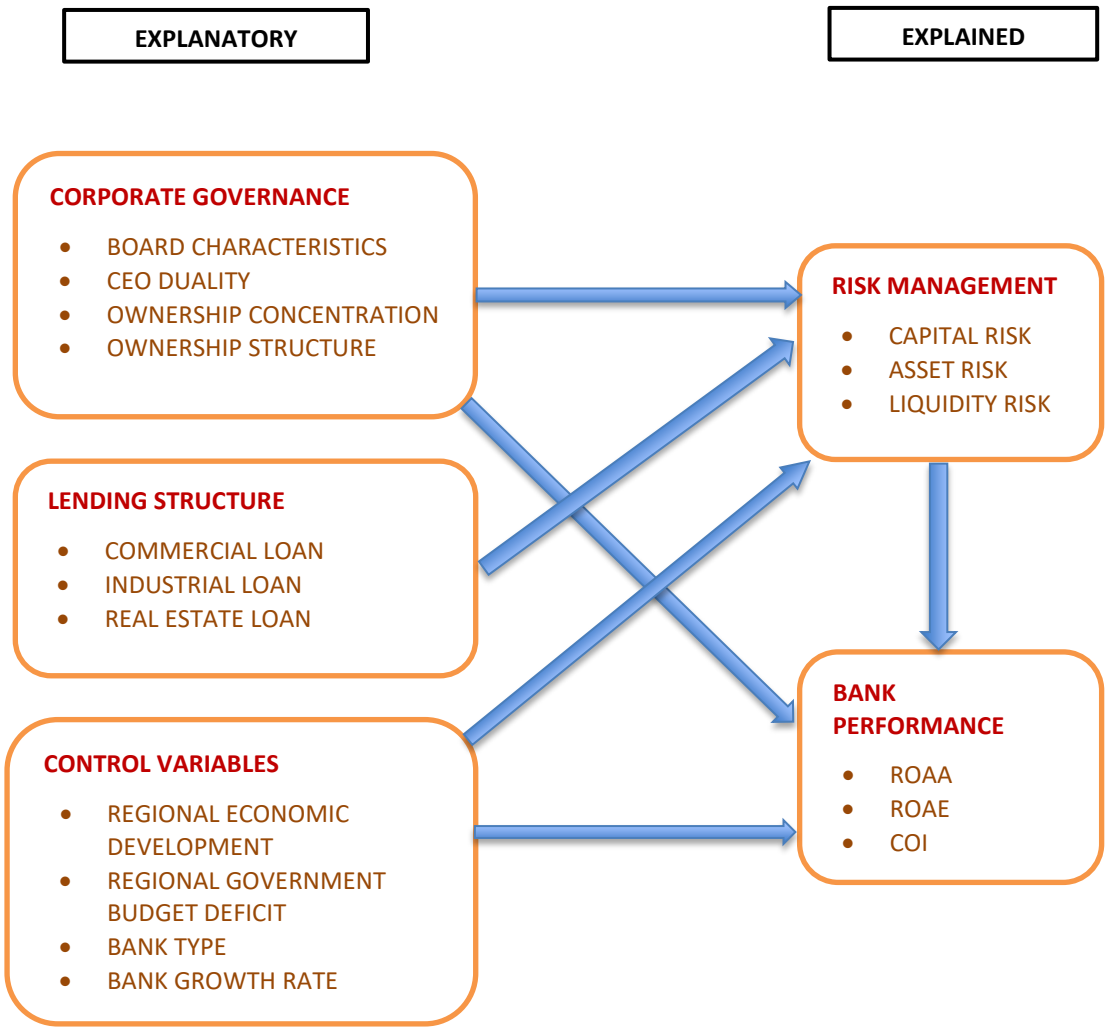
In Section 4.2, the conceptual framework covers four main relationships in accordance with the research questions presented in Chapter 1, namely: (i) lending structure and bank risk management; (ii) bank risk management and bank performance; (iii) CG and bank risk management; and (iv) CG and bank performance. Following the conceptual framework, Section 4.3 develops the structural model for the study while Section 4.4 defines the variables included in the structural model. Section 4.5 lists the research questions based on the knowledge gap identified in Chapters 2 and 3. It also presents a summary of the statistical hypotheses. Section 4.6 reports the research method, covering the statistical method used in this study, econometric models, definitions of variables and the data collection process. Section 4.7 summarises the characteristics of the sample JSCBs and CCBs in terms of lending structure, risk management, ownership structure, board characteristics and performance, and it reports the descriptive statistics of variables in the regression models. Section 4.8 provides the Pearson correlation coefficients between the variables. Section 4.9 concludes the chapter with a summary.

4.2 Conceptual Framework

Based on the literature review in Chapters 2 and 3, a conceptual framework is developed to encompass the relationship between CG, lending structure, risk

management and performance of Chinese JSCBs and CCBs. Figure 4-1 presents a diagrammatic illustration of the relationships:

Figure 4-1 Conceptual Framework for This Study



The conceptual framework serves as the foundation of this study and guides the construction of the empirical model. In the conceptual framework, performance is evaluated using the ROAA, ROAE and COI ratios. This study does not adopt Tobin's Q,[30] which is used by a stream of CG–firm performance studies, because most of the

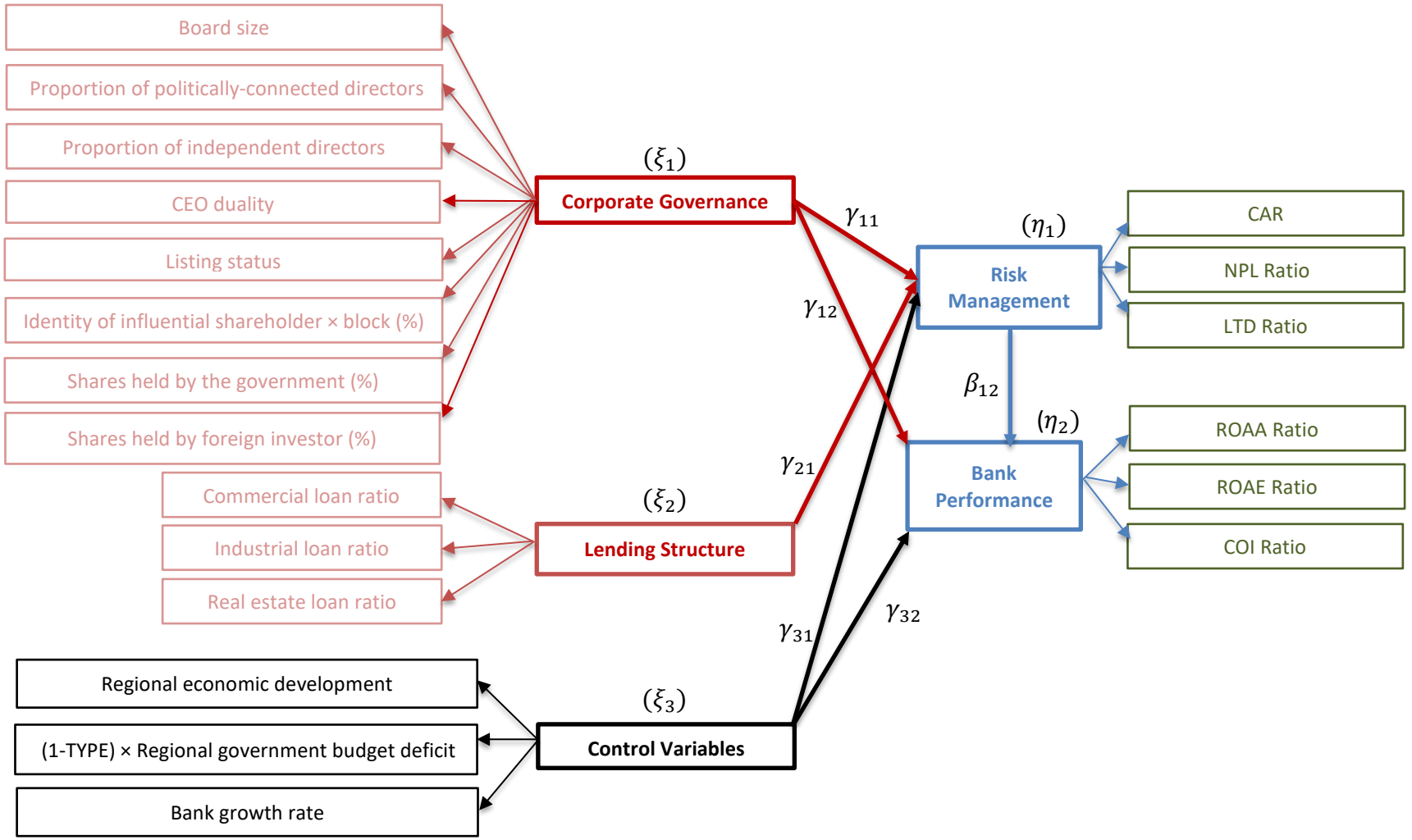
[30] Tobin's Q is the ratio of the market value of a company's assets divided by the book value of the company's assets.

banks included in this research are not publicly listed. Higher ROAA and ROAE ratios indicate better profitability of banks, while a higher COI ratio represents inefficiency and therefore less profitability. Risk management includes three measures: capital risk, which is measured by the CAR; asset risk, which is measured by the NPL ratio; and liquidity risk, which is measured by the LTD ratio. The commonly used 'z-score' as a measure of credit risk is not used in this study because, as mentioned previously, a large number of banks in China are not publicly listed. Lending structure comprises loans that are issued based on industry classification—that is, commercial loans (LOANCOM), real estate loans (LOANRE) and industrial loans (LOANIND). CG reflects aspects of a bank's governance mechanism, including the following aspects: (i) board characteristics, including board size (BOARDSIZE), proportion of politically connected directors (BOARDPC) and proportion of independent directors (BOARDIND); (ii) CEO duality (CEO); (iii) ownership concentration measures, comprising four interactive terms between the identity of influential shareholders (i.e., government organisations, SOEs, foreign shareholders and private sector), the proportion of shares held by these influential shareholders (BLOCK) and a dummy variable representing the listing status of the bank; and (iv) percentages of shares ultimately held by the government and foreign investors. This study controls for: (i) bank annual growth rate via operating income (BGROWTH); (ii) an interactive term of regional government budget deficit (RGD) and bank type (TYPE); and (iii) regional economic development (RED).

4.3 Structural Model

The conceptual framework and the variables introduced above are further developed into the structural model illustrated by Figure 4-2.

Figure 4-2 Structural Model for this Study



The structural model includes three latent exogenous constructs: ξ_1 refers to CG variables, ξ_2 represents lending structure and ξ_3 represents control variables. The two unobserved endogenous factors are η_1, which refers to risk management, and η_2, which indicates bank performance. Matrix γ_{11} is the coefficient matrix relating ξ_1 to η_1; γ_{21} is the coefficient matrix relating ξ_2 to η_1; γ_{31} is the coefficient matrix relating ξ_3 to η_1; γ_{12} and γ_{32} are the matrices relating ξ_1 and ξ_3 to η_2 respectively. β_{12} is the parameter capturing the regression relations between two endogenous latent variables η_1 and η_2.

Based on this structural model, two system equations can be further developed to specify the regression relations between the latent variables:

$$\eta_1 = \gamma_{11}\xi_1 + \gamma_{21}\xi_2 + \gamma_{31}\xi_3 + \zeta_1 \quad (4.1)$$

$$\eta_2 = \beta_{12}\eta_1 + \gamma_{12}\xi_1 + \gamma_{32}\xi_3 + \zeta_2 \quad (4.2)$$

Equation (4.1) explains the behaviour of bank risk management (η_1) using CG (ξ_1), lending structure of banks (ξ_2) and the control variables (ξ_3). Equation (4.2) indicates that bank performance (η_2) can be considered a function of three factors—namely, risk management (η_1), CG (ξ_1) and the control variables (ξ_3). ζ_1 and ζ_2 are errors terms for each equation.

4.4 Definition of Variables in the Structural Model

The structural model presented in Figure 4-2 defines a list of CG, lending structure, risk management and bank performance variables:

(1) Board characteristics: Three measurements are used to capture board characteristics—namely, board size (BOARDSIZE), political connection of board (BOARDPC) and board independence (BOARDIND). Board size is measured by the number of directors on the board. Political connection of board is measured by the

percentage of politically connected directors on the board, where politically connected directors are those who served as officials of the state/local governments or military force. Board independence is measured by the percentage of independent directors on the board.

(2) CEO duality: CEO duality identifies the banks of which the president also chairs the board. In the Chinese context, CEO duality is strictly forbidden by the CBRC CG guidelines. However, in practice, some banks have the president as the vice chairman and/or executive director. This study recognises this de facto CEO duality, and the dummy variable CEO is coded as '1' if the chair or deputy chair of the board is also the president of the bank, and '0' otherwise.

(3) Ownership concentration: Two variables are used to measure ownership concentration: LIST and BLOCK. LIST identifies publicly listed banks with a less concentrated shareholding structure, because public investors can also hold shares of these banks. BLOCK measures the percentage of shares held by the largest shareholder, which is examined in combination with the identity of the influential shareholder. The identities of influential shareholders are measured using three dummy variables: state or local government (NISGOV), SOEs (NISSOE) and foreign investors (NISFOREIGN). These dummy variables and BLOCK form four interaction terms—NISGOV*BLOCK, NISSOE*BLOCK, NISFOREIGN*BLOCK and (1-NISGOV-NISSOE-NISFOREIGN)*BLOCK—to examine the effect of different types of influential shareholders with various shareholding structures.

(4) Ownership structure: This study collects shareholding information in terms of the number of shares held by the state or local government (OSGOV) and foreign investors (OSFOREIGN).

(5) Lending structure variables: Lending asset allocation is used for the industrial sector (LOANIND), commercial sector (LOANCOM) and real estate sector (LOANRE) to evaluate the lending structure of banks. These three variables are measured in percentage form by loans issued to borrowers from the industrial sector, retail sector and real estate development sector against total loans issued at the end of the financial year.

(6) Risk management variables: The CAR is used to capture capital risk faced by banks, which is also relevant to the Chinese context of recent banking reform. A lower CAR measurement indicates that banks are exposed to higher capital risk, which suggests that their risk management is weaker. The NPL ratio is used to proxy the asset risk of banks. A higher NPL indicates that banks are exposed to higher asset risk; therefore, their risk management is weaker. The gross LTD ratio is also used to proxy the liquidity risk of banks. A higher measure indicates that banks are exposed to a higher level of liquidity risk; therefore, their risk management is weaker.

(7) Bank performance variables: This study uses three performance measurements—namely, the ROAA, ROAE and COI ratios. ROAA ratio and ROAE ratio measures the profitability of banks. A higher ROAA/ROAE ratio indicates higher profitability therefore better performance. COI ratio measures the efficiency of banks: a lower COI ratio suggests a higher operating efficiency hence better performance.

(8) Control variables: This study employs two sets of control variables for the risk management and performance of JSCBs and CCBs. For risk management, this study controls for bank growth rate (BGROWTH) and an interactive term between regional government budget deficit (RGD) and (1-TYPE). In relation to BGROWTH, the present study follows Jia (2009) and Barry, Lepetit and Tarazi (2011). In relation to RGD, Lu and Sun (2013) suggested that fiscal financing gaps in regional governments

have been largely covered by financing from local government financing platforms (LGFPs). The rapid expansion of LGFPs affects banks' asset quality and, more broadly, medium-term financial stability in China. As argued by Zhao and Du (2013), the loan proportion of financing platforms can increase non-performing assets and reduce the performance of CCBs. By adding an interactive term (1-TYPE) to the government debt, the present study assumes that RGD only affects CCBs instead of JSCBs, which operate nationwide, following Lu and Sun (2013). For the performance of JSCBs and CCBs, this study controls for regional economic development (RED) and BGROWTH, following Qian, Zhang and Liu (2015), Jia (2009) and Barry, Lepetit and Tarazi (2011).

Table 4-1 summarises the operationalised variables in this study.

Table 4-1 Definition of Operationalised Variables

Panel A—CG Variables		
CG Mechanisms	**Variables**	**Operational Definition**
Board Characteristics	BOARDSIZE	Number of directors on the board
	BOARDPC	Percentage of directors who served as government officers of the governments or military force
	BOARDIND	Percentage of independent directors on board
CEO Duality	CEO	Dummy variable that equals '1' if the chair or deputy chair of the board of directors is also CEO and '0' otherwise
Ownership Concentration	LIST	Dummy variable that equals '1' if the bank is listed on Shang Hai, Shen Zhen or Hong Kong Stock exchange and '0' otherwise
	BLOCK	Percentage of shares held by the largest shareholder at the end of financial year
	NISGOV	Dummy variable that equals '1' if the largest shareholder of the bank is the state/local government, their directly controlled investment companies or SASAC and '0' otherwise
	NISSOE	Dummy variable that equals '1' if the largest shareholder of the bank is an SOE that is not fully owned by a state/local government or SASAC and '0' otherwise
	NISFOREIGN	Dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise
Ownership Structure	OSSTATE	Percentage of shares of the bank held by the finance bureau, other state or local government, investment corporation fully owned and controlled by the government, state or local SASAC and SOEs at the end of the financial year
	OSFOREIGN	Percentage of shares of the bank held by foreign entities at the end of financial year[(a)]
Panel B—Lending Structure Variables		
Lending Structure	**Variables**	**Operational Definition**
	LOANIND	Percentage of industrial lending to total loans issued
	LOANCOM	Percentage of commercial lending to total loans issued
	LOANRE	Percentage of real estate development lending to total loans issued

Panel C—Risk Management Variables		
Risk Management	**Variables**	**Operational Definition**
Capital risk	CAR	CAR between capital and risk-weighted assets
Asset risk	NPL	Ratio of NPLs to total loans issued
Liquidity risk	LTD	Ratio of gross loan to total deposit
Panel E—Bank Performance Variables		
Performance Measures	**Variables**	**Operational Definition**
Profitability	ROAA	Return on average assets ratio
	ROAE	Return on average equity ratio
Efficiency	COI	Ratio of general and administrative expenses to operating income
Panel D—Control Variables		
Variables	**Operational Definition**	
TYPE	Dummy variable that equals '1' if the bank is a JSCB and '0' otherwise	
RED	Natural logarithm form of GDP in hundred million RMB of the province in which the bank's head office operates	
RGD	Natural logarithm form of government budget deficits in hundred million RMB of the province in which the bank's head office operates	
BGROWTH	Annual growth rate of bank operating income	

Note: The idea of including the percentage of foreign ownership is to examine how much, if anything, foreign investors contribute to Chinese bank performance. Therefore, shareholders that are founded as overseas subsidiaries of Chinese SOEs are not considered foreign investors for that purpose. Their shareholding in the banks is not considered 'foreign ownership'. For example, China Everbright Limited is registered in Hong Kong and recognised on the financial report as a foreign shareholder. However, it is also a subsidiary of China Everbright Group, an SOE operated under the supervision of the State Council of China. It is not considered a foreign investor during the data collection.

4.5 Summary of Research Questions and Hypotheses

The main objective of this study is to empirically examine the relationship between various CG variables, lending structure, bank risk management and bank performance. The knowledge gap identified in existing studies yields two fundamental research questions that this thesis aims to address.

4.5.1 Research Question One

Do CG factors and lending structure of banks have significant effects on the risk management of JSCBs and CCBs?

Chapter 3 introduced various CG factors and discussed their effect on banks' risk management. The relationship between state ownership and risk-taking behaviour has been tested in the Chinese banking sector, and it is generally accepted that banks with more prudent lending behaviour exhibit lower state ownership with various measurements (Berger, Hasan & Zhou 2009; Ferri 2009; Fu & Heffernan 2007; Jia 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Li & Li 2008; Lin & Zhang 2009; Matthews & Zhang 2010; Shen, Liao and Weyman-Jones 2009). In regard to SOE ownership, banks controlled by SOEs have strong financial constraints and do not receive as much financial support from the state as government-controlled banks. Therefore, they have greater incentives to pursue profit-maximising strategies and exercise prudential management than government-controlled banks. Empirical evidence shows that banks controlled by SOEs tend to take fewer risks than government-controlled banks (Dong et al. 2014). In terms of the relationship between foreign ownership and risk management of banks in China, although global advantage theory implies that foreign ownership is expected to have a positive effect on risk management of banks, empirical research has not yet offered conclusive results. Some

studies have found that foreign strategic investment improves the CG of Chinese banks and reduces their risk-taking (Berger, Hasan & Zhou 2009; Dong et al. 2014; Hasan & Xie 2013), while other studies have found no significant relationship between foreign investment and bank risk management (Jiang, Feng & Zhang 2012). In addition, Qian, Zhang and Liu (2015) concluded that the introduction of foreign strategic investors does not affect how prudently the bank behaves. Regarding ownership concentration, an array of theories has recognised ownership concentration as a CG mechanism in enhancing corporate control. Empirical evidence demonstrates support for the notion that ownership concentration affects banks' risk-taking behaviour, although there is no consensus on the sign of this effect across different institutional environments.

Existing research has also explored the relationship between the board of directors as a CG mechanism and the risk management of banks. In regard to board size, existing studies tend to support the finding that small boards exhibit better risk management for banks (Pathan 2009). In terms of board political connection, politically connected directors are deemed to be able to provide subsidies directly or to lend to politically desired projects because they are seen as another form of governance presence in banking operations in addition to the government directly holding banks shares. Empirical evidence has also demonstrated that banks with more officials on their board tend to affect credit supply and risk management (Qian, Zhang & Liu 2015). Regarding board independence, independent directors will be negatively related to bank risk management if they act in the interest of regulators and depositors (Minton, Taillard & Williamson 2011). However, in the Chinese context, recent research by Qian, Zhang and Liu (2015) showed that independent directors can weaken the effect on government-appointed officials on boards, and they are associated with more prudent lending and better risk management.

Regarding CEO duality, existing research shows mixed results for non-Chinese banks (Aebi, Sabato & Schmid 2012; Pathan 2009) and Chinese banks (Bai et al. 2004; Chen, Firth & Xu 2009; Sami, Wang & Zhou 2011). Peng, Zhang and Li (2007) noted that existing studies tend to offer greater support for the stewardship theory, which implies that banks with CEO duality are expected to exhibit better risk management. To summarise the above discussion, a series of statistical hypotheses are developed to address Research Question 1A:

> *What is the effect of CG factors of banks, if any, on the risk management of JSCBs and CCBs?*

The hypotheses regarding the relationship between CG and risk management of banks are displayed in Table 4-2.

Table 4-2 Summary of Statistical Hypotheses between Corporate Governance and Risk Management

Explained Variables	Positive	Negative	Non-directional
NPL	BOARDPC (H_{1B})	BOARDSIZE(H_{1A})	NISFOREIGN*BLOCK (H_{1E})
	CEO (H_{1D})	BOARDIND (H_{1C})	NISGOV*BLOCK (H_{1F})
	OSSTATE (H_{1J})	OSFOREIGN (H_{1K})	NISSOE*BLOCK (H_{1G})
		LIST (H_{1I})	(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{1H})
CAR	BOARDSIZE(H_{2A})	BOARDPC (H_{2B})	NISFOREIGN*BLOCK (H_{2E})
	BOARDIND (H_{2C})	CEO (H_{2D})	NISGOV*BLOCK (H_{2F})
	OSFOREIGN (H_{2K})	OSSTATE (H_{2J})	NISSOE*BLOCK (H_{2G})
	LIST (H_{2I})		(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{2H})
LTD	BOARDPC (H_{3B})	BOARDSIZE(H_{3A})	NISFOREIGN*BLOCK (H_{3E})
	CEO (H_{3D})	BOARDIND (H_{3C})	NISGOV*BLOCK (H_{3F})
	OSSTATE (H_{3J})	OSFOREIGN (H_{3K})	NISSOE*BLOCK (H_{3G})
		LIST (H_{3I})	(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{3H})

As discussed in Chapter 2, the growing issuance of real estate loans among Chinese banks increases banks' risk in the form of NPLs (Qian, Cao & Li 2011). Earlier empirical evidence shows that banks with higher commercial, industrial and real estate lending ratios exhibit better credit risk management (Cebenoyan & Strahan 2004). A series of statistical hypotheses are developed to address Research Question 1B:

> *What is the effect of lending structure of banks, if any, on the risk management of JSCBs and CCBs?*

Following Qian, Cao and Li (2011) and Cebenoyan and Strahan (2004), the relationship between lending structure and risk management can be summarised by the hypotheses in Table 4-3.

Table 4-3 Summary of Statistical Hypotheses between Lending Structure and Risk Management

Explained Variables	Positive Effect	Negative Effect
NPL	LOANRE (H_{4C})	LOANCOM (H_{4A}) LOANIND (H_{4B})
CAR	LOANCOM (H_{5A}) LOANIND (H_{5B})	LOANIRE (H_{5C})
LTD	LOANRE (H_{6C})	LOANCOM (H_{6A}) LOANIND (H_{6B})

4.5.2 Research Question Two

> *Do CG factors and risk management of banks have significant effects on the performance of JSCBs and CCBs?*

As discussed in Chapter 3, different CG theories may imply contradictory effects of CG factors on bank performance. In regard to ownership structure, different types of bank ownership can be recognised as forms of governance (Berger et al. 2005). The relationship between state ownership and bank performance has been argued to

negatively affect bank performance in China (Berger, Hasan & Zhou 2009; Jiang, Feng & Zhang 2012), although under the 'development' view, it is necessary for government participation in the financial industry in countries in which economic institutions are not sufficiently developed for private banks to attract sufficient funds. In this case, government ownership is advocated (La Porta, Lopez-de-Silianes & Shleifer 2002; Shleifer 1998). SOE ownership is sometimes considered state ownership in existing studies (see Berger, Hasan & Zhou 2009; Liang, Xu & Jiraporn 2013) because the government still retains ultimate decision rights regarding mergers and acquisitions, the disposal of shares and assets, and the appointment of CEOs while largely granting operating decision rights to SOE managers (Fan, Wong & Zhang 2007). This study adopts the same measurement to measure the effect of state shareholding—that is, shares held by the state government and designated SOEs. Additionally, the role of government and SOE shareholdings in bank performance is examined using interactive terms between the following proxy variables: government influential shareholder and SOE influential shareholder and percentage of shares held by the influential shareholder. This measures the effect when the influential shareholder is a government organisation or an SOE.

In regard to foreign ownership, global advantage theory advocates foreign ownership in Chinese banks because it is expected to have a positive performance effect by bringing advanced managerial techniques (Genay et al. 2000). This relationship is tested by employing two variables: percentage of shares held by foreign shareholder and an interactive term between the proxy variable of foreign influential shareholder and percentage of shares held by the influential shareholder. Altogether, the interactive terms between the identity of the influential shareholders and their shares allows the evaluation of the influence of different types of influential shareholders on bank

performance in addition to estimating the effect of ownership concentration in general. Agency theory advocates concentrated shareholding as a way to exert a direct influence on managers to run the firm in their interests (Edwards & Nibler 2000). In addition to block shareholding, the proxy variable representing the listing status (LIST) of banks is used to examine the effect of ownership concentration on bank performance. Listed banks have a more dispersed shareholding structure, which indicates lower shareholding concentration.

In regard to the board of directors, board size (BOARDSIZE), board political connection (BOARDPC) and board independence (BOARDIND) are included to measure the effect of board characteristics on bank performance. As discussed in Chapter 3, board size is positively associated with firm performance under the agency theory regime because it is associated with more independent decision-making processes (Fama 1980). Resource dependence theory also advocates larger boards because they can be used as a mechanism to form links with the external environment. However, stewardship theory considers small boards beneficial for firm performance. Empirical evidence in China supports stewardship theory because board size is negatively associated with bank performance in terms of profitability (Liang, Xu & Jiraporn 2013) and efficiency (Berger, Hasan & Zhou 2009).

In regard to board political connection, resource dependence theory advocates having politically connected directors because they are well connected with the external environment, which is beneficial for bank performance. However, existing empirical evidence in China shows that banks with a lower percentage of politically connected directors tend to have better performance (Liang, Xu & Jiraporn 2013; Qian, Zhang & Liu 2015).

Regarding board independence, the percentage of independent directors on the board can be used to measure board independence. It is considered a mechanism to monitor managers because independent directors value maintaining their reputation in the directorship market. Similarly, resource dependence theory views independent directors as a mechanism to form links with the external environment to manage environment contingencies and reduce resource dependence. Both theories propose a positive relationship between board independence and performance.

Regarding CEO duality, agency theory suggests that it is bad for performance because it compromises the monitoring and control of the CEO. In contrast, stewardship theory argues that CEO duality is good for performance because of the unity of command it presents (Peng, Zhang & Li 2007). Empirical evidence also offers mixed results in the banking industry (e.g., Aebi, Sabato & Schmid 2012; Pathan 2009).

A series of statistical hypotheses are developed to answer Research Question 2A:

> *What is the effect of CG factors of banks, if any, on the performance of JSCBs and CCBs?*

The hypotheses for testing the relationship between CG and bank performance are summarised in Table 4-4.

Table 4-4 Summary of Statistical Hypotheses between Corporate Governance and Bank Performance

Explained Variables	Positive	Negative	Non-directional
LROAA	BOARDIND (H_{7C})	BOARDSIZE(H_{7A})	NISFOREIGN*BLOCK (H_{7E})
	OSFOREIGN (H_{7K})	BOARDPC (H_{7B})	NISGOV*BLOCK (H_{7F})
	LIST (H_{7I})	CEO (H_{7D})	NISSOE*BLOCK (H_{7G})
		OSSTATE (H_{7J})	(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{7H})
LROAE	BOARDIND (H_{8C})	BOARDSIZE(H_{8A})	NISFOREIGN*BLOCK (H_{8E})
	OSFOREIGN (H_{8K})	BOARDPC (H_{8B})	NISGOV*BLOCK (H_{8F})
	LIST (H_{8I})	CEO (H_{8D})	NISSOE*BLOCK (H_{8G})
		OSSTATE (H_{8J})	(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{8H})
LCOI	BOARDSIZE(H_{9A})	BOARDIND (H_{9C})	NISFOREIGN*BLOCK (H_{9E})
	BOARDPC (H_{9B})	OSFOREIGN (H_{9K})	NISGOV*BLOCK (H_{9F})
	CEO (H_{9D})	LIST (H_{9I})	NISSOE*BLOCK (H_{9G})
	OSSTATE (H_{9J})		(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK (H_{9H})

Chapter 2 reviewed the effect of risk management on bank performance. Banks with sufficient capital reflect higher risk management quality and better risk management. A higher NPL ratio indicates that banks are less risk averse and hence lack risk management. Prudent risk management can also be proxied by the loan leverage ratio. If a bank operates more prudently, it will have fewer loans issued against deposits. Empirical evidence shows a significant relationship between risk management and bank performance in general, despite the inconsistencies in risk variables adopted and methods employed (Jiang, Feng & Zhang 2012; Jiang, Yao & Zhang 2009; Lee, Ning & Lee 2015).

A series of statistical hypotheses are developed to answer Research Question 2B:

> *What is the effect of risk management of banks, if any, on the performance of JSCBs and CCBs?*

The hypotheses for testing the relationship between risk management and bank performance are summarised in Table 4-5.

Table 4-5 Summary of Statistical Hypotheses between Risk Management and Bank Performance

Explained Variables	Positive	Negative	Non-directional
LROAA	CAR (H_{10C})	NPL (H_{10B})	LTD (H_{10A})
LROAE	CAR (H_{11C})	NPL (H_{11B})	LTD (H_{11A})
LCOI	CAR (H_{12C}) NPL (H_{12B})	LTD (H_{12A})	

4.6 Research Methods

4.6.1 Econometric Methodology

The aim of this study is to empirically examine the effect of various CG constructs (board characteristics, CEO duality, ownership concentration and ownership structure) and lending structure on risk management and bank performance. As discussed in Chapter 3, inconsistency in empirical evidence regarding CG and bank performance arises because of differences in research periods, bank composition, constructs of variables and methods adopted to analyse the behavioural relationship between these factors. Table 4-6 summarises a selection of existing empirical studies in the Chinese context that have explored the relationship between CG and bank performance in relation to the methods employed.

Table 4-6 Selective Review of Empirical Methodology in Corporate Governance Study of Chinese Banks

Researcher	Sample Size and Year of Study	CG Variables	Dependent Variables	Method/s
Qian, Zhang and Liu (2015)	79 CCBs 2006–2010	Officials on board, influential shareolder as government or foreign investor, ownership concentration	Excess reserve ratio, loan-to-asset ratio and LTD ratio	OLS
Barros, Fujii and Managi (2015)	14 banks 1993–2010	Ownership	Productivity	Directional Distance Function
Liang, Xu and Jiraporn (2013)	52 banks 2003–2010	Board size, board meetings, CEO duality, independent director, political director, busy director, foreign director, old director, female director	Profit ratios, NPL and net charge-offs	OLS; GMM
Hasan and Xie (2013)	139 banks 1997–2010	Foreign director, independent director, board size, independent risk management committee, CEO compensation	ROA, ROE and NPL ratio	OLS; GMM
Qian (2012) (in Chinese)	79 banks 2006–2009	Officials on board, tenure of officials on board	Loan-to-asset ratio and LTD ratio	OLS
Jiang, Feng and Zhang (2012)	47 banks 1995–2008	Nature of owners, ownership concentration	Profit inefficiency	One-stage stochastic approach model
Heffernan and Fu (2010)	76 banks 1999–2006	Public listing, foreign ownership, nature of owners	ROA, ROE and NIM	GMM and fixed-effects model
Jiang, Yao and Zhang (2009)	35 banks 1995–2005	Nature of owners, ownership concentration	Profit inefficiency	One-stage stochastic frontier approach
Lin and Zhang (2009)	60 banks 1997–2004	Static ownership indicators, selection ownership indicators, dynamic ownership indicators	ROA, ROE, COI ratio, NPL ratio	OLS
Jia (2009)	14 banks 1985–2004	Public listing, foreign ownership, nature of owners	Excess reserves ratio, loan/asset ratio, deposit/loan ratio	OLS

Researcher	Sample Size and Year of Study	CG Variables	Dependent Variables	Method/s
Berger, Hasan and Zhou (2009)	38 banks 1994–2003	Bank type	Cost and profit efficiency	OLS
Li and Cao (2004)	12 banks, 16 credit corporations 2003	Nature of influential shareholder, ownership concentration (first and first 10 larget shareholders), board size, board independency	ROA, ROE	OLS

As shown in Table 4-6, some previous studies used multiple measurements to evaluate bank performance to avoid biased results associated with using one measurement. Multiple CG variables are also employed to reflect various CG factors that may affect bank performance and risk management. The present study also employs multivariate measures of CG, risk management, lending structure and performance to reduce potential discrepancies related to variable constructs. It uses the simultaneous equation modelling (SEM) method to test potential relationships between the four sets of variables by applying simultaneous regression equations. SEM is an econometric method used to specify, estimate and evaluate models of linear relationships among observable (i.e., indicators) and unobserved variables (i.e., latent variables). It has been widely used to test multivariate models, and the simultaneous equations include random variables (observed variables and error terms) and structural parameters. A key concern for any analysis of board effects is the endogeneity of board structure as found empirically both in generic firms (Baker & Gompers 2003; Boone et al. 2007; Coles, Daniel & Naveen 2008; Hermalin & Weisbach 2001; Patro, Lehn & Zhao 2009) and banks (Andres & Vallelado 2008; Pathan & Skully 2010) because firms structure their boards consistent with the costs and benefits associated with boards' monitoring and advising functions. Therefore, the widely employed OLS estimation shown in Table 5-5 is not appropriate for testing SEMs because explanatory variables may be correlated and hence violate the assumption of the OLS regression, in which case the OLS regression will generate biased and inconsistent results.

To address the endogeneity problem, GMM is employed in this study. The GMM technique has been adopted by most recent studies to account for endogeneity. Table 4-7 summarises a selection of recent CG studies employing GMM for testing endogeneity.

Table 4-7 Selected Corporate Governance Studies Using GMM Methods

Researcher	Sample Size and Year of Study	CG Variables	Dependent Variables	Instrument Variable
Liang, Xu and Jiraporn (2013)	52 Chinese banks 2003–2010	Board size, board meetings, CEO duality, independent director, political director, busy director, foreign director, old director, female director	NPL (%), NPL ($), NCO (%), NCO ($)	Lagged board variables and lagged state ownership
Hasan and Xie (2013)	139 Chinese banks 1997–2010	Foreign director, independent director, board size, independent risk management committee, CEO compensation	ROA, ROE NPL	Lagged dependent variable in levels and in differences
Wintoki, Linck and Netter (2012)	6,000 firms 1991–2003	Board size, board independence, CEO duality	ROA, Tobin's Q, return on sales	Variables lagged three and four periods
Hoechle et al. (2012)	4,250 US firms 1996–2005	CEO ownership, institutional ownership, officer and director ownership, directors receive shares or options, outside blockholder ownership, board size, board independence, independent nominating committee, busy board, CEO duality, pay performance sensitivity for CEO, takeover defenses index, old director, percentage of directors whose tenure predates CEO, director with attendance problem	Excess firm value measures	Lagged variables of firm performance, governance, and other characteristics
Pham, Suchard and Zein (2011)	150 Australian firms 1994–2003	Board size, board independence, insider shareholding and outsider shareholding	Tobin's Q, trademarked variant of residual income	Lagged CG variables and difference variables
Ammann, Oesch and Schmid (2011)	Over 2,300 firms from 22 developed countries 2003–2007	Three corporate governance indices constructed from 64 CG attributes	Tobin's Q	Lagged values of the governance indices and performance
Schultz, Tan and Walsh (2010)	ASX 200 firms 2000–2007	Power ratio, CEO duality, non-executive chair, board size, non-executive fixed pay, executive fixed pay, percentage of shares held by insiders, percentage of shares held by outsiders	Total return, Tobin's Q, accounting profit rate, ROA	Lagged differenced firm performance, CG and control variables
Heffernan and Fu (2010)	76 Chinese banks 1999–2006	Public listing, foreign ownership, nature of owners	ROA, ROE, NIM	GMM and fixed-effects model

Researcher	Sample Size and Year of Study	CG Variables	Dependent Variables	Instrument Variable
Pathan and Skully (2010)	212 US bank-holding companies 1997–2004	CEO tenure, CEO age, CEO ownership, percentage of shares held by outsiders, percentage of shares held by non-afflicated block-holders	Board size, board independence, CEO duality	First difference variables
Minnick and Noga (2010)	456 S&P companies five-year moving average 1996–2005	Board size, board independence, CEO duality, two CG indices, staggered board, CEO age, compensation charateristics	Income taxes, cash taxes	Lagged variables of one and two years
Pathan (2009)	212 US bank-holding companies 1997–2004	Board size, board independence, shareolders' restrictive rights index, CEO duality, CEO ownership	Bank risk measures	First differenced variables
Andres and Vallelado (2008)	69 banks 1995–2005	Board size, board independence, board meetings	ROA, annual market return of a bank shareholder	Lagged CG variables

GMM refers to a class of estimators that are constructed by exploiting the sample moment counterparts of population moment conditions, also known as orthogonality conditions. Thus, GMM is a robust estimator because it does not require information of the exact distribution of the disturbances in system equations (Lee & Liu 2010). The GMM estimation assumes that the disturbances in the equations are uncorrelated with a set of instrumental variables. Therefore, the GMM estimator selects parameter estimates so that the correlations between the instrumental variables and disturbances are as close to zero as possible. The GMM starts from the assumption that with a vector of L moment conditions and K-dimensional parameters of interest to be estimated. This can be expressed as:

$$E[f(X_t, \beta_0)] = 0 \tag{4.3}$$

in which $f(X_t, \beta)$ is a continuous and continuously differentiable function of β, X_t is an observed sample and β is the unknown parameter to be estimated via the observed sample. Subsequently, the population moment conditions can be summarised as:

$$E[f(X_t, \beta)] = 0 \text{ if, and only if } \beta_0 = \beta \tag{4.4}$$

Typically, β_0 is not sufficient to write down a likelihood function, in which case the model is only partially specified for the probability model that underlies the data-generation process (Hansen 2010). If the moment conditions are restricted to those that may be written as orthogonality conditions between the residuals of an equation: $u_t = u(y_t, X_t, \beta)$ and a set of K instruments Z_t:

$$E(Z_t u_t(\beta)) = 0 \tag{4.5}$$

The traditional method of moments estimator is then defined by solving the linear equations contained in Equation (4.5) (Zsohar 2012).

For panel data analysis, GMM outweighs the fixed-effects estimator (e.g., Heffernan & Fu 2010) as a method to eliminate the potential bias caused by omitted heterogeneity because of the efficiency of GMM in the presence of either heteroscedasticity or serial correlation (Lee & Liu 2010; Wooldridge 2001). Generally, GMM estimators are widely used for the following reasons. First, they have large sample properties that are easy to characterise in ways that facilitate comparison. A family of such estimators can be studied *a priori* in ways that make asymptotic efficiency comparisons easy. The method also provides a natural way to construct tests that consider both sampling and estimation errors. Second, in practice, researchers find it useful that GMM estimators can be constructed without specifying the full data-generating process (Hansen 2010). GMM has also been employed in empirical studies of the Chinese banking industry. Following Andres and Vallelado (2008), Liang, Xu and Jiraporn (2013) employed the GMM using the two-step system estimator with an adjusted standard error for potential heteroscedasticity to study board characteristics and bank performance in China. The study adjusted for small samples (52 banks over 2006–2010) following Windmeijer (2005) because the Windmeijer proposal improves the robustness of the results and avoids potential downward bias in the estimated asymptotic standard errors. The researchers used lagged board variables and lagged state ownership as instrument variables because board and ownership variables in earlier years could not have resulted from bank performance in subsequent years. Following this logic, the present research uses exogenous variables and their lagged terms as instrument variables.

The effect of banking reform in 2009 on bank lending behaviour, risk management, CG and performance is estimated via a *t*-test.

4.6.2 Econometric Model

Based on the research questions and statistical hypotheses, I can now further specify system Equations (4.1) and (4.2) and rewrite the full equations to reflect on the effect of specific CG factors on lending structure, risk management and bank performance.[31]

The three risk management variables can be written as a function of the CG variables and lending structure variables:

$$NPL = \alpha_1 + \alpha_2 * NPL(-1) + \alpha_3 * BOARDSIZE + \alpha_4 * BOARDPC + \alpha_5 * BOARDIND + \alpha_6 * CEO + \alpha_7 * NISFOREIGN * BLOCK + \alpha_8 * NISGOV * BLOCK + \alpha_9 * NISSOE * BLOCK + \alpha_{10} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \alpha_{11} * LIST + \alpha_{12} * OSSTATE + \alpha_{13} * OSFOREIGN + \alpha_{14} * (1 - TYPE) * Log(RGD) + \alpha_{15} * BGROWTH + \alpha_{16} * LOANCOM + \alpha_{17} * LOANIND + \alpha_{18} * LOANRE + \varepsilon_1 \quad (4.6)$$

$$CAR = \alpha_{19} + \alpha_{20} * CAR(-1) + \alpha_{21} * BOARDSIZE + \alpha_{22} * BOARDPC + \alpha_{23} * BOARDIND + \alpha_{24} * CEO + \alpha_{25} * NISFOREIGN * BLOCK + \alpha_{26} * NISGOV * BLOCK + \alpha_{27} * NISSOE * BLOCK + \alpha_{28} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \alpha_{29} * LIST + \alpha_{30} * OSSTATE + \alpha_{31} * OSFOREIGN + \alpha_{32} * (1 - TYPE) * Log(RGD) + \alpha_{33} * BGROWTH + \alpha_{34} * LOANCOM + \alpha_{35} * LOANIND + \alpha_{36} * LOANRE + \varepsilon_2 \quad (4.7)$$

$$LTD = \alpha_{37} + \alpha_{38} * LTD(-1) + \alpha_{39} * BOARDSIZE + \alpha_{40} * BOARDPC + \alpha_{41} * BOARDIND + \alpha_{42} * CEO + \alpha_{43} * NISFOREIGN * BLOCK + \alpha_{44} * NISGOV * BLOCK + \alpha_{45} * NISSOE * BLOCK + \alpha_{46} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \alpha_{47} * LIST + \alpha_{48} * OSSTATE + \alpha_{49} * OSFOREIGN + \alpha_{50} * (1 - TYPE) * Log(RGD) + \alpha_{51} * BGROWTH + \alpha_{52} * LOANCOM + \alpha_{53} * LOANIND + \alpha_{54} * LOANRE + \varepsilon_3 \quad (4.8)$$

[31] 'Log' in Equations (4.6–4.11) refers to taking the natural logarithm of the variables. For simplicity, in discussing the estimations in Chapter 5 and Chapter 6, Log(RGD), Log(RED), Log(ROAA), Log(ROAE) and Log(COI) are also written as LRGD, LRED, LROAA, LROAE and LCOI.

The natural logarithm form of the three performance variables (ROAA, ROAE and COI) can be expressed in the linear form of CG variables and risk management variables:

$$Log(ROAA) = \beta_1 + \beta_2 * Log\big(ROAA(-1)\big) + \beta_3 * BOARDSIZE + \beta_4 * BOARDPC + \beta_5 * BOARDIND + \beta_6 * CEO + \beta_7 * NISFOREIGN * BLOCK + \beta_8 * NISGOV * BLOCK + \beta_9 * NISSOE * BLOCK + \beta_{10} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \beta_{11} * LIST + \beta_{12} * OSSTATE + \beta_{13} * OSFOREIGN + \beta_{14} * Log(RED) + \beta_{15} * BGROWTH + \beta_{16} * LTD + \beta_{17} * NPL + \beta_{18} * CAR + \varepsilon_4 \quad (4.9)$$

$$Log(ROAE) = \beta_{19} + \beta_{20} * Log\big(ROAE(-1)\big) + \beta_{21} * BOARDSIZE + \beta_{22} * BOARDPC + \beta_{23} * BOARDIND + \beta_{24} * CEO + \beta_{251} * NISFOREIGN * BLOCK + \beta_{26} * NISGOV * BLOCK + \beta_{27} * NISSOE * BLOCK + \beta_{28} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \beta_{29} * LIST + \beta_{30} * OSSTATE + \beta_{31} * OSFOREIGN + \beta_{32} * Log(RED) + \beta_{33} * BGROWTH + \beta_{34} * LTD + \beta_{35} * NPL + \beta_{36} * CAR + \varepsilon_5 \quad (4.10)$$

$$Log(COI) = \beta_{37} + \beta_{38} * Log\big(COI(-1)\big) + \beta_{39} * BOARDSIZE + \beta_{40} * BOARDPC + \beta_{41} * BOARDIND + \beta_{42} * CEO + \beta_{43} * NISFOREIGN * BLOCK + \beta_{44} * NISGOV * BLOCK + \beta_{45} * NISSOE * BLOCK + \beta_{46} * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + \beta_{47} * LIST + \beta_{48} * OSSTATE + \beta_{49} * OSFOREIGN + \beta_{50} * Log(RED) + \beta_{51} * BGROWTH + \beta_{52} * LTD + \beta_{53} * NPL + \beta_{54} * CAR + \varepsilon_6 \quad (4.11)$$

4.6.3 Data Collection

This study uses manually collected data from the financial reports of JSCBs and CCBs. Data sources and adjustments made to ensure the comparability of the data are discussed below.

4.6.3.1 Data Source

The sample is an unbalanced panel that includes the financial data of 49 Chinese banks defined by the CBRC as JSCBs and CCBs during the period 2007–2014, totalling 296 observations. RCBs are not included because financial reports are mostly poorly

disclosed for these banks. Two selection criteria are followed during data collection: (i) exclusion of observations with missing variables; and (ii) exclusion of observations exhibiting outliers.[32]

The primary data source used in this study was annual reports. Data from annual reports were manually obtained from individual bank websites, China Bond (www.chinabond.com.cn) and Sina Finance (finance.sina.com.cn). When not disclosed in annual reports, senior executive information profiles were gathered from other sources, including Hexun Finance (www.hexun.com), Ifeng Finance (finance.ifeng.com), Baidu Baike (baike.baidu.com) and local government websites. Regional GDP and government budgets/expenditure were acquired from the National Statistics Bureau of China (http://www.stats.gov.cn).

The present study adjusts and recomputes the variables while collecting data from original financial reports obtained from the abovementioned sources in the following aspects:

1. Adjusting to the change of accounting policy that affects the calculation of operating income, bank growth rate and income-to-cost ratio.
2. Adjusting government ownership defined under different scopes in different banks and/or years.

The nature of these adjustments is discussed below.

4.6.3.2 Adjustment of Operating Income and Related Variables

From 1997 to 2001, the MoF in China issued 30 exposure drafts and 16 final Chinese Accounting Standards (CAS) with supporting guidelines. In February 2006, the MoF

[32] Outliers are identified as those observations that fall outside three sample standard deviations from the sample mean.

issued an entirely new CAS that became effective for listed companies in 2007 and for SOEs in 2008. By 2009, all large- and medium-sized unlisted enterprises were expected to adopt the 2006 CAS.

Most of the banks selected in the present research follow the 2006 CAS during the sample period, while some banks also prepared annual reports based on the International Financial Reporting Standards (IFRS).[33] The new standards cover most of the topics of the IFRS, and this change of accounting standards affected the banking industry in general. Many sample banks changed their accounting policy between 2006 and 2009 and adjusted their financial reports for the preceding year.

Therefore, operating incomes that were disclosed and calculated based on the pre-2006 CAS can be converted using the following equation to meet the 2006 CAS:

$$\begin{aligned} Operating\ Income_{2006\ CAS} \\ &= Operating\ Income_{Pre-2006\ CAS} \\ &- Operating\ Expenses_{Pre-2006\ CAS} \\ &+ Gerneral\ and\ Administrative\ Expenses_{Pre-2006\ CAS} \\ &+ Net\ Investment\ Income_{Pre-2006\ CAS} \end{aligned} \tag{4.12}$$

The performance variable COI ratio is then calculated based on the converted operating income.

The study also annualises the operating income if a bank is founded or restructured within the research sample period. In the case where banks only disclose the income with less than one year's worth of data, the following equation is applied to annualise the operating income:

[33] According to Berger, Hasan and Zhou (2009) and Liang, Xu and Jiraporn (2013), there is no material difference between financial statements of the same bank under CAS and IFRS. However, this finding does not involve any accounting ratios calculated based on operating income.

$$Annualised\ Operating\ Income_{2006\ CAS} = \frac{365 * Periodical\ Operating\ Income_{2006\ CAS}}{Number\ of\ days\ between\ date\ of\ founded\ and\ end\ of\ year} \quad (4.13)$$

The control variable BGROWTH is calculated based on the annualised operating income. Table 4-8 summarises the difference between income statements under the 2006 and pre-2006 CAS.

Table 4-8 Comparison of Income Statements under the 2006 and Pre-2006 CAS

2006 CAS	*Pre-2006 CAS*
1. Operating Income	**1. Operating Income**
Interest income	Loan interest income
Less: interest expense	Interest income from interbank transactions
(Net interest expense)	Fees and commissions
Fee and Commission income	Exchange gain
Less: fee and commission expense	Other operating income
(Net fee and commission income)	**2. Operating Expenses**
Net investment income	Less: Interest expenses
Gains or losses from changes in fair values	Interest expenses from interbank transactions
Net foreign exchange difference	Fees and commissions expenses
Other net operating income	Exchange loss
2. Operating Expenses	Other operating expenses
Less: Business tax and surcharge	General and administrative expenses
General and administrative expenses	**3. Net Investment Income**
Impairment losses on assets	**4. Operating Profit**
3. Operating Profit	Non-operating income
Non-operating income	Less: non-operating expenses
Less: non-operating expenses	Less: Business tax and surcharge
4. Profit Before Tax	**5. Net profit Before Tax and Provision**
Less: income tax	Less: Asset loss Provision
5. Net Profit	**6. Profit before Tax**
	Less: income tax
	7. Net Profit

4.6.3.3 Adjustment of Government Ownership

Existing literature that examines state ownership as a CG mechanism for Chinese commercial banks has mostly focused on types of banks and the static/dynamic effect of changes in ownership (Berger, Hasan & Zhou 2009; Jia 2009; Jiang, Feng & Zhang 2012; Lin & Zhang 2009). However, few studies have directly explored the quantitative relationship between the percentage of government ownership and bank performance. This can be attributed to the lack of comparability in statistics provided by banks' financial reports, because various scopes were applied to define government ownership by different banks across sample years. The present research identified three different definitions of 'government ownership' in banks' financial reports. They are summarised below.

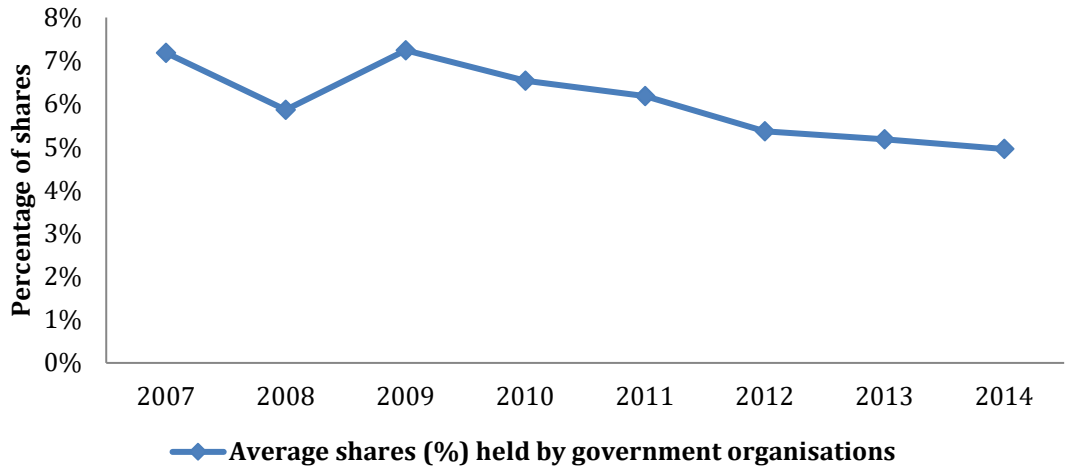
1. First scope: Shares held solely by a government organisation such as a state/provincial financial ministry/department.
2. Second scope: First scope plus shares that are held by investment companies or SOEs that are established and controlled by state/provincial government organisations and SASACs.
3. Third scope: Second scope plus shares held by other SOEs, including public-listed companies and joint-stock companies that are deemed to be SOEs, although their shares are not 100% held by the government or SASACs.

The inconsistency in defining government shares is also identified in some existing research on government ownership. Lu, Thangavelu and Hu (2005) and Ferri (2009) defined government shares as direct shareholding by the local government, which

resembles the first scope.[34] Qian, Zhang and Liu's (2015, p. 86) definition of shares being held by 'the finance bureau, a government investment corporation, a local SASAC or a local state-owned enterprise' is similar to the second scope. Additionally, Liang, Jia and Jiraporn (2013) and Berger, Hasan and Zhou (2009) defined state shareholder as the state and SOE, which is similar to the third scope.

According to the first scope of defining government shareholding, the average shares held by government organisations in Chinese JSCBs and CCBs have been steadily decreasing since 2009, as shown in Figure 4-3.

Figure 4-3 Average Shares (%) Held by Government Organisations in Chinese JSCBs and CCBs (2007–2014)



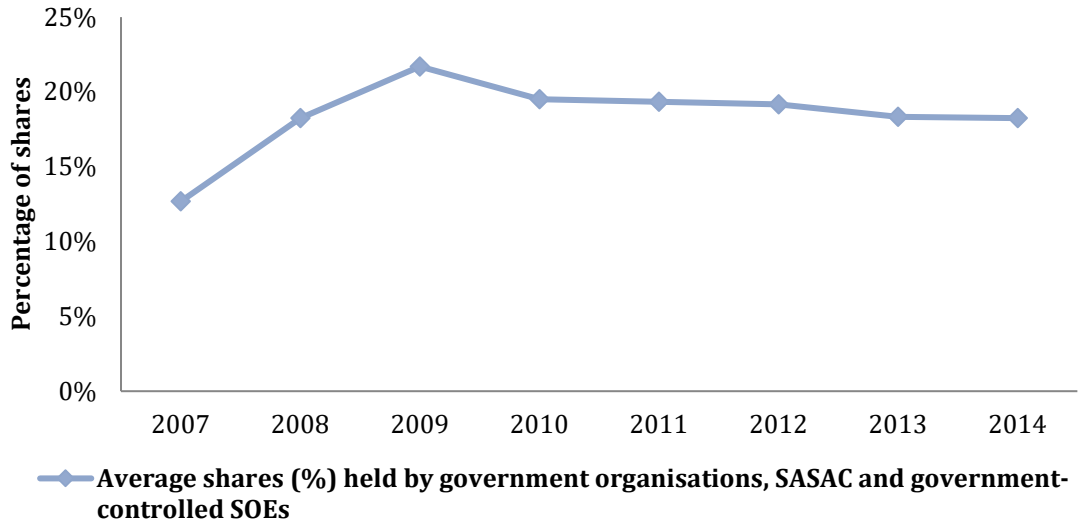
Source: Sample banks' financial reports 2007–2014

This can be explained by the stipulation in the Measures for the Management of Capital Adequacy Ratios of Commercial Banks ('2007 CAR Amendment') by the CBRC in 2007 that required commercial banks to meet the minimal CAR by the end of 2009.

[34] In China's stock exchange regime, when data were collected for Lu, Thangavelu and Hu's (2005) research, there were five types of shares in listed companies: (i) government shares, which are retained in state institutions and government departments, are not tradable; (ii) legal entity shares, which can only be held by other SOEs, are not listed in the two official exchanges; (iii) employee shares are non-tradable until the firm allows their convertibility; (iv) ordinary domestic individual shares, or A shares, can only be purchased and traded by private Chinese citizens in the two official exchanges; and (v) foreign individual shares, which are denominated in foreign currencies, can be purchased and traded in exchanges in China (B shares), Hong Kong (H shares) and the New York Stock Exchange (N shares).

Consequently, many banks went through reorganisation and join-stock transformation (see a more detailed discussion in section 2.2.1). In addition to the new capital adequacy requirement, the CBRC adjusted the market access policy for branches and sub-branches of small and medium commercial banks[35] and provided additional guidelines on CG[36] for these banks in 2009. The information is summarised in Figure 4-3 and is somewhat consistent with Figure 4-4, which uses the second scope definition of government shares. Total shares held by all types of government agencies, including partially privatised SOEs, seem to remain quite constant, with a major increase around 2008–2009 and a slight decrease in 2013, as shown in Figure 4-5.

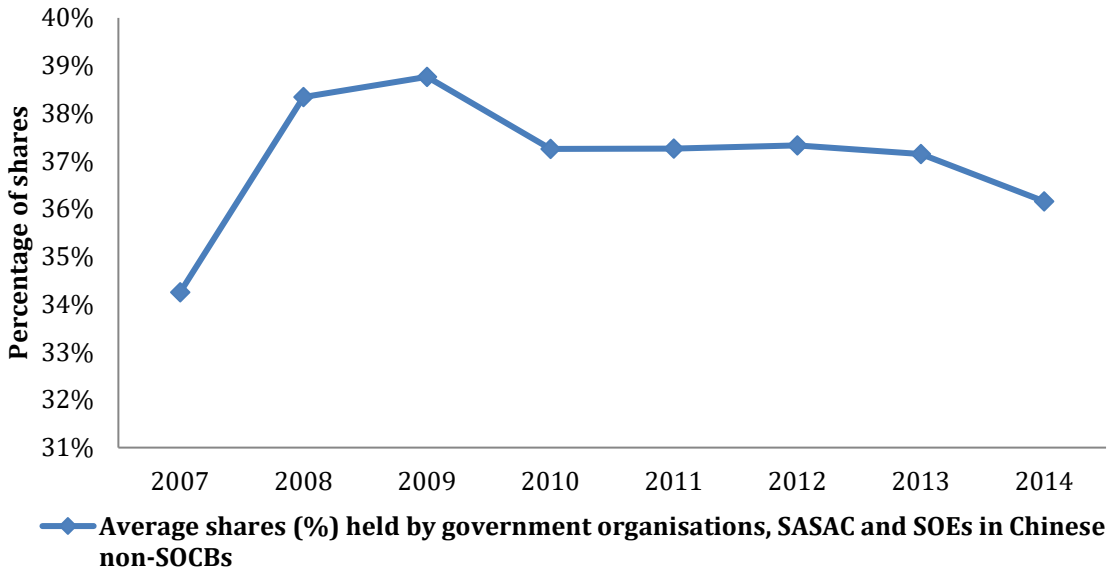
Figure 4-4 Average Shares (%) Held by Government Organisations, SASACs and Government-Controlled SOEs in Chinese JSCBs and CCBs (2007–2014)



Source: Sample banks' financial reports 2007–2014

[35] See Opinions on the Adjustment to the Market Access Policy for Branches and Sub-branches of Small and Medium Commercial Banks (Provisional), Notice of CBRC [2009] No. 143, CBRC.
[36] See Guiding Opinions on Improving Corporate Governance of Small and Medium Commercial Banks, Notice of CBRC [2009] No. 15, CBRC. This guideline was later abolished in 2013 by the updated Guidelines on Corporate Governance of Commercial Banks, Notice of CBRC [2014] No. 34.

Figure 4-5 Average Shares (%) Held by Government Organisations, SASACs and SOEs in Chinese JSCBs and CCBs (2007–2014)



Source: Sample banks' financial reports 2007–2014

This study uses the latter two measurements to test the effects of various government shareholding structures on bank performance. That is, in addition to estimating the effect of government influential shareholders on bank performance and risk management, this study measures the percentage of shares held altogether by the state as well as SASAC and government-controlled SOEs, and it estimates the effect of these shares on bank performance. By doing so, this study assumes that the Chinese government can exert influence over the bank operations of JSCBs and CCBs through a broader group of government-controlled organisations, including SOEs.

4.7 Descriptive Statistics

The section introduces the descriptive statistics of the variables employed. A comparison between the present study and other studies for these variables is discussed wherever possible. The sampled banks included in the present study are mainly unlisted banks as opposed to some previous banking studies in China. As demonstrated in this

section, listed banks and unlisted banks are different in relation to bank lending structure, CG factors, risk management and bank performance.

4.7.1 Overview of the Sample

This study excludes observations with outliers of the non-binary variables to ensure that extreme values will not influence the results.[37] The final sample consists of 296 bank-year observations from 12 JSCBs and 37 CCBs, which are summarised in Table 4-9.

Table 4-9 A Summary of JSCBs and CCBs included in this Study

Name of Banks	Bank Type	No. of Bank-year Observations
Shanghai Pudong Development Bank	JSCB	7
Ping An Bank	JSCB	5
Industrial Bank	JSCB	8
Huaxia Bank	JSCB	8
China Zheshang Bank	JSCB	8
China Minsheng Bank	JSCB	8
China Merchants Bank	JSCB	8
China Guangfa Bank	JSCB	6
HengFeng Bank	JSCB	5
China Everbright Bank	JSCB	6
China CITIC Bank	JSCB	8
China Bo Hai Bank	JSCB	2
Zhejiang Tailong Commercial Bank	CCB	6
Zhejiang Mintai Commercial Bank	CCB	6
Zhejiang Chuzhou Commercial Bank	CCB	7
Xiamen International Bank	CCB	3
Bank of Taizhou	CCB	2
Bank of Taian	CCB	6
Qilu Bank	CCB	4
Panzhihua City Commercial Bank	CCB	3

[37] This was done by excluding observations that have non-binary variables outside three sample standard deviations from the sample mean.

Name of Banks	Bank Type	No. of Bank-year Observations
Jinshang Bank	CCB	6
Jiangxi Bank	CCB	6
Guilin Bank	CCB	7
Guangxi Beibu Gulf Bank	CCB	4
Fujian Haixia Bank	CCB	6
Fudian Bank	CCB	7
Chongqing Three Gulf Bank	CCB	5
Baoshang Bank	CCB	7
Bank of Zhengzhou	CCB	6
Bank of Yingkou	CCB	6
Bank of Tianjin	CCB	7
Bank of Suzhou	CCB	3
Bank of Shaoxing	CCB	4
Bank of Shanghai	CCB	8
Bank of Qingdao	CCB	6
Bank of Ningbo	CCB	8
Bank of Nanjing	CCB	6
Bank of Luoyang	CCB	8
Bank of Liuzhou	CCB	3
Bank of Jiujiang	CCB	2
Bank of Jiaxing	CCB	8
Bank of Jiangsu	CCB	8
Bank of Huzhou	CCB	8
Bank of Hebei	CCB	7
Bank of Hankou	CCB	7
Bank of Hangzhou	CCB	6
Bank of Dongying	CCB	8
Bank of Dalian	CCB	6
Bank of Beijing	CCB	6

Among the 49 banks, seven were listed[38] on the Shenzhen, Shanghai or Hong Kong stock exchanges by the end of 2007, and 12 were listed[39] by the end of 2014. That is, five banks went through an IPO during the research period. Table 4-10 shows the distribution of the observations based on bank type, year and listing status of banks.

Table 4-10 Distribution of Sample Observations

Total Bank Observations	Total	2007	2008	2009	2010	2011	2012	2013	2014
Bank type	**296**	**17**	**24**	**39**	**42**	**44**	**43**	**44**	**43**
JSCBs	**79**	8	7	10	12	12	10	10	10
CCBs	**217**	9	17	29	30	32	33	34	33
Listing status	**296**	**17**	**24**	**39**	**42**	**44**	**42**	**44**	**43**
Listed	**78**	7	6	9	11	11	11	12	12
Unlisted	**218**	10	18	30	31	33	32	32	31

4.7.2 Lending Structure of JSCBs and CCBs in China

Table 4-11 provides the descriptive statistics of lending variables over the sample period for different types of banks in terms of median, mean, standard deviation (STD), minimum (Min.) and maximum values (Max.).

Table 4-11 Descriptive Statistics for Lending Structure of JSCBs and CCBs

Variables	Median	Mean	STD	Min.	Max.
Commercial lending ratio	**0.1430**	**0.1599**	**0.0783**	**0.0088**	**0.418**
Listed banks	0.1189	0.1145	0.0342	0.0392	0.1926
Unlisted banks	0.1570	0.1764	0.0832	0.0088	0.418
Industrial lending ratio	**0.2147**	**0.2431**	**0.1048**	**0.0090**	**0.5628**
Listed banks	0.1975	0.2004	0.0522	0.1004	0.3735
Unlisted banks	0.2388	0.2586	0.1145	0.0090	0.5628
Real estate lending ratio	**0.0712**	**0.0716**	**0.046**	**0.0000**	**0.2054**
Listed banks	0.0848	0.0873	0.0270	0.0435	0.1610
Unlisted banks	0.0607	0.0658	0.0500	0.0000	0.2054

Note: STD: standard deviation; Min.: minimum value; Max.: maximum value.

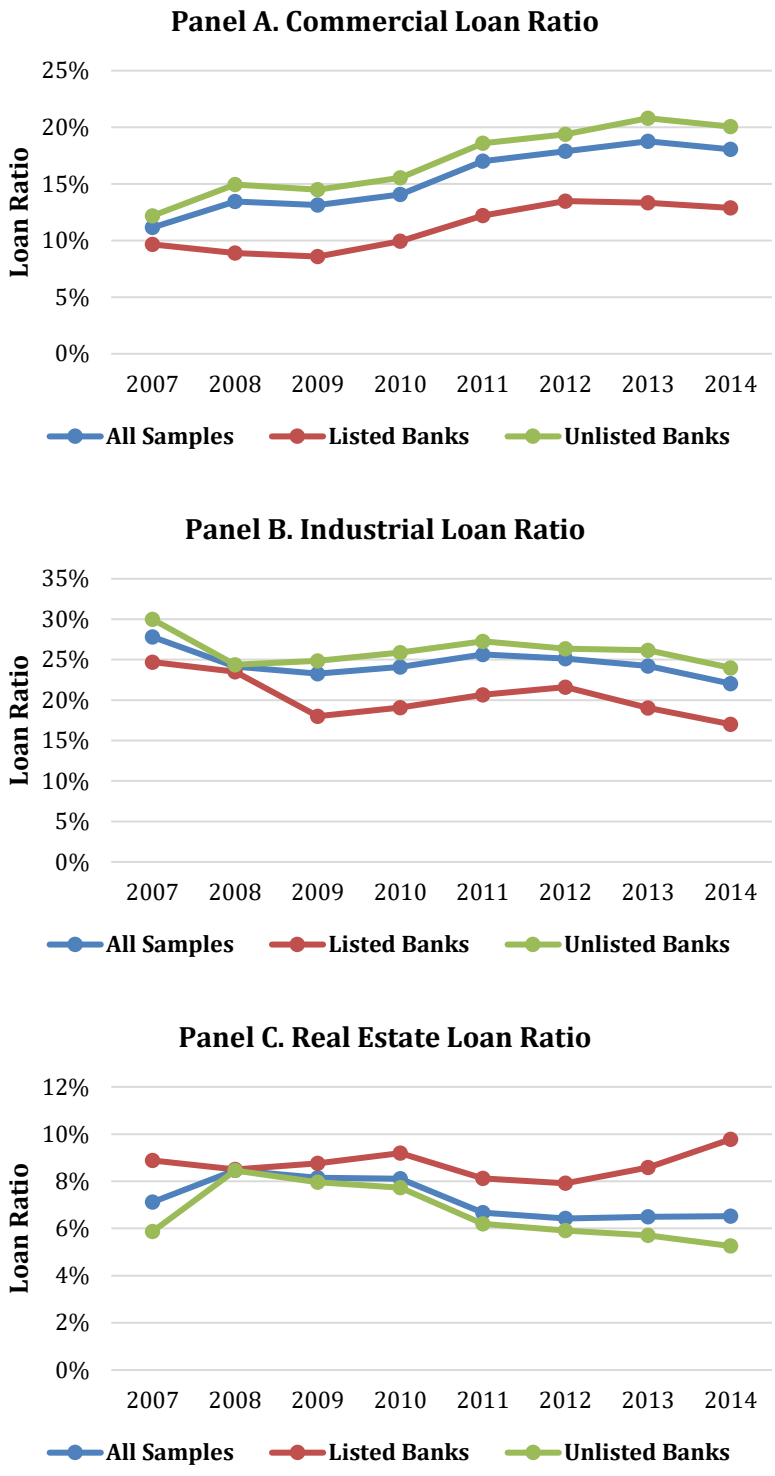
[38] These banks are Bank of Ningbo, China CITIC Bank, China Merchants Bank, China Minsheng Bank, Huaxia Bank, Industrial Bank and SPD Bank.
[39] These banks are Bank of Nanjing, Bank of Ningbo, Bank of Shanghai, Bank of Beijing, China Everbright Bank, Bank of Ningbo, China CITIC Bank, China Merchants Bank, China Minsheng Bank, Huaxia Bank, Industrial Bank and SPD Bank.

The average commercial lending ratio against total loans issued by the sample banks is 0.1599 over the sample period, which is slightly higher than 0.1355 in the study by Qian, Cao and Li (2011). In relation to listed banks and unlisted banks, on average, unlisted banks were shown to lend more to commercial loan borrowers, with a mean ratio of 0.1764 compared with listed banks (0.1145) over the sample period. The mean industrial lending ratio is 0.2431 across the whole sample, which is close to, yet lower than, 0.2592 of Qian, Cao and Li (2011). In relation to listed banks and unlisted banks in this study, the former had a ratio of 0.2004, while the latter was 0.2586; hence, unlisted banks tended to lend more to industrial loan borrowers than listed banks. The average real estate lending ratio in this study is 0.0716, which is higher than 0.2592 of Qian, Cao Lin (2011). A possible explanation for the different sample mean between this study and that of Qian, Cao and Li (2011) is that their study only included unlisted CCBs in the sample. A comparison of listed and unlisted banks shows that listed banks allocate more loans (0.0873) to the real estate sector than unlisted banks (0.0658). According to Qian, Cao and Li (2011), real estate loans expose banks to a higher risk than commercial loans and industrial loans. That is, listed banks may act less prudently than unlisted banks in terms of allocating more loans in the real estate sector compared with the commercial and industrial sectors.

Figure 4-6 shows the time trends of commercial loans, industrial loans and real estate loans for the sample banks from 2007 to 2014. Panel A shows that the mean commercial loan ratio increased over the study period, while panel B indicates that the industrial loan ratio decreased over the same period. Panel C suggests that after a brief convergence between listed and unlisted banks in 2008, unlisted banks allocated fewer loans to the real estate sector, while listed banks increased their loan allocation in the

real estate sector. By the end of 2014, listed banks were allocating almost 10% of their lending assets in the real estate sector, which is almost double that of unlisted banks.

Figure 4-6 Chinese JSCBs and CCBs Lending Structure Trends: 2007–2014



4.7.3 Risk Management of JSCBs and CCBs in China

Table 4-12 provides the descriptive statistics of the risk management variables over the sample period for different types of banks. The variables comprise the CAR, NPL ratio and LTD ratio. The non-interest income ratio was not included in the regression model because of its non-normality.[40] Three-year standard deviation of the ROAA/ROAE ratio was excluded in the model because of its weak correlation with the exogenous and endogenous variables later in the model testing stage. As Table 4-11 indicates, the average CAR over the sample period is 0.1240, which is lower than that of 0.1463 in the study by Molyneux, Liu and Jiang (2014). This difference is not unexpected because the latter covers a much larger sample of 186 banks over the period 2000–2012. The NPL ratio in this study is 0.0101, which is lower than 0.02651 in Qian, Zhang and Liu (2015) and 0.03 in Liang, Xu and Jiraporn (2013). The average LTD ratio in this study is 0.6471, which is higher than 0.54 in Qian, Zhang and Liu (2015). A comparison between listed banks and unlisted banks indicates that, on average, listed banks have a lower CAR, NPL ratio and higher LTD ratio. Additionally, different periods and sample sizes contribute to the sample mean differences between the current study and existing studies.[41]

[40] The kurtosis measurement of the non-interest income ratio is 12.5884.
[41] The probabilities of *t*-tests for sample means between listed banks and unlisted banks in terms of their CAR, NPL and LTD are 0.0000.

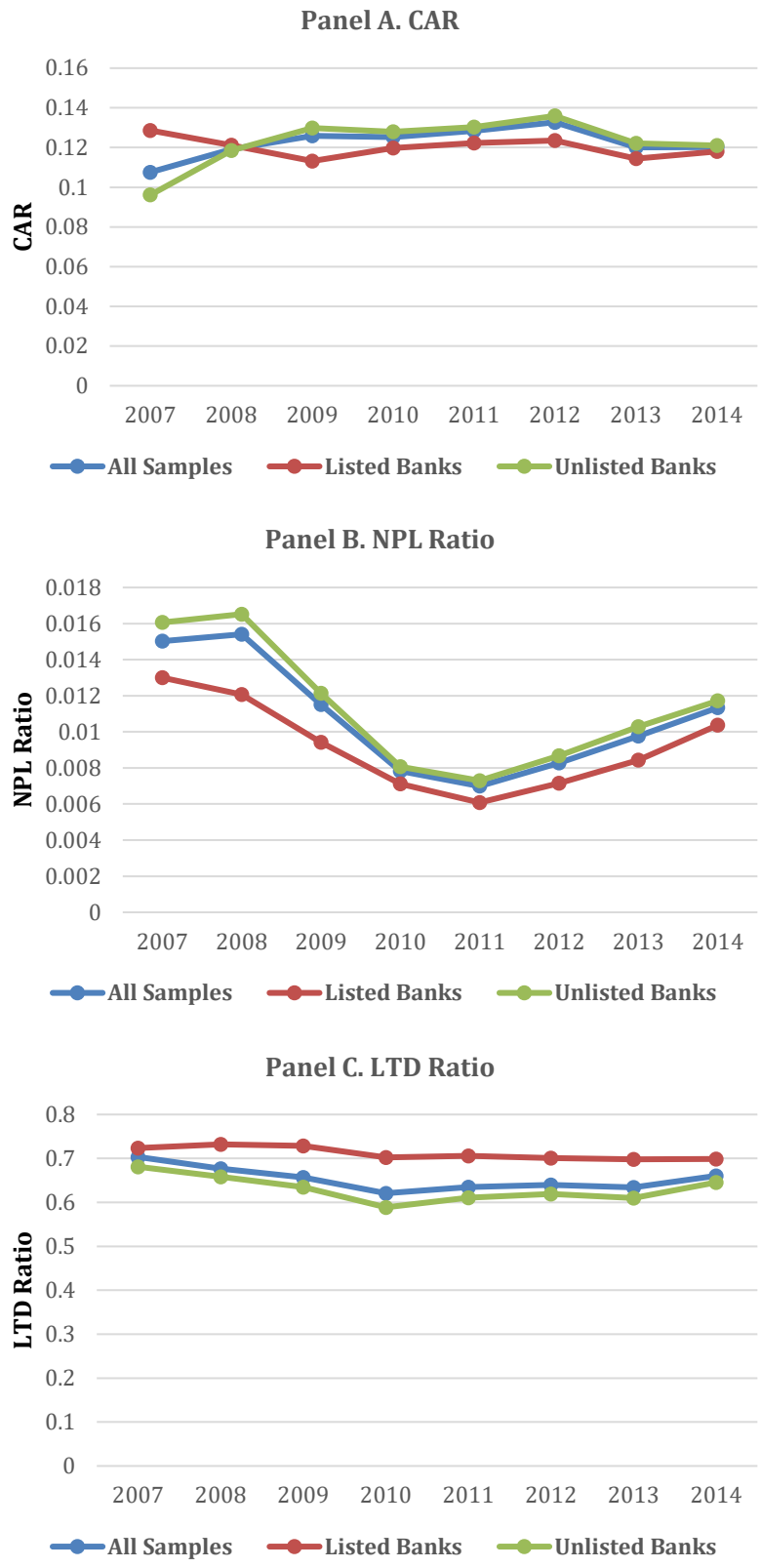
Table 4-12 Descriptive Statistics for Risk Management Variables of JSCBs and CCBs

Variables		Median	Mean	STD	Min.	Max.
CAR		**0.1216**	**0.1240**	**0.0198**	**0.0702**	**0.2153**
	Listed banks	0.1137	0.1193	0.0192	0.0847	0.21
	Unlisted banks	0.1238	0.1257	0.0198	0.0702	0.2153
NPL ratio		**0.0094**	**0.0101**	**0.0053**	**0.0000**	**0.0388**
	Listed banks	0.0083	0.0089	0.0033	0.0036	0.0225
	Unlisted banks	0.0098	0.0105	0.0058	0.0070	0.1062
LTD ratio		**0.6827**	**0.6471**	**0.1011**	**0.3250**	**0.8378**
	Listed banks	0.7213	0.7096	0.0573	0.4743	0.8378
	Unlisted banks	0.6487	0.6243	0.1040	0.3250	0.8189

Note: STD: standard deviation; Min.: minimum value; Max.: maximum value.

Figure 4-7 shows the time trends for selected risk management variables included in the regression model in this study: CAR, NPL and LTD. Panel A indicates that the average CAR of sample JSCBs and CCBs increased from 0.1076 to 0.1201 over the period 2007–2014. This implies that capital risk management improved over the sample period. While listed banks had better risk-weighted capital reserves at the beginning of the sample period compared with unlisted banks, the two groups converged over time to approximately 0.12 by the end of 2014. Panel B shows that the NPL ratio had a substantial decrease after 2008 and then started rising until 2014 for all sample banks. Panel C suggests that the LTD ratio has been quite stable, with a slight decrease over the sample period.

Figure 4-7 Chinese JSCBs and CCBs Risk Management Trends: 2007–2014



4.7.4 Ownership Structure of JSCBs and CCBs in China

Table 4-13 summarises the descriptive statistics of the ownership structure for Chinese JSCBs and CCBs based on their listing status. These include the identity of banks' influential shareholders (NISFOREIGN, NISGOV and NISSOE), percentage of shares held by influential shareholders (BLOCK), percentage of shares held by government organisations and government agencies (OSSTATE) and foreign investors (OSFOREIGN). Over the sample period, on average, approximately 11% of the sample observations are NISFOREIGN (i.e., controlled by foreign investors), 49% are NISGOV (i.e., controlled by the government and their controlled agencies) and 25% are NISSOE (i.e., controlled by SOEs). The remaining 15% of selected banks are controlled by investors from the private sector.[42] As Table 4-9 had shown, of the 296 bank-year observations, 78 are listed and 218 are unlisted. A comparison of listed and unlisted banks shows that listed banks tend to attract more foreign investment, with a higher mean OSFOREIGN of 0.0939 compared with 0.0477 for unlisted banks. Listed banks are also more likely to be dominated by SOEs and foreign strategic investors, as evidenced by a mean NISFOREIGN of 0.1392 and mean NISSOE of 0.3165 compared with 0.1060 and 0.2304 respectively for unlisted banks. Interestingly, despite the more dispersed ownership structure associated with listed banks, the average percentage of shares held by influential shareholders of listed banks (average: 0.2459) is higher than that of unlisted banks (average: 0.1662). Conversely, approximately 55% of unlisted banks are dominated by government organisations or government agencies, as opposed to 33% for listed banks, indicating that unlisted banks are more likely to be directly or indirectly influenced by the government.[43] Given the institutional background of

[42] Fifteen percent is derived from subtracting 11%, 49% and 25% from 100%.
[43] The probabilities of *t*-tests for sample means between listed banks and unlisted banks in terms of their ownership structure variables are 0.0000.

JSCBs and CCBs, whereby the founding of these banks is either initiated by the state/local government or through consolidating small credit cooperative unions, state shares are more likely to be diluted after an IPO in these banks.

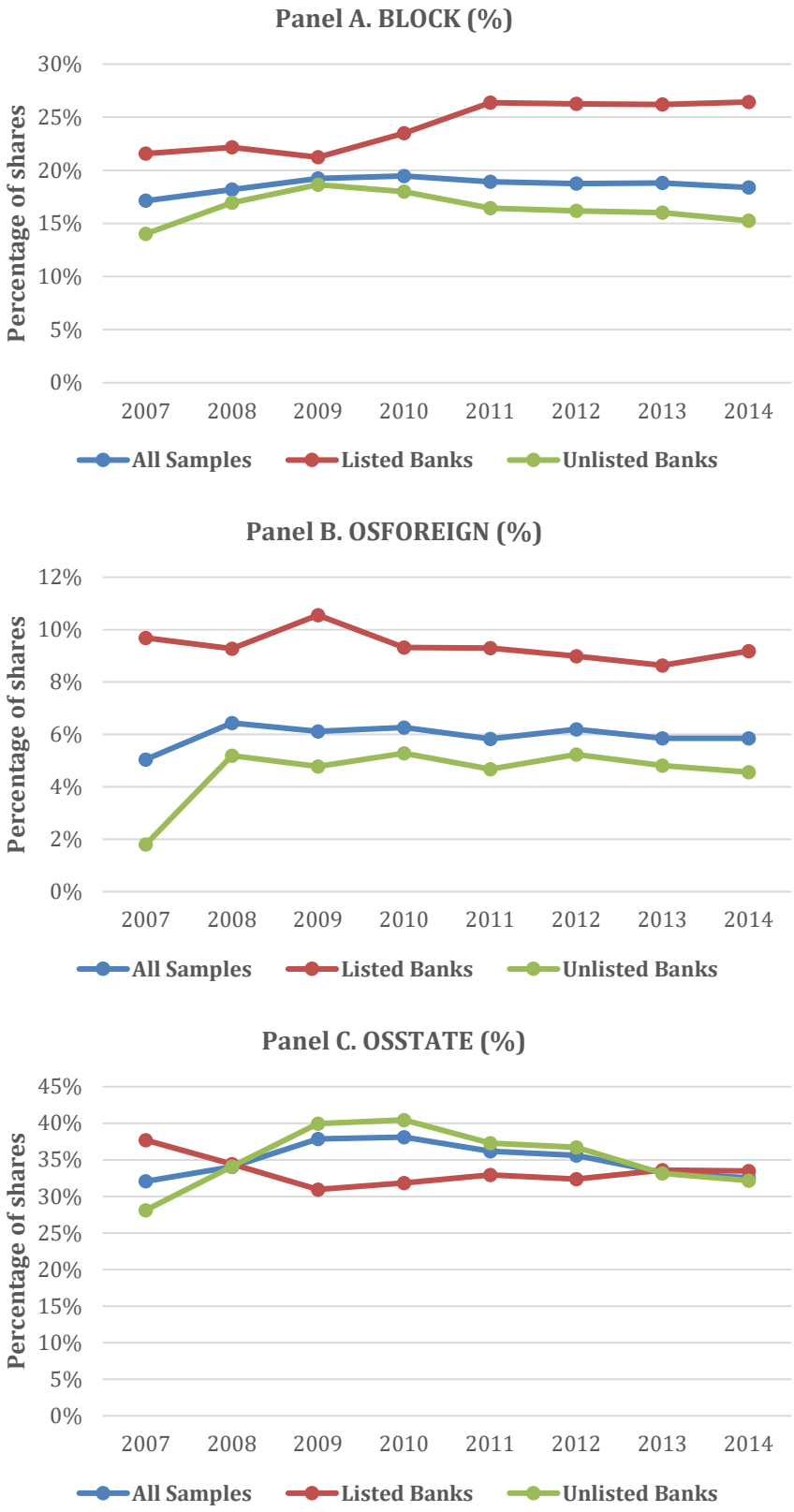
Table 4-13 Descriptive Statistics for Ownership Structure of JSCBs and CCBs

Variables	Median	Mean	STD	Min.	Max.
Ownership Concentration (LIST)	**0**	**0.2669**	**0.4431**	**0**	**1**
Nature of influential shareholder: foreign investor (NISFOREIGN)	**0**	**0.1149**	**0.3194**	**0**	**1**
Listed banks	0	0.1392	0.0192	0	1
Unlisted banks	0	0.1060	0.0198	0	1
Nature of influential shareholder: government (NISGOV)	**0**	**0.4899**	**0.5007**	**0**	**1**
Listed banks	0	0.3291	0.4729	0	1
Unlisted banks	1	0.5484	0.4988	0	1
Nature of influential shareholder: SOEs (NISSOE)	**0**	**0.2534**	**0.4357**	**0**	**1**
Listed banks	0	0.3165	0.4681	0	1
Unlisted banks	0	0.2304	0.4221	0	1
% Shares held by influential shareholder (BLOCK)	**0.1786**	**0.1875**	**0.1085**	**0.0551**	**0.6713**
Listed banks	0.1797	0.2459	0.1645	0.059	0.6713
Unlisted banks	0.1712	0.1662	0.0678	0.0551	0.5982
% Shares held by government and government agencies (OSSTATE)	**0.3486**	**0.3523**	**0.1961**	**0**	**0.8446**
Listed banks	0.3146	0.3316	0.1884	0.0125	0.6845
Unlisted banks	0.3556	0.3599	0.1987	0	0.8446
% Shares held by foreign investor (OSFOREIGN)	**0**	**0.0600**	**0.0871**	**0**	**0.2764**
Listed banks	0.11	0.0939	0.0754	0	0.201
Unlisted banks	0	0.0477	0.0880	0	0.2764

Note: STD: standard deviation; Min.: minimum value; Max.: maximum value.

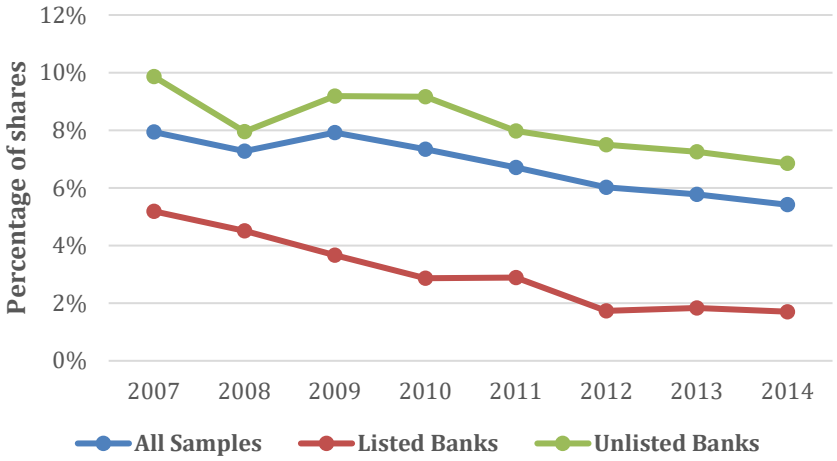
Figure 4-8 shows the time trends for non-binary variables used in this study in measuring various ownership structures.

Figure 4-8 Selected Chinese JSCBs and CCBs Ownership Structure Trends: 2007–2014



Panel A indicates that the overall ownership concentration, as measured by influential shareholding, remains fairly constant between 2007 and 2014, with a slight peak in 2009. Interestingly, although publicly listed JSCBs and CCBs have a more dispersed shareholder structure, the average influential shareholding percentages seem to increase over the sample period in general. This is in contrast with the case of unlisted JSCBs and CCBs, indicating that although these unlisted banks may have fewer shareholders, the influential shareholder tends to hold shares over time. Panel B illustrates that average shares held by foreign shareholders tended to fluctuate around 6% after a slight increase in 2008. Listed JSCBs and CCBs tended to attract more foreign investment than unlisted banks by around 4% over the sample period, with a major convergence between the two groups in 2008. Panel C shows interesting trends of shares held by all government agencies, including government organisations, state or lower-tier SASACs and SOEs. There were two converging periods in 2007–2008 and 2010–2014 between listed and unlisted JSCBs and CCBs on OSSTATE, although OSSTATE remained quite constant overall. Earlier in Chapter 4, this study demonstrated the variability in measuring government ownership in commercial banks by existing studies. Further examination of the time trend shares held by government organisations (see Figure 4-9) indicate that the shares owned by government organisations tended to decrease after 2009 as a result of the 2007 CAR amendment by the CBRC. The variances in time trends between Figure 4-8 (panel C) and Figure 4-9 indicate that shares of JSCBs and CCBs may have been transferred from government organisations to government-related agencies such as SASACs or SOEs, which largely remain under the control of the government.

Figure 4-9 Shares Held by Government Organisations in JSCBs and CCBs: Time Trend 2007–2014



4.7.5 Board Information of JSCBs and CCBs in China

Table 4-14 reports the summary statistics for board characteristics of Chinese JSCBs and CCBs, including board size, CEO duality, board political connection and board independence.

Table 4-14 Descriptive Statistics for Boards of JSCBs and CCBs

Variables	Median	Mean	STD	Min.	Max.
Board size	**14**	**13.9054**	**2.7955**	**6**	**19**
Listed banks	17	16.3924	1.8771	11	19
Unlisted banks	13	13	2.5129	6	19
CEO duality	**0**	**0.3345**	**0.4726**	**0**	**1**
Listed banks	0	0.2532	0.4376	0	1
Unlisted banks	0	0.3640	0.4823	0	1
% Board political connection	**0.3333**	**0.3304**	**0.1418**	**0**	**0.7333**
Listed banks	0.3571	0.3432	0.2583	0	0.7333
Unlisted banks	0.3333	0.3257	0.1395	0	0.6154
% Board independence	**0.2899**	**0.2672**	**0.1014**	**0**	**0.4545**
Listed banks	0.3333	0.3496	0.0335	0.2667	0.4545
Unlisted banks	0.2308	0.2372	0.1013	0	0.4545

Note: STD: standard deviation; Min.: minimum value; Max.: maximum value.

Over the sample period, average board size is approximately 14. Listed banks tended to have larger boards of approximately 16 directors compared with unlisted banks (13 directors). This difference is most likely attributed to the CSRC's regulatory requirement for the board size of listed companies (see Section 3.6.2).

In relation to CEO duality, in approximately 33% of sample observations, the president of the bank was also chair of the board or served as the deputy chair. Among the sample banks, unlisted banks tended to exhibit a higher CEO duality ratio of around 36% compared with listed banks (25%). The average percentages of politically connected directors and independent directors on boards are approximately 33% and 27% respectively across the whole sample. Specifically, listed banks tended to have more politically connected directors (34%) and independent directors (35%) compared with unlisted banks (33% and 24%) respectively.[44]

4.7.6 Performance of JSCBs and CCBs in China

Table 4-15 summarises the descriptive statistics for the performance variables of Chinese JSCBs and CCBs, including ROAA, ROAE and COI. The mean ROAA ratio is 0.0112 over the sample period, with a minor variance between listed banks (0.0110) and unlisted banks (0.0113). The mean ROAA ratio in this study is very close to that of Liang, Xu and Jiraporn (2013) with the latter being 0.01 despite differences in the sample size.

[44] The probabilities of *t*-tests for sample means between listed banks and unlisted banks in terms of their board characteristics variables are 0.0000.

Table 4-15 Descriptive Statistics for Performance of JSCBs and CCBs

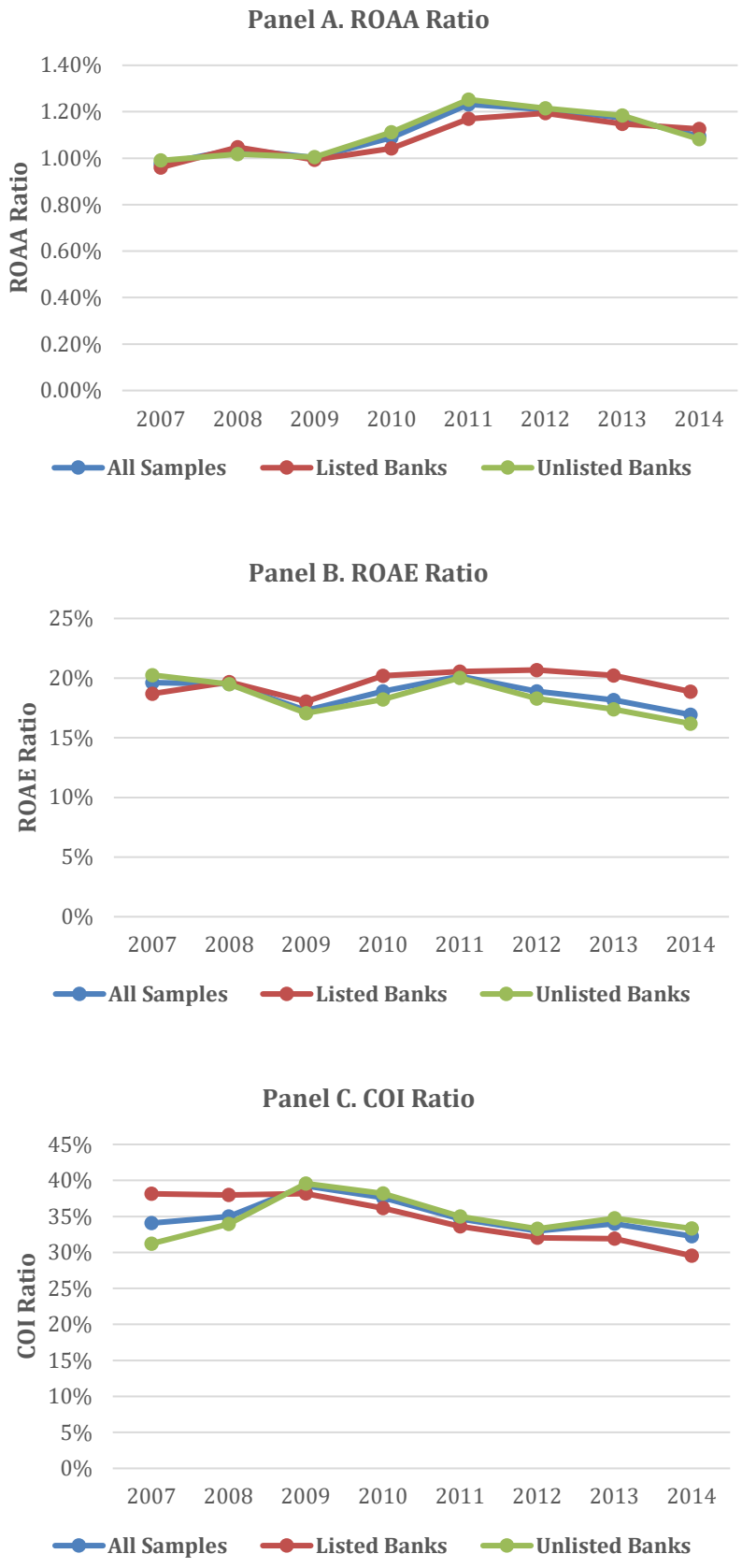
Variables	Median	Mean	STD	Min.	Max.
ROAA Ratio	**0.0110**	**0.0112**	**0.0030**	**0.0011**	**0.022**
Listed banks	0.0113	0.0110	0.0022	0.0041	0.0149
Unlisted banks	0.0109	0.0113	0.0033	0.0011	0.022
ROAE Ratio	**0.1833**	**0.1854**	**0.0493**	**0.0308**	**0.3972**
Listed banks	0.193	0.1969	0.0351	0.1262	0.2741
Unlisted banks	0.1771	0.1813	0.0530	0.0308	0.3972
COI Ratio	**0.3483**	**0.3498**	**0.0662**	**0.1567**	**0.5721**
Listed banks	0.3413	0.3414	0.0558	0.2312	0.4699
Unlisted banks	0.3489	0.3529	0.0695	0.1567	0.5721

Note: STD: standard deviation; Min.: minimum value; Max.: maximum value.

The mean ROAE ratio is 18.54%; however, there is a noticeable difference between the two groups of banks: listed banks have outperformed unlisted banks since 2009 with a mean ROAE of 19.69% and 18.13% respectively. This may be explained by the difference in average equity-to-asset ratios associated with the two groups. As shown in Figure 4-7, although both groups increased their equity-to-asset ratio over the observation period, listed banks tended to have a lower equity-to-asset ratio for almost the whole period, except for 2007. The mean ROAE ratio in this study is higher than 0.14 in Liang, Xu and Jiraporn's (2013). Again, the latter's sample comprises 359 bank-year observations over 2003–2010 of mainly large listed banks. This may explain the lower ROAE ratio in their study. The average COI ratio is 34.98% for the whole sample in the present study, with a slight difference between listed banks (34.14%) and unlisted banks (35.29%).[45] Figure 4-10 shows the time trends for ROAA, ROAE and COI over the sample period.

[45] The probabilities of *t*-tests for sample means between listed banks and unlisted banks in terms of the performance variables and capital-to-asset ratio are 0.0000.

Figure 4-10 Chinese JSCBs and CCBs Performance Trends: 2007–2014



Generally, the ROAA ratio steadily increased between 2008 and 2011 and then started to decrease slowly to around 1.1% in 2014. The ROAE ratio fluctuated by around 18% over the sample period, with two minor peaks in 2009 and 2011. By the end of 2014, listed banks tended to have a higher average ROAE ratio (18.87%) than unlisted banks (16.18%). The COI ratio of listed banks steadily decreased from 38.13% to 29.54% over the sample period, showing an improvement in performance in terms of operating efficiency over time. For unlisted banks, the ratio fluctuated by around 35%, with a major peak in 2009. As a result, the overall COI ratio for the whole sample fluctuated over the study period.

4.7.7 Summary of Descriptive Statistics

According to the descriptive statistics, approximately three quarters (37 of 49) of the sample banks included in the present study are unlisted. Unlisted banks differ from listed banks in relation to lending structure, risk management and CG variables as follows: (i) unlisted banks tend to lend less to the real estate sector and more to the commercial and industrial sectors; (ii) unlisted banks are better capitalised (higher CAR) but less leveraged (lower LTD ratio) with a higher asset risk (higher NPL ratio); and (iii) unlisted banks have a less concentrated shareholding structure (lower BLOCK), less investment by foreign strategic investors (lower OSFOREIGN) and more state shareholders (higher OSSTATE). Unlisted banks also tend to have smaller boards, fewer politically connected directors and more board dependence.

4.8 Correlation Coefficients

Table 4-16 provides the matrix of the Pearson correlation coefficients. The correlation coefficients are usually very small (less than 0.3), indicating that the correlation between variables has a weak association.

Table 4-16 Pearson Correlation Coefficients for the Variables in the Regression Equations

	Serial Number	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
LROAA	1	1							
LROAE	2	0.650104	1						
LCOI	3	−0.35844	−0.36101	1					
BOARDSIZE	4	−0.12519	0.007538	−0.02509	1				
CEO	5	−0.07039	−0.10327	−0.05603	0.126661	1			
BOARDPC	6	−0.12777	−0.11032	0.031531	0.025282	0.03428	1		
BOARDIND	7	0.033908	0.081415	−0.00585	0.348138	0.073941	−0.11892	1	
BLOCK	8	−0.0585	0.045647	−0.018	0.023136	−0.20959	0.029722	0.236855	1
NISGOV	9	0.012446	−0.0527	−0.18658	−0.16051	−0.02144	0.177249	−0.15756	−0.07007
NISSOE	10	−0.20744	−0.02241	0.137907	0.10046	−0.06724	−0.04978	−0.00765	0.243513
NISFOREIGN	11	0.02617	−0.02985	0.018035	0.042583	−0.00835	0.021717	0.066166	−0.01475
OSFOREIGN	12	−0.16051	−0.00775	−0.00834	0.110302	−0.02121	−0.09485	0.21248	0.21505
LIST	13	0.000347	0.167046	−0.05817	0.537696	−0.10397	0.054609	0.490917	0.325506
OSSTATE	14	−0.28618	−0.12452	−0.00584	0.011412	0.010471	0.067049	−0.09635	0.358309
NPL	15	−0.36693	−0.35723	0.103589	−0.06358	−0.03618	−0.12784	−0.13194	−0.05469
CAR	16	0.310395	−0.13142	−0.0584	−0.12797	0.064162	−0.03537	−0.0247	−0.1126
LTD	17	−0.11473	0.006207	0.126591	0.280023	−0.18668	0.164976	0.176189	0.13819
LOANCOM	18	0.230157	0.071337	−0.00678	−0.29972	−0.01143	−0.33845	−0.07833	−0.25899
LOANIND	19	0.073032	−0.05161	0.140132	−0.2372	−0.06604	0.003667	−0.35437	−0.19255
LOANRE	20	−0.16862	−0.04114	−0.05342	0.17601	0.103321	0.193656	0.082943	0.123148
LRED	21	0.180667	0.094063	−0.12474	−0.0315	−0.17963	0.09602	0.096667	−0.10384
BGROWTH	22	0.14552	0.170901	−0.04404	−0.10919	0.025424	−0.02411	−0.13002	−0.03753
(1-TYPE)*LRGD	23	0.20877	−0.14661	−0.10656	−0.47579	0.142856	−0.15617	−0.24485	−0.40649

	Serial Number	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
LROAA	1								
LROAE	2								
LOGCOI	3								
BOARDSIZE	4								
CEO	5								
BOARDPC	6								
BOARDIND	7								
BLOCK	8								
NISGOV	9	1							
NISSOE	10	−0.57086	1						
NISFOREIGN	11	−0.35301	−0.0637	1					
OSFOREIGN	12	−0.13295	0.010496	0.584999	1				
LIST	13	−0.19402	0.087503	0.046126	0.234541	1			
OSSTATE	14	0.182652	0.320794	−0.12552	0.108692	−0.0639	1		
NPL	15	0.140504	−0.0254	0.04831	0.007269	−0.13719	0.174437	1	
CAR	16	0.102267	−0.12474	0.070709	−0.10973	−0.14249	−0.02145	−0.128	1
LTD	17	0.051099	−0.17088	−0.00662	0.106441	0.37375	−0.10042	0.054796	−0.24856
LOANCOM	18	−0.09367	0.056617	−0.10225	−0.19473	−0.35051	−0.20045	−0.05469	0.13733
LOANIND	19	−0.00405	0.001823	−0.05515	−0.18662	−0.24571	−0.16831	−0.104	0.038772
LOANRE	20	0.059027	0.050124	0.000476	0.208075	0.207319	0.148861	0.076762	−0.0895
LRED	21	−0.10014	−0.07634	0.2274	0.042209	−0.02353	−0.2432	−0.1049	−0.06074
BGROWTH	22	−0.09864	0.103091	−0.10522	−0.08503	−0.11803	−0.10348	−0.31092	0.149476
(1−TYPE)*LRGD	23	0.194838	−0.26873	0.071547	−0.20742	−0.64023	−0.03048	0.128129	0.409994

	Serial Number	*17*	*18*	*19*	*20*	*21*	*22*	*23*
LROAA	1							
LROAE	2							
LCOI	3							
BOARDSIZE	4							
CEO	5							
BOARDPC	6							
BOARDIND	7							
BLOCK	8							
NISGOV	9							
NISSOE	10							
NISFOREIGN	11							
OSFOREIGN	12							
LIST	13							
OSSTATE	14							
NPL	15							
CAR	16							
LTD	17	1						
LOANCOM	18	−0.23041	1					
LOANIND	19	0.172256	0.217548	1				
LOANRE	20	−0.03996	−0.32348	−0.52136	1			
LRED	21	0.278275	0.164258	0.336482	−0.39349	1		
BGROWTH	22	−0.21124	0.098795	0.105791	−0.03206	−0.12387	1	
(1-TYPE)*LOG(RGD)	23	−0.51765	0.35923	0.127059	−0.22855	0.030033	0.018679	1

4.9 Summary

This chapter summarised four sets of relationships found in previous research on four aspects pertinent to JSCBs and CCBs in China: (i) lending structure and bank risk management; (ii) bank risk management and bank performance; (iii) CG and bank risk management; and (iv) CG and bank performance. These relationships are pertinent to the main research questions and are captured using two system equations presented in this chapter, which can be statistically tested for the problem of endogeneity associated with CG—particularly board characteristics using the GMM method. This chapter then briefly reviewed existing CG literature in terms of the method chosen to address the endogeneity problem, and it introduced the econometric methods used in this study. Following the discussion of statistical methods, this chapter justified the econometric model to be employed in this study. This was followed by a discussion of the data collection process. Descriptive statistics and the correlation coefficients of the study sample were then reviewed. The next chapter reports the data analysis results and discusses the implications of these results.

CHAPTER 5 RESULTS AND DISCUSSION

5.1 Introduction

Based on the empirical model and methodology proposed in Chapter 4, this chapter reports and discusses the data analysis results. Specifically, Section 5.2 reports the estimation results from the GMM method. Section 5.3 discusses the results regarding the relationships between CG, lending structure, risk management and performance of JSCBs and CCBs. It also discusses the effect of recent banking reforms in terms of CG on CG practice, lending structure, risk management and performance of banks via a *t*-test. Section 5.4 concludes the chapter with a summary.

5.2 Reporting the Estimation Results

As discussed earlier, a key concern for any analysis of board effects is the endogeneity of board structure as found empirically both in generic firms (Bakers & Gompers 2003; Boone et al. 2007; Coles, Daniel & Naveen 2008; Hermalin & Weisbach 2001; Patro, Lehn & Zhao 2009) and banks (Andres & Vallelado 2008; Pathan & Skully 2010). This is because firms structure their boards consistent with the costs and benefits associated with boards' monitoring and advising functions. Therefore, the widely employed OLS estimation is not appropriate for testing SEMs because explanatory variables may be correlated that will violate the assumption of OLS regression. In this case, the OLS regression will generate biased and inconsistent results. In comparison, the GMM method addresses the endogeneity problem of CG mechanisms. In the system equations, one dependent variable is treated as a determinant in another equation, which considers the endogenous determination of independent variables. Thus, the present study uses GMM as the primary analytical tool, while the OLS estimation results are reported in Appendix 1 and Appendix 2.

This study runs simultaneous Equations (4.6)–(4.11) as a system in EViews using the GMM method. Heteroscedastic and autocorrelation consistent estimators were used to calculate the optimal weighting matrix and standard errors to address potential heteroscedasticity and autocorrelation problems associated with time series within the panel data. The instrument variables were the exogenous variables and their lagged terms. The logic is that these variables in earlier years could not have resulted from explained variables in subsequent years (Liang, Xu & Jiraporn 2013). The J-statistics from the Sargan–Hansen test of the system estimation was 0.1730, which means that at the 0.5% significance level, the null hypothesis of a valid system model cannot be rejected.[46] This indicates that the system is not over-identified, and the estimated coefficients can be used for statistical inferences. The following two sections report the estimation results, which are then summarised in Section 5.2.3.

5.2.1 Reporting the Estimation Results on Relationship between Corporate Governance, Lending Structure and Risk Management

The relationship between CG factors, lending structure and bank risk management are estimated using three dependent variables: (i) NPL ratio, (ii) CAR and (iii) LTD ratio. The adjusted R^2 ranges between 0.3258 and 0.7389, and the results for the individual equations are discussed in the following sections.

5.2.1.1 Estimation for NPL Ratio

Table 5-1 summarises the estimated coefficients, standard errors, *t*-statistics and probabilities for the estimation of the NPL ratio.

[46] The Sargan–Hansen J-statistic is used to test whether the model is over-identified, while the null hypothesis is that the system model is valid and the alternative hypothesis is that the model is invalid. The J-statistic follows a chi-square distribution with k-j degree of freedom (k is the number of instruments variable and j is the number of explanatory variables. In this study, the critical chi-square value is 1.34, which is significantly greater than 0.1730. Therefore, the null hypothesis cannot be rejected, and the model is believed to be valid at the 0.5% significance level.

Table 5-1 Estimation Results for NPL Ratio

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	0.00654	0.00174	3.75666	0.00020
NPL(−1)	0.50989	0.06065	8.40665	0.00000
BOARDSIZE	−0.00013	0.00006	−2.20010	0.02800
BOARDPC	−0.00094	0.00133	−0.70372	0.48170
BOARDIND	0.00135	0.00165	0.81822	0.41340
CEO	0.00088	0.00024	3.68951	0.00020
NISFOREIGN*BLOCK	−0.00084	0.00220	−0.37910	0.70470
NISGOV*BLOCK	−0.00164	0.00147	−1.11942	0.26320
NISSOE*BLOCK	−0.00243	0.00141	−1.72177	0.08530
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	−0.00735	0.00262	−2.80306	0.00510
LIST	0.00090	0.00042	2.15100	0.03170
OSSTATE	0.00006	0.00084	0.06758	0.94610
OSFOREIGN	−0.00353	0.00182	−1.94100	0.05250
(1-TYPE)*LRGD	−0.00005	0.00005	−1.10327	0.27010
BGROWTH	−0.00455	0.00080	−5.73107	0.00000
LOANCOM	0.00891	0.00170	5.23593	0.00000
LOANIND	0.00080	0.00159	0.50508	0.61360
LOANRE	−0.00492	0.00382	−1.28727	0.19820

Notes: NPL (−1) is the lagged NPL ratio from the previous year, BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is an SOE and '0' otherwise; OSSTATE is the percentage of shares of the bank held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRGD is the natural logarithm form of the regional government budget deficit; TYPE is a proxy variable that equals '1' if the bank is a JSCB and '0' if a bank is the CCB; BGROWTH is the annual growth rate of a bank's operating income; LOANIND is the percentage of industrial lending to total loans issued; LOANCOM is the percentage of commercial loans; and LOANRE is the percentage of real estate loans. Adjusted R^2 for this estimation is 0.4621; the Durbin–Watson test statistic is 1.6587.

The adjusted R^2 is 0.4621, implying that around 46% of the variation in NPL can be explained by the estimate. Based on the estimation results, NPL can be written as a linear function of a series of CG factors, lending structure variables and control variables:

$$
\begin{aligned}
NPL = \quad & 0.00654 + 0.50989 * NPL(-1) - 0.00013 * BOARDSIZE \\
& - 0.00094 * BOARDPC + 0.00135 * BOARDIND + 0.00088 * CEO \\
& - 0.00084 * NISFOREIGN * BLOCK - 0.00164 * NISGOV \\
& * BLOCK - 0.00243 * NISSOE * BLOCK - 0.00735 \\
& * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + 0.00090 \\
& * LIST + 0.00006 * OSSTATE - 0.00353 * OSFOREIGN - 0.00005 \\
& * (1 - TYPE) * LRGD - 0.00455 * BGROWTH + 0.00891 \\
& * LOANCOM + 0.00080 * LOANIND - 0.00492 * LOANRE
\end{aligned}
\tag{5.1}
$$

Regarding the relationship between CG factors and the NPL ratio, the regression results indicate that board size (prob. = 0.02800), block shareholding by SOEs (prob. = 0.08530) and private sector (prob. = 0.00510) and foreign investor shareholding (prob. = 0.05250) had a significant and negative effect on the NPL ratio. CEO duality (prob. = 0.00020) and public listing (prob. = 0.03170) had a significant and positive effect. Board political connection (prob. = 0.48170), board independence (prob. = 0.41340) and block shareholding by foreign institutional investors (prob. = 0.70470) and government organisations (prob. = 0.26320) had a negative yet non-significant effect. Lastly, state shareholding (prob. = 0.94610) had a positive but non-significant effect on the NPL ratio.

Regarding the relationship between lending structure and the NPL ratio, the estimation results imply that only the ratio of commercial loans (prob. = 0.00000) is statistically significant with a positive effect on the NPL ratio. The variables, ratio of industrial loans (prob. = 0.61360) and real estate loans (prob. = 0.19820) were statistically non-significant, while the former had a positive sign and the latter had a negative sign.

The estimation shows that control variable bank growth (prob. = 0.00000) had a significant and negative effect on the NPL ratio, while regional government budget

deficit (prob. = 0.27010) had a negative yet non-significant effect on the NPL ratio of CCBs.

5.2.1.2 Estimation for CAR

Table 5-2 summarises the estimated coefficients, standard errors, *t*-statistics and probabilities for the estimation of the CAR.

Table 5-2 Estimation Results for the CAR

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	0.05020	0.00996	5.04243	0.00000
CAR(−1)	0.47200	0.07685	6.14215	0.00000
BOARDSIZE	0.00054	0.00021	2.58355	0.00990
BOARDPC	−0.00772	0.00390	−1.98174	0.04770
BOARDIND	−0.00548	0.00518	−1.05956	0.28950
CEO	0.00062	0.00098	0.62705	0.53070
NISFOREIGN*BLOCK	0.03541	0.01538	2.30268	0.02140
NISGOV*BLOCK	0.02352	0.00723	3.25261	0.00120
NISSOE*BLOCK	0.00523	0.00535	0.97726	0.32860
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	−0.00372	0.00952	−0.39051	0.69620
LIST	0.00146	0.00241	0.60667	0.54420
OSSTATE	−0.00127	0.00277	−0.45819	0.64690
OSFOREIGN	−0.02700	0.00735	−3.67246	0.00020
(1-TYPE) *LRGD	0.00095	0.00039	2.44482	0.01460
BGROWTH	0.01309	0.00270	4.84909	0.00000
LOANCOM	0.00062	0.00814	0.07638	0.93910
LOANIND	0.00444	0.00550	0.80773	0.41940
LOANRE	−0.00763	0.01515	−0.50353	0.61470

Notes: CAR (−1) is the lagged CAR from the previous year, BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is an SOE and '0' otherwise; OSSTATE is the percentage of shares of the bank held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRGD is the natural logarithm form of the regional government budget deficit; TYPE is a proxy variable that equals '1' if the bank is a JSCB and '0' if a bank is the CCB; BGROWTH is the annual growth rate of a bank's operating income; LOANIND is the percentage of industrial lending to total loans issued; LOANCOM is the percentage of commercial loans; and LOANRE is the percentage of real estate loans. Adjusted R^2 for this estimation is 0.3258; the Durbin–Watson test statistic is 2.5028.

The adjusted R^2 for this estimation is 0.3258, implying that approximately 33% of the variation in CAR can be explained by the estimation model. Based on the estimation

results, CAR can be written as a linear function of a series of CG factors, lending structure variables and control variables:

$$\begin{aligned} CAR = \quad & 0.05020 + 0.47200 * CAR(-1) + 0.00054 * BOARDSIZE \\ & - 0.00772 * BOARDPC - 0.00548 * BOARDIND + 0.00062 * CEO \\ & + 0.03541 * NISFOREIGN * BLOCK + 0.02352 * NISGOV \\ & * BLOCK + 0.00523 * NISSOE * BLOCK - 0.00372 \\ & * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + 0.00146 \\ & * LIST - 0.00127 * OSSTATE - 0.02700 * OSFOREIGN + 0.00095 \\ & * (1 - TYPE) * LOG(RGD) + 0.01309 * BGROWTH + 0.00062 \\ & * LOANCOM + 0.00444 * LOANIND - 0.00763 * LOANRE \end{aligned} \quad (5.2)$$

Regarding the relationship between CG factors and CAR, the regression results indicate that board size (prob. = 0.00990) and block shareholding by foreign institutional investors (prob. = 0.02140) and government organisations (prob. = 0.00120) had a significant and positive effect on CAR. Board political connection (prob. = 0.04770) and foreign investor shareholding (prob. = 0.00020) had a significant and negative effect on CAR. Board independence (prob. = 0.28950), block shareholding by private sector (prob. = 0.69620) and state shareholding (prob. = 0.64690) had a negative yet non-significant effect on CAR. Lastly, CEO duality (prob. = 0.53070), block shareholding by SOEs (prob. = 0.32860) and public listing (prob. = 0.54420) had a positive but non-significant effect on CAR.

Regarding the relationship between lending structure and CAR, the regression results show that all lending variables are statistically non-significant with positive signs.

The regression results also show that both control variables—bank growth (prob. = 0.00000) and regional government budget deficit (prob. = 0.01460)—had a significant and positive effect on the CAR.

5.2.1.3 Estimation for LTD Ratio

Table 5-3 summarises the estimated coefficients, standard errors, *t*-statistics and probabilities for the estimation of LTD ratio.

Table 5-3 Estimation Results for LTD Ratio

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	−0.07101	0.03233	−2.19626	0.02820
LTD (−1)	1.18213	0.03759	31.45188	0.00000
BOARDSIZE	−0.00073	0.00128	−0.57377	0.56620
BOARDPC	0.02055	0.02010	1.02245	0.30670
BOARDIND	0.02841	0.02691	1.05567	0.29130
CEO	0.00361	0.00531	0.68015	0.49650
NISFOREIGN*BLOCK	−0.11918	0.06365	−1.87249	0.06140
NISGOV*BLOCK	−0.07370	0.03192	−2.30891	0.02110
NISSOE*BLOCK	0.00397	0.02239	0.17741	0.85920
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	−0.05466	0.05345	−1.02269	0.30660
LIST	−0.01591	0.00704	−2.26089	0.02390
OSSTATE	−0.03017	0.01332	−2.26454	0.02370
OSFOREIGN	0.03218	0.04711	0.68300	0.49470
(1-TYPE)*LRGD	0.00208	0.00097	2.14857	0.03180
BGROWTH	−0.04051	0.01357	−2.98518	0.00290
LOANCOM	0.02156	0.02971	0.72561	0.46820
LOANIND	−0.07351	0.03351	−2.19404	0.02840
LOANRE	−0.18196	0.07632	−2.38414	0.01730

Notes: LTD (−1) is the lagged LTD ratio from previous year, BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is an SOE and '0' otherwise; OSSTATE is the percentage of shares of the bank held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRGD is the natural logarithm form of the regional government budget deficit; TYPE is a proxy variable that equals '1' if the bank is a JSCB and '0' if a bank is the CCB; BGROWTH is the annual growth rate of a bank's operating income; LOANIND is the percentage of industrial lending to total loans issued; LOANCOM is the percentage of commercial loans; and LOANRE is the percentage of real estate loans. Adjusted R^2 for this estimation is 0.7398; the Durbin–Watson test statistic is 1.7700.

The adjusted R^2 for this estimation is 0.7398, implying that approximately 74% of the variation in the LTD ratio can be explained by the estimation model. Based on the estimation results, the LTD ratio can be written as a linear function of a series of CG factors, lending structure variables and control variables:

$$\begin{aligned} LTD = \quad & -0.07101 + 1.18213 * LTD(-1) - 0.00073 * BOARDSIZE + 0.02055 \\ & * BOARDPC + 0.02841 * BOARDIND + 0.00361 * CEO - 0.11918 \\ & * NISFOREIGN * BLOCK - 0.07370 * NISGOV * BLOCK + 0.00397 \\ & * NISSOE * BLOCK - 0.05466 \\ & * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK - 0.01591 * LIST \\ & - 0.03017 * OSSTATE + 0.03218 * OSFOREIGN + 0.00208 \\ & * (1 - TYPE) * LRGD - 0.04051 * BGROWTH + 0.02156 * LOANCOM \\ & - 0.07351 * LOANIND - 0.18196 * LOANRE \end{aligned} \tag{5.3}$$

Regarding the relationship between CG factors and LTD ratio, the regression results indicate that block shareholding by foreign institutional investors (prob. = 0.06140) and government organisations (prob. = 0.02110), public listing (prob. = 0.02390) and state shareholding (prob. = 0.02370) had a negative effect on the LTD ratio. Board size (prob. = 0.56620) and block shareholding by private sector (prob. = 0.30660) had a negative yet non-significant effect on the LTD ratio. Lastly, board political connection (prob. = 0.30670), board independence (prob. = 0.29130), CEO duality (prob. = 0.49650), block shareholding by SOE (prob. = 0.85920) and foreign shareholding (prob. = 0.49470) had a positive but non-significant effect on the LTD ratio.

Regarding the relationship between lending structure and the LTD ratio, the estimation results show that both the ratio of industrial loan (prob. = 0.02840) and real estate loans (prob. = 0.01730) are statistically significant with a negative sign. The ratio of commercial loans (prob. = 0.46820) is not statistically significant with a positive sign.

The estimation results also show that both control variables are statistically significant. Specifically, regional government budget deficit (prob. = 0.03180) had a positive effect on the LTD ratio, while bank growth rate (prob. = 0.00290) had a negative effect.

5.2.1.4 Summary of Hypotheses Testing Results Based on the Regression between Corporate Governance, Lending Structure and Risk Management (H_1–H_6)

Research Question 1: Do CG factors and lending structure of banks have significant effects on the risk management of JSCBs and CCBs?

To answer Research Question 1, the estimation between CG, lending structure and risk management of JSCBs and CCBs was carried out, and the estimation results indicate different directions of relationships between these factors, as summarised in Table 5-4.

According to the regression results, no CG factor or lending structure variable had a consistent effect on any of the risk management variables. Specifically, among CG variables, board size had a significant and negative effect on the NPL ratio and a significant and positive effect on the CAR, which supports hypotheses H_{1A} and H_{2A}.[47] Board political connection had a significant and negative effect on the CAR, which supports hypothesis H_{2B}. Board independence does not have a significant effect on any of the risk management variables, therefore failing to support hypotheses H_{1C}, H_{2C} and H_{3C}. CEO duality had a significant and positive effect on the NPL ratio, which supports hypothesis H_{1D}. Block shareholding by foreign institutional investors had a significant and positive effect on the CAR and a significant and negative effect on the LTD ratio, which supports hypotheses H_{2E} and H_{3E}. Block shareholding by government

[47] The numbering of the hypotheses mentioned in this section are located in table 4-2 through to table 4-5 (see Section 4.5). These hypotheses were initially proposed in Chapter 2 and Chapter 3 (see Sections 2.3, 2.4 and 3.7).

organisations had a significant and positive effect on the CAR and a significant and negative effect on the LTD ratio, which supports hypotheses H_{2F} and H_{3F}. Block shareholding by SOEs and private sector had a significant and negative effect on the NPL ratio, which supports hypotheses H_{1G} and H_{1H}. Public listing status had a significant and positive effect on the NPL ratio, which does not support hypothesis H_{1I}, and a significant and negative effect on the LTD ratio, which supports hypothesis H_{3I}. State shareholding had a significant and negative effect on the LTD ratio, which does not support hypothesis H_{3J}. Foreign shareholding had a significant and negative effect on both the NPL ratio, which supports hypothesis H_{1K}, and a significant and negative effect on the CAR, which does not support hypothesis H_{2K}.

Regarding lending structure variable and risk management variables of JSCBs and CCBs, the ratio of commercial loans is positively related to the NPL ratio with statistical significance, which does not support H_{4A}. The ratio of industrial loans had a significant and negative effect on the LTD ratio, which supports hypothesis H_{6B}, while the ratio of real estate loans had a significant and negative impact on the LTD ratio, which does not supports hypothesis H_{6C}.

The control variable bank growth rate had a significant effect on all three risk management variables, while the regional government budget deficit variable had a significant and positive effect on the CAR and a significant and negative effect on the LTD ratio. These results are further discussed in Sections 5.3.1 and 5.3.2.

Table 5-4 Summary of Hypotheses Testing Results Based on the Estimation between Corporate Governance, Lending Structure and Risk Management

	NPL	CAR	LTD
CG Variables			
BOARDSIZE	**NS**	**PS**	**NI**
	H_{1A} is **supported**	H_{2A} is **supported**	H_{3A} is **not supported**
BOARDPC	**NI**	**NS**	**PI**
	H_{1B} is **not supported**	H_{2B} is **supported**	H_{3B} is **not supported**
BOARDIND	**PI**	**NI**	**PI**
	H_{1C} is **not supported**	H_{2C} is **not supported**	H_{3C} is **not supported**
CEO	**PS**	**PI**	**PI**
	H_{1D} is **supported**	H_{2D} is **not supported**	H_{3D} is **not supported**
NISFOREIGN*BLOCK	**NI**	**PS**	**NS**
	H_{1E} is **not supported**	H_{2E} is **supported**	H_{3E} is **supported**
NISGOV*BLOCK	**NI**	**PS**	**NS**
	H_{1F} is **not supported**	H_{2F} is **supported**	H_{3F} is **supported**
NISSOE*BLOCK	**NS**	**PI**	**PI**
	H_{1G} is **supported**	H_{2G} is **not supported**	H_{3G} is **not supported**
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	**NS**	**NI**	**NI**
	H_{1H} is **supported**	H_{2H} is **not supported**	H_{3H} is **not supported**
LIST	**PS**	**PI**	**NS**
	H_{1I} is **not supported**	H_{2I} is **not supported**	H_{3I} is **supported**
OSSTATE	**PI**	**NI**	**NS**
	H_{1J} is **not supported**	H_{2J} is **not supported**	H_{3J} is **supported**
OSFOREIGN	**NS**	**NS**	**PI**
	H_{1K} is **supported**	H_{2K} is **not supported**	H_{3K} is **not supported**
Lending Structure Variables			
LOANCOM	**PS**	**PI**	**PI**
	H_{4A} is **supported**	H_{5A} is not **supported**	H_{6A} is not **supported**
LOANIND	**PI**	**PI**	**NS**
	H_{4B} is **not supported**	H_{5B} is **not supported**	H_{6B} is **supported**
LOANRE	**NI**	**NI**	**NS**
	H_{4C} is **not supported**	H_{5C} is **not supported**	H_{6C} is **not supported**
Control Variables			
BGROWTH	**NS**	**PS**	**NS**
(1-TYPE)*LRGD	**NI**	**PS**	**NS**

Notes: In reporting the hypothesis-testing results, the descriptions 'supported' or 'not supported' refer to the alternative hypothesis, implying rejecting or not rejecting the null hypothesis respectively. **PS:** positive and statistically significant; **NS:** negative and statistically significant; **PI:** positive and not statistically significant; **NI:** negative and not statistically significant. Confidence level is 10%.

5.2.2 Reporting Estimation Results on Relationship between Corporate Governance, Risk Management and Performance

The relationship between CG factors, risk management and performance of JSCBs and CCBs was estimated along with the three system equations reported in Section 5.2.1. Three dependent variables were included in the system equations: (i) natural logarithm form of the return on average assets (LROAA) ratio; (ii) natural logarithm form of the return on average equity (LROAE) ratio; and (iii) natural logarithm form of the COI (LCOI) ratio. The adjusted R^2 ranges between 0.4328 and 0.5959, and the results for the individual equations are discussed in the following sections.

5.2.2.1 Estimation for LROAA

Table 5-5 summarises the estimated coefficients, standard errors, t-statistics and probabilities for LROAA. The adjusted R^2 for this estimation is 0.5959, implying that approximately 59.6% of the variation in LROAA can be explained by the estimation equation.

Table 5-5 Estimation Results for LROAA

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	−2.62897	0.38616	−6.80801	0.00000
LROAA(−1)	0.49540	0.06123	8.09098	0.00000
BOARDSIZE	0.00020	0.00356	0.05720	0.95440
BOARDPC	−0.26641	0.07736	−3.44370	0.00060
BOARDIND	−0.26760	0.08514	−3.14327	0.00170
CEO	−0.02672	0.01513	−1.76637	0.07760
NISFOREIGN*BLOCK	0.88512	0.19403	4.56174	0.00000
NISGOV*BLOCK	0.32530	0.08979	3.62298	0.00030
NISSOE*BLOCK	0.08130	0.06166	1.31858	0.18750
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	0.55254	0.21324	2.59119	0.00970
LIST	0.04405	0.01936	2.27563	0.02300
OSSTATE	0.11572	0.05175	2.23591	0.02550
OSFOREIGN	−0.56739	0.16633	−3.41128	0.00070
LRED	0.03835	0.01674	2.29133	0.02210
BGROWTH	0.17948	0.05589	3.21105	0.00140
LTD	−0.10459	0.09881	−1.05855	0.29000
NPL	−13.47557	6.19431	−2.17548	0.02980
CAR	1.70531	1.06046	1.60808	0.10800

Notes: LROAA (−1) is the natural logarithm of the ROAA ratio from the previous period; BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is a SOE and '0' otherwise; OSSTATE is the percentage of bank shares held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRED is the natural logarithm form of regional GDP; BGROWTH is the annual growth rate of a bank's operating income. Adjusted R^2 for this estimation is 0.5959; the Durbin–Watson test statistic is 1.2688.

Based on the estimation results, LROAA can be written as a linear function of a series of CG factors, risk management variables and control variables:

$$\begin{aligned} LROAA = \quad & -2.62987 + 0.49540 * LROAA(-1) + 0.00020 * BOARDSIZE - 0.26641 \\ & * BOARDPC - 0.26760 * BOARDIND - 0.02672 * CEO + 0.88512 \\ & * NISFOREIGN * BLOCK + 0.32530 * NISGOV * BLOCK + 0.08130 \\ & * NISSOE * BLOCK + 0.55254 \\ & * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + 0.04405 * LIST \\ & + 0.11572 * OSSTATE - 0.56739 * OSFOREIGN + 0.03835 * LRED \\ & + 0.17948 * BGROWTH - 0.10459 * LTD - 13.47557 * NPL + 1.70531 \\ & * CAR \end{aligned} \tag{5.4}$$

Regarding the relationship between CG factors and LROAA, the regression results indicate that block shareholding by foreign investors (prob. = 0.00000), government organisations (prob. = 0.00030) and the private sector (prob. = 0.00970), state shareholding (prob. = 0.02550) and ownership concentration measured by public listing (prob. = 0.02300) had a significant and positive effect on LROAA. Political connection of board (prob. = 0.00060), independent directors on board (prob. = 0.00170), CEO duality (prob. = 0.07760) and foreign investor shareholding (prob. = 0.00070) had a significant and negative effect on LROAA. Lastly, board size (prob. = 0.95440) and block shareholding by SOEs (prob. = 0.18750) are not significant yet had negative signs.

Regarding the relationship between risk management and LROAA, the regression results show that the NPL ratio (prob. = 0.02980) is statistically significant with a negative effect on LROAA. The CAR (prob. = 0.10800) had a significant and positive effect on LROAA, and the LTD ratio (prob. = 0.29000) had no significant effect on LROAA with a negative sign.

The regression results indicate that both control variables—regional economic development (prob. = 0.02210) measured by regional GDP and bank growth rate (prob. = 0.00140)—had a significant and positive effect on LROAA.

5.2.2.2 Estimation for LROAE

Table 5-6 summarises the estimated coefficients, standard errors, *t*-statistics and probabilities for the estimation of LROAE. The adjusted R^2 for this estimation is 0.4328, implying that approximately 43.3% of the variation in LROAE can be explained by the estimation equation.

Table 5-6 Estimation Results for LROAE

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	−0.59291	0.28832	−2.05640	0.03990
LROAE(−1)	0.32995	0.06558	5.03109	0.00000
BOARDSIZE	−0.00283	0.00554	−0.51193	0.60880
BOARDPC	−0.31324	0.09262	−3.38195	0.00070
BOARDIND	−0.16166	0.10379	−1.55757	0.11960
CEO	−0.01504	0.01993	−0.75435	0.45080
NISFOREIGN*BLOCK	0.58901	0.18874	3.12074	0.00180
NISGOV*BLOCK	0.22906	0.10530	2.17525	0.02980
NISSOE*BLOCK	−0.16549	0.07352	−2.25087	0.02460
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	0.19938	0.22768	0.87572	0.38130
LIST	0.12500	0.02320	5.38847	0.00000
OSSTATE	0.23027	0.04895	4.70454	0.00000
OSFOREIGN	−0.54100	0.17693	−3.05772	0.00230
LRED	0.03793	0.01841	2.05985	0.03960
BGROWTH	0.22074	0.06082	3.62974	0.00030
LTD	−0.30460	0.09234	−3.29872	0.00100
NPL	−23.33492	7.11645	−3.27901	0.00110
CAR	−4.06043	1.11287	−3.64860	0.00030

Notes: LROAE (−1) is the natural logarithm of the ROAE ratio from the previous period; BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is an SOE and '0' otherwise; OSSTATE is the percentage of shares of the bank held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRED is the natural logarithm form of regional GDP; BGROWTH is the annual growth rate of a bank's operating income. Adjusted R^2 for this estimation is 0.4328; the Durbin–Watson test statistic is 1.2015.

Based on the estimation results, LROAE can be written as a linear function of a series of CG factors, risk management variables and control variables:

$$\begin{aligned} LROAE = \quad & -0.59291 + 0.32995 * LROAE(-1) - 0.00283 * BOARDSIZE - 0.31324 \\ & * BOARDPC - 0.16166 * BOARDIND - 0.01504 * CEO + 0.58901 \\ & * NISFOREIGN * BLOCK + 0.22906 * NISGOV * BLOCK - 0.16549 \\ & * NISSOE * BLOCK + 0.19938 \\ & * (1 - NISGOV - NISSOE - NISFOREIGN) * BLOCK + 0.12500 * LIST \\ & + 0.23027 * OSSTATE - 0.54100 * OSFOREIGN + 0.03793 * LRED \\ & + 0.22074 * BGROWTH - 0.30460 * LTD - 23.33492 * NPL - 4.06043 \\ & * CAR \end{aligned} \tag{5.5}$$

Regarding the relationship between CG factors and LROAE, the regression results indicate that block shareholding by foreign investors (prob. = 0.00180) and government organisations (prob. = 0.02980), public listing (prob. = 0.00000) and state shareholding (prob. = 0.00000) had a significant and positive effect on LROAE. Additionally, the variable political connection of board (prob. = 0.00070), block shareholding by SOEs (prob. = 0.02460) and foreign investor shareholding (prob. = 0.00230) had a significant and negative effect on LROAE. The results indicate that board size (prob. = 0.60880), independent directors on board (prob. = 0.11960), CEO duality (prob. = 0.45080) and block shareholding by private sector (prob. = 0.38130) are not significant.

Regarding the relationship between risk management and LROAE, the regression results show that all risk management variables—LTD ratio (prob. = 0.00100), NPL ratio (prob. = 0.00110) and CAR (prob. = 0.00030)—had a significant and negative effect on LROAE.

The regression results also show that both control variables—regional economic development (prob. = 0.03960) measured by regional GDP and bank growth (prob. = 0.00030)—had a significant and negative effect on LCOI. These results are discussed further in Sections 5.3.3 and 5.3.4.

5.2.2.3 Estimation for LCOI

Table 5-7 summarises the estimated coefficients, standard errors, *t*-statistics and probabilities for the estimation of LCOI. The adjusted R^2 for this estimation is 0.4849, implying that approximately 48.5% of the variation in LCOI can be explained by the estimate.

Table 5-7 Estimation Results for LCOI

Explanatory Variables	Coefficient	Std. Error	*t*-statistic	Prob.
Constant	0.02804	0.15217	0.18426	0.85380
LCOI(−1)	1.05176	0.05807	18.11082	0.00000
BOARDSIZE	0.00152	0.00269	0.56618	0.57140
BOARDPC	0.09676	0.03962	2.44195	0.01470
BOARDIND	−0.15076	0.05489	−2.74648	0.00610
CEO	−0.02739	0.00960	−2.85149	0.00440
NISFOREIGN*BLOCK	−0.15634	0.10926	−1.43094	0.15270
NISGOV*BLOCK	−0.06682	0.07222	−0.92515	0.35510
NISSOE*BLOCK	0.14195	0.04764	2.97962	0.00290
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	0.26147	0.12407	2.10737	0.03530
LIST	−0.03819	0.01589	−2.40434	0.01630
OSSTATE	−0.13970	0.02965	−4.71139	0.00000
OSFOREIGN	0.28555	0.07802	3.66013	0.00030
LRED	−0.00918	0.00923	−0.99485	0.32000
BGROWTH	−0.26105	0.04379	−5.96128	0.00000
LTD	−0.09366	0.06805	−1.37635	0.16890
NPL	7.63203	3.76412	2.02757	0.04280
CAR	1.63274	0.67829	2.40715	0.01620

Notes: LCOI (−1) is the natural logarithm of the COI ratio from the previous period; BOARDSIZE is the number of directors on the board; BOARDPC is the percentage of politically connected directors on the board; BOARDIND is the percentage of independent directors on the board; CEO is a dummy variable that equals '1' if the chair or deputy chair of the board serves as the CEO and '0' otherwise; NISFOREIGN is a dummy variable that equals '1' if the largest shareholder of the bank is a foreign investor and '0' otherwise; NISGOV is a dummy variable that equals '1' if the largest shareholder of the bank is the state/local government organisation and '0' otherwise; NISSOE is a dummy variable that equals '1' if the largest shareholder of the bank is an SOE and '0' otherwise; OSSTATE is the percentage of shares of the bank held by the finance bureau, other state or local government and SOEs; OSFOREIGN is the percentage of bank shares held by foreign entities; LRED is the natural logarithm form of regional GDP; BGROWTH is the annual growth rate of a bank's operating income. Adjusted R^2 for this estimation is 0.4849; the Durbin–Watson test statistic is 2.0267.

Based on the estimation results, LCOI can be written as a linear function of a series of CG factors, risk management variables and control variables:

$$\begin{aligned} LCOI = \quad & 0.02804 + 1.05176 * LCOI(-1) + 0.00152 * BOARDSIZE + 0.09676 \\ & * BOARDPC - 0.15076 * BOARDIND - 0.02739 * CEO - 0.15634 \\ & * NISFOREIGN * BLOCK - 0.06682 * NISGOV * BLOCK + 0.14195 \\ & * NISSOE * BLOCK + 0.26147 * (1 - NISGOV - NISSOE \\ & - NISFOREIGN) * BLOCK - 0.03819 * LIST - 0.13970 * OSSTATE \\ & + 0.28555 * OSFOREIGN - 0.00918 * LRED - 0.26105 * BGROWTH \\ & - 0.09366 * LTD + 7.63203 * NPL + 1.63274 * CAR \end{aligned} \tag{5.6}$$

Regarding the relationship between CG factors and LCOI, the regression results indicate that political connection of board (prob. = 0.01470), block shareholding by

SOEs (prob. = 0.00290) and private sector (prob. = 0.03530) and foreign investor shareholding (prob. = 0.00030) had a significant and positive effect on LCOI, while independent directors on board (prob. = 0.00610), CEO duality (prob. = 0.00440), public listing (prob. = 0.01630) and state shareholding (prob. = 0.00000) had a significant and negative effect on LCOI. Lastly, board size (prob. = 0.57140), block shareholding by foreign institutional investors (prob. = 0.15270) and government institutions (prob. = 0.35510) are not statistically significant.

Regarding the relationship between risk management and LCOI, the regression results show that both the NPL ratio (prob. = 0.04280) and CAR (prob. = 0.01620) are statistically significant with a positive effect on LCOI, while the LTD ratio (prob. = 0.16890) is statistically non-significant with a negative sign.

The regression results also indicate that the control variable bank growth (prob. = 0.00000) had a significant and positive effect on LCOI, while regional economic development (prob. = 0.32000) measured by regional GDP did not have significant effect on LCOI.

5.2.2.4 Summary of Hypotheses Testing Results Based on the Regression between Corporate Governance, Risk Management and Bank Performance (H_7–H_{12})

Research Question 2: Do CG factors and risk management of banks have significant effects on the performance of JSCBs and CCBs?

To answer Research Question 2, the estimation was conducted between CG, risk management and performance of JSCBs and CCBs. The estimation results indicate different directions of relationships between these factors, which are summarised in Table 5-8.

According to the estimation results, among the CG mechanisms included in this study, public listing and state shareholding had a significant and positive effect consistently for all three banking performance measurements (LROAA, LROAE and LCOI) in that public-listed banks and banks with a higher percentage of state shares exhibited better performance (higher LROAA and LROAE) and higher efficiency (lower LCOI). Meanwhile, banks with more politically connected directors and a higher percentage of foreign investors' shares were associated with lower profitability (lower LROAA and LROAE) and lower efficiency (higher LCOI). Among the risk management variables, both the NPL ratio and CAR had a consistent significant effect on the three banking performance variables: higher NPL ratio is associated with lower profitability (lower LROAA and LROAE) and lower efficiency (higher LCOI), while higher CAR is associated with better asset profitability (higher LROAA), but lower efficiency of use of capital (lower LROAE) and lower efficiency (higher LCOI).

More specifically, in relation to CG factors, board size does not have a significant impact on LROAA, LROAE or LCOI, failing to support H_{7A}, H_{8A} and H_{9A}. Politically connected board had a significant and negative effect on LROAA and LROAE (i.e., profitability) and a significant and positive effect on LCOI of banks, which supports hypotheses H_{7B}, H_{8B} and H_{9B}. Board independence had a negative effect on both LROAA and LCOI with statistical significance, which supports hypothesis H_{9C} but not H_{7C}. CEO duality had a significant and negative effect on LROAA and LCOI, which supports hypothesis H_{7D} but not H_{9D}.

Block shareholding by foreign institutional investors had a significant and positive effect on LROAA and LROAE, which supports hypotheses H_{7E} and H_{8E}. Block shareholding by government organisations had a significant and positive effect on LROAA and LROAE, which supports hypotheses H_{7F} and H_{8F}. Block shareholding by

SOEs had a significant and negative effect on LROAE and a significant and positive effect on LCOI, which supports hypotheses H_{8G} and H_{9G}. Block shareholding by the private sector had a significant and positive effect on LROAA and LCOI, which supports hypotheses H_{7H} and H_{9H}. Public listing had a significant and positive effect on LROAA and LROAE and a significant and negative effect on LCOI, which supports hypotheses $H_{7I,}$ H_{8I} and H_{9I} respectively.

State shareholding had a significant and positive effect on LROAA and LROAE and a significant and negative effect on LCOI, which does not support hypotheses H_{7J}, H_{8J} or H_{9J}. Lastly, foreign shareholding had a significant and negative effect on both LROAA and LROAE and a significant and positive effect on LCOI, which does not support hypotheses H_{7K}, H_{8K} and H_{9K}.

Regarding risk management variables and performance of JSCBs and CCBs, the LTD ratio had a significant and negative effect on LROAE and LCOI, which supports H_{11A} and H_{12A}. The NPL ratio had a significant and negative effect on LROAA and LROAE and a positive effect on LCOI, which supports hypotheses H_{10B}, H_{11B} and H_{12B}. The CAR had a significant and positive effect on LROAA and LCOI and a significant and negative effect on LROAE, which supports hypotheses H_{10C} and H_{12C} but not H_{11C} respectively.

Control variable BGROWTH had a significant and positive effect on all performance variables, while LRED had a significant and positive effect on LROAA and LROAE. These results are discussed further in Sections 5.5.1 and 5.5.2.

Table 5-8 Summary of Hypotheses Testing Results Based on the Regression between Corporate Governance, Risk Management and Bank Performance

	LROAA	LROAE	LCOI
CG Variables			
BOARDSIZE	**PI** H_{7A} is **not supported**	**NI** H_{8A} is **not supported**	**PI** H_{9A} is **not supported**
BOARDPC	**NS** H_{7B} is **supported**	**NS** H_{8B} is **supported**	**PS** H_{9B} is **supported**
BOARDIND	**NS** H_{7C} is **not supported**	**NI** H_{8C} is **not supported**	**NS** H_{9C} is **supported**
CEO	**NS** H_{7D} is **supported**	**NI** H_{8D} is **not supported**	**NS** H_{9D} is **not supported**
NISFOREIGN*BLOCK	**PS** H_{7E} is **supported**	**PS** H_{8E} is **supported**	**NI** H_{9E} is **not supported**
NISGOV*BLOCK	**PS** H_{7F} is **supported**	**PS** H_{8F} is **supported**	**NI** H_{9F} is **not supported**
NISSOE*BLOCK	**PI** H_{7G} is **not supported**	**NS** H_{8G} is **supported**	**PS** H_{9G} is **supported**
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	**PS** H_{7H} is **supported**	**PI** H_{8H} is **not supported**	**PS** H_{9H} is **supported**
LIST	**PS** H_{7I} is **supported**	**PS** H_{8I} is **supported**	**NS** H_{9I} is **supported**
OSSTATE	**PS** H_{7J} is **not supported**	**PS** H_{8J} is **not supported**	**NS** H_{9J} is **not supported**
OSFOREIGN	**NS** H_{7K} is **not supported**	**NS** H_{8K} is **not supported**	**PS** H_{9K} is **not supported**
Risk Management Variables			
LTD	**NI** H_{10A} is **not supported**	**NS** H_{11A} is **supported**	**NS** H_{12A} is **supported**
NPL	**NS** H_{10B} is **supported**	**NS** H_{11B} is **supported**	**NS** H_{12B} is **supported**
CAR	**PS** H_{10C} is **supported**	**NS** H_{11C} is **not supported**	**PS** H_{12C} is **supported**
Control Variables			
LRED	**PS**	**PS**	**NI**
BGROWTH	**PS**	**PS**	**NS**

Notes: In reporting the hypothesis-testing results, the descriptions 'supported' or 'not supported' refer to the alternative hypothesis, implying rejecting or not rejecting the null hypothesis respectively. **PS:** positive and statistically significant; **NS:** negative and statistically significant; **PI:** positive and not statistically significant; **NI:** negative and not statistically significant. Confidence level is 10%.

5.2.3 Summary of the Estimation Results

The estimation results reported in Sections 5.2.1 and 5.2.2 are presented in Table 5-9.

Table 5-9 Summary of Estimation Results

Explanatory Variables	NPL	CAR	LTD	LROAA	LROAE	LCOI
Constant	0.00654***	0.05020***	−0.07101**	−2.62897***	−0.59291**	0.02804
	(3.76)	(5.04)	(−2.20)	(−6.81)	(−2.06)	(0.18)
Explained Lagged Variable	0.50989***	0.47200***	1.18213***	0.49540***	0.32995***	1.05176***
	(8.41)	(6.14)	(31.45)	(8.09)	(5.03)	(18.11)
BOARDSIZE	−0.00013**	0.00054***	−0.00073	0.00020	−0.00283	0.00152
	(−2.20)	(2.58)	(−0.57)	(0.06)	(−0.51)	(0.57)
BOARDPC	−0.00094	−0.00772**	0.02055	−0.26641***	−0.31324***	0.09676***
	(−0.70)	(−1.98)	(1.02)	(−3.44)	(−3.38)	(2.44)
BOARDIND	0.00135	−0.00548	0.02841	−0.26760***	−0.16166	−0.15076***
	(0.82)	(−1.06)	(1.06)	(−3.14)	(−1.56)	(−2.75)
CEO	0.00088***	0.00062	0.00361	−0.02672**	−0.01504	−0.02739***
	(3.69)	(0.63)	(0.68)	(−1.77)	(−0.75)	(−2.85)
NISFOREIGN*BLOCK	−0.00084	0.03541**	−0.11918*	0.88512***	0.58901***	−0.15634
	(−0.38)	(2.30)	(−1.87)	(4.56)	(3.12)	(−1.43)
NISGOV*BLOCK	−0.00164	0.02352***	−0.07370**	0.32530***	0.22906**	−0.06682
	(−1.12)	(3.25)	(−2.31)	(3.62)	(2.18)	(−0.93)
NISSOE*BLOCK	−0.00243*	0.00523	0.00397	0.08130	−0.16549**	0.14195***
	(−1.72)	(0.98)	(0.18)	(1.32)	(−2.25)	(2.98)
(1-NISGOV-NISSOE-NISFOREIGN)*BLOCK	−0.00735***	−0.00372	−0.05466	0.55254***	0.19938	0.26147**
	(−2.80)	(−0.39)	(−1.02)	(2.59)	(0.88)	(2.11)
LIST	0.00090**	0.00146	−0.01591**	0.04405**	0.12500***	−0.03819***
	(2.15)	(0.61)	(−2.26)	(2.28)	(5.39)	(−2.40)
OSSTATE	0.00006	−0.00127	−0.03017**	0.11572**	0.23027***	−0.13970***
	(0.07)	(−0.46)	(−2.26)	(2.24)	(4.70)	(−4.71)
OSFOREIGN	−0.00353**	−0.02700***	0.03218	−0.56739***	−0.54100***	0.28555***
	(−1.94)	(−3.67)	(0.68)	(−3.41)	(−3.06)	(3.66)
LRED	–	–	–	0.03835**	0.03793**	−0.00918
				(2.29)	(2.06)	(−0.99)
(1-TYPE)*LRGD	−0.00005	0.00095**	0.00208**	–	–	–
	(−1.10)	(2.44)	(2.15)			
BGROWTH	−0.00455***	0.01309***	−0.04051***	0.17948***	0.22074***	−0.26105***
	(−5.73)	(4.85)	(−2.99)	(3.21)	(3.63)	(−5.96)
LTD	–	–	–	−0.10459	−0.30460***	−0.09366*
				(−1.06)	(−3.30)	(−1.38)
NPL	–	–	–	−13.4756**	−23.335***	7.63203**
				(−2.18)	(−3.28)	(2.03)
CAR	–	–	–	1.70531*	−4.06043***	1.63274**
				(1.61)	(−3.65)	(2.41)
LOANCOM	0.00891***	0.00062	0.02156	–	–	–
	(5.24)	(0.08)	(0.73)			
LOANIND	0.00080	0.00444	−0.07351**	–	–	–
	(0.51)	(0.81)	(−2.19)			
LOANRE	−0.00492	−0.00763	−0.18196**	–	–	–
	(−1.29)	(−0.50)	(−2.38)			
Adjusted R^2	**0.4621**	**0.3258**	**0.7398**	**0.5959**	**0.4328**	**0.4849**

Notes: Table is based on the results of the GMM estimation of Equations (4.6)–(4.11) outlined in Chapter 4. LROAA, LROAE and LCOI are the natural logarithm forms of ROAA, ROAE and COI, respectively. Figures in parentheses are *t*-statistics. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively. Instrument variables were exogenous variables with a one-period lagged term.

5.2.4 Reporting the Results of the Effect of Banking Reform

The banking reform undertaken in 2009 included two important aspects. First, the CBRC adjusted the market access policy for branches and sub-branches of small and medium commercial banks,[48] which are mainly CCBs and RCBs. Second, the CBRC provided additional guidelines for CG for JSCBs and small and medium commercial banks.[49]

The effect of introducing these changes is determined by performing *t*-tests on the sample mean of CG, risk management, lending structure and performance variables before and after the reforms. Table 5-10 summarises the *t*-test results. The results indicate that the banking reform with respect to CG practice was most effective in enhancing board independence by increasing the percentage of independent directors on the board from 22.90% to 28.13%. However, for other CG mechanisms, the effect of reform was not significant. In terms of lending structure of banks, banks allocated more lending assets to the commercial sector after the reform. The commercial loan ratio increased from 12.80% to 17.17%, while loans issued to the real estate sector decreased from 8.02% to 6.83%. The change in the industrial loan ratio was not significant. Regarding the risk management of JSCBs and CCBs, the NPL ratio and LTD ratio significantly decreased from 1.34% and 67.27% to 0.88% and 63.76% respectively, while the CAR increased from 12.00% to 12.54%. Regarding performance of JSCBs and CCBs, banks had significantly higher ROAA and lower COI after 2009, indicating an improvement in profitability and efficiency. The change to ROAE was not significant.

[48] See Opinions on the Adjustment to the Market Access Policy for Branches and Sub-branches of Small and Medium Commercial Banks (Provisional), Notice of CBRC [2009] No. 143, CBRC.
[49] See Guiding Opinions on Improving Corporate Governance of Small and Medium Commercial Banks, Notice of CBRC [2009] No. 15, CBRC. This guideline was abolished in 2013 by the updated Guidelines on Corporate Governance of Commercial Banks, Notice of CBRC [2014] No. 34.

Table 5-10 Effect of Reform on Corporate Governance Practice, Risk Management and Performance of Chinese JSCBs and CCBs: Before–After Analysis

Variables	2007–2009	2010–2014	Prob.
Panel A—CG Variables			
BOARDSIZE	13.85	13.92	0.8497
BOARDPC	31.46%	33.62%	0.2510
BOARDIND	22.90%	28.13%	0.0003
CEO	31.25%	34.26%	0.6246
BLOCK	18.47%	18.84%	0.7996
OSSTATE	35.50%	35.14%	0.8935
OSFOREIGN	5.98%	6.01%	0.9803
Panel B—Risk Management Variables			
CAR	12.00%	12.54%	0.0943
NPL	1.34%	0.88%	0.0000
LTD	67.27%	63.76%	0.0034
Panel C—Lending Structure Variables			
LOANCOM	12.80%	17.17%	0.0000
LOANIND	24.50%	24.24%	0.8520
LOANRE	8.02%	6.83%	0.0713
Panel D—Bank Performance Variables			
ROAA	1.01%	1.16%	0.0002
ROAE	18.45%	18.58%	0.8623
COI	36.86%	34.28%	0.0044

Notes: Table provides information on the sample mean of CG, risk management, lending structure and performance of Chinese JSCBs and CCBs for two periods: 2007–2009 and 2010–2014. The reforms introduced in 2009 were made to expand the operation of CCBs and improve CG practice. The last column reports the probability for two-tail *t*-tests for each variable.

5.3 Discussion of the Estimation Results

Section 5.2 reported the estimation results for two sets of relationships: (i) the relationship between bank lending structure, CG factors and risk management of JSCBs and CCBs; and (ii) the relationship between bank risk management, CG factors and performance of JSCBs and CCBs. The following sections discuss the estimation results and the effect of banking reform on lending structure, CG practice, risk management and performance of JSCBs and CCBs.

5.3.1 Relationship between Corporate Governance and Risk Management

The next section discusses the relationship between various CG factors and risk management of JSCBs and CCBs.

5.3.1.1 Relationship between Board Size and Risk Management

This study tested the relationship between board size and risk management of JSCBs and CCBs. The estimation results reveal that board size had a significant and negative effect on the NPL and a significant and positive effect on the CAR. The effect on the LTD ratio was not significant with a negative sign. This indicates that increasing board size may effectively reduce the NPL ratio and increase the CAR of banks, suggesting that JSCBs and CCBs with a smaller board size have better risk management. This evidence supports the agency theory view of board size, which suggests that increasing board size is associated with improved decision-making, facilitating manager supervision and introducing more human capital to advise managers on issues related to risk management (Fama & Jensen 1983). This empirical evidence is consistent with that of Pathan (2009), who found that banks with small boards take more risks in the US. However, it is in contrast to the research undertaken by Liang, Xu and Jiraporn (2013), who found a significant positive effect of board size on bank performance as measured by ROA and ROE, but no significant effect of board size on the NPL of Chinese banks. The inconsistency between the results of the present study and that of Liang, Xu and Jiraporn (2013) may be because the latter sampled the 50 largest Chinese banks, including SOCBs. As discussed in Chapter 2, the SOCBs had underwritten or disposed much of their NPLs to AMCs in an attempt to clean up their balance sheet from the late 1990s to the late 2000s. This period is largely covered in Liang, Xu and Jiraporn's (2013) study period of 2003–2010. Consequently, the NPLs of these banks were more of an outcome of the banking reform initiative rather than managerial or governance efforts. The exogenous regulatory factors may have weakened the link between board size and the NPL ratio of Chinese commercial banks in Chen, Xu and Jiraporn's (2013) study. Future research should explore the effect of bank listing status

and bank size on the relationship between board size and risk management by including an interactive term between bank size and/or bank listing status and board size.

5.3.1.2 Board Political Connection and Risk Management

It is generally accepted that informal institutions such as political connections play a dominant role in firms' decisions in China because of the country's weak legal institutions and poorly protected property rights (Li et al. 2008). This study tested the relationship between board political connection and risk management of JSCBs and CCBs. The estimation showed a significant and negative effect of board political connection on the CAR and a non-significant effect on the NPL and LTD ratios. The implication of this estimation is that board political connection is somewhat negatively associated with risk management because it tends to lower the CAR of banks. However, the NPL and LTD ratios are not significantly affected and are supported by earlier research by Liang, Xu and Jiraporn (2013), who documented a non-significant effect of board political connection on the NPL ratio.

One reason for this is that in the banking industry, the degree of government interference may be largely determined by the relationship between the bank and the government: the closer the relationship, the more likely they will engage in policy lending (Luo 2016). This relationship may originate from the nature of the bank establishment. For instance, Huaxia Bank was privately owned by several large enterprises (mostly SOEs such as Shougang Group) with a quite dispersed shareholding structure. Given that the NPL and LTD ratios are both risk management measures that are based on the balance sheet and are relevant to the lending activities of banks, future research should test the relationship between board political connection and risk management of Chinese commercial banks by including the nature of bank establishment and alternative risk management measures.

However, the non-significant effect of board political connection conflicts with Qian, Zhang and Liu's (2015) study, which documented a significant effect of board officials on the LTD ratio. This inconsistency can be explained by the difference in defining politically connected directors in this study and board officials in Qian, Zhang and Liu (2015). The present study defines politically connected directors as those who are current or former officers of the central government, local government or the military force, while Qian, Zhang and Liu (2015) defined board officials as government officials designated by government shareholders. Consequently, there is a stronger link between government shareholders, board officials and the overall political connection of banks. Together, evidence from this study, Liang, Xu and Jiraporn (2013) and Qian, Zhang and Liu (2015) suggest that former government officials on boards may not have a significant effect on the risk management of banks. This finding should be complemented by future studies.

The estimation results reveal consistent, yet limited, evidence of the negative relationship between board political connection and the CAR of JSCBs and CCBs, compared with existing studies such as Qian, Zhang and Liu (2015) and Qian, Cao and Li (2011). A possible reason for the negative relationship between board political connection and the CAR is that government officials can affect banks' prudent behaviour through regulations or by imposing political pressure on commercial banks to strengthen their capital reserve.

5.3.1.3 Board Independence and Risk Management

The relationship between board independence and risk management of JSCBs and CCBs is tested in this study. The estimation results imply a non-significant relationship between board independence and all three risk management variables. Overall, the results show that board independence does not affect the risk management of JSCBs

and CCBs when it is measured by the CAR and NPL and LTD ratios. This result contradicts that of Qian, Zhang and Liu (2015), who found a mitigating effect of independent directors on prudent lending and risk management of banks. In Qian, Zhang and Liu (2015), two distinguishing approaches arise. First, their main assumption is that independent directors can enhance the efficiency of decision-making and monitor the management of firms efficiently. Thus, they examined the effect of independent directors in terms of their mitigating role in monitoring officials on the board. The variable of proportion of independent directors was introduced as an interactive term in the model as opposed to the individual independent variable used in this study. The present study implies that independent directors may not improve the overall risk management of JSCBs and CCBs, despite being effective in mitigating the negative effect of officials on the board. Second, the researchers used a dummy variable to indicate both the presence of officials on the board and the percentage of officials, as opposed to the single measurement used in the present study. This difference exists because all banks covered in the present study were identified as having at least one politically connected director on the board.

The ineffectiveness of independent directors in improving banks' risk management was explained by Andres and Vallelado (2008), who posited that an excessive proportion of independent directors may damage the advisory role of boards because they may prevent bank executives from joining the board. Inside directors provide information that outside directors would find difficult to gather. Having more insiders and fewer independent directors would facilitate the transfer of information between board directors and management (Adams & Ferreira 2007; Coles, Daniel & Naveen 2008; Harris & Raviv 2008), which implies that board independence might be an ineffective

CG mechanism in mitigating banks' risk-taking from the perspective of efficient management and communication.

5.3.1.4 CEO Duality and Risk Management

The estimation shows a significant positive effect on the NPL ratio with a very small coefficient, while the effect on the CAR and LTD ratio is not significant. Overall, the estimation results show limited support for a significant relationship between CEO duality and bank risk management. The statistically significant and positive relationship between CEO duality and the NPL ratio suggests that banks with CEO duality exhibit a slightly higher NPL ratio and thus lower risk management. Overall, this result is consistent with the work of Aebi, Sabato and Schmid (2012), who found similar non-significant effects of CEO duality on risk management in the US banking sector during the GFC. The present study also provides additional support to the work of Liang, Xu and Jiraporn (2013), who found a non-significant effect of CEO duality on the NPL ratio and NPL stock in the Chinese banking sector.

This result conflicts with the finding of Pathan (2009), who found that CEO power is negatively related to banks' risk-taking in the US. Pathan (2009) argued that bank managers and CEOs may prefer lower risk because of their undiversifiable wealth vested in the banks and relatively fixed salary. While this may be the case for China, in which there is no significant relation between positive pay and performance, ownership structure and compensation committee can be significant in terms of executive compensation in the Chinese banking sector (Luo 2015). The implication is that the government may ensure an efficient monitoring function when the pay incentive is ineffective, which may weaken the link between CEO duality and risk management of banks.

In the present study, the empirical evidence found in the relationship between CEO duality and risk management indicates that CEO duality as a CG mechanism may not have enough influence over the risk management practice and quality of Chinese JSCBs and CCBs.

5.3.1.5 State Ownership and Risk Management

Although earlier studies documented a negative relationship between state ownership and risk management of banks (e.g., Jia 2009; Qian, Zhang & Liu 2015), the present study finds limited evidence of that relationship using a more specific measurement of state ownership. The estimation results indicate that the percentage of shares held by the state government does not have a significant effect on the NPL ratio and the CAR with a positive sign on the NPL ratio and a negative sign on the CAR. This is consistent with Liang, Xu and Jiraporn (2013), who documented a non-significant relationship between state ownership and the NPL ratio. However, the present study contradicts the finding of Molyneux, Liu and Jiang (2014), who documented a significant effect of state ownership on bank capital that is robust to alternative measures of capital ratio. The main difference between this study and that of Molyneux, Liu and Jiang (2014) is that the latter used a binary variable to measure state ownership that does not allow for change of state control during the study period. While some non-state-owned banks, according to their definition, may still be subject to state influence, the non-significant relationship between state ownership in this study implies that the state may have limited control over bank asset risk management and capital risk management via shareholding.

The results show a significant and negative effect on the LTD ratio. This implies that state ownership is negatively associated with the LTD ratio of Chinese JSCBs and CCBs. Consequently, state ownership can be deemed to be associated with less active

lending activities of banks. This was also documented by Micco and Panizza (2006), who found that the lending of state banks is less responsive to macroeconomic shocks than the lending of private banks. State ownership may be associated with less active lending activities for the following reasons: (i) the state may internalise the benefits of a more stable macroeconomic environment, and credit stabilisation becomes part of the objective function of banks (Sapienza 2004); (ii) depositors may think that state-owned banks are safer than privately held banks because of implicit or explicit deposit insurance, which gives state-owned banks more stable deposits (Micco & Panizza 2006); (iii) lack of incentives of managers in state-owned banks to react to changes in business cycles (Micco & Panizza 2006); and (iv) politicians may intervene in the credit issuing of public banks to maximise their probability of re-election (Dinç 2005), extend their tenure or seek promotion (Qian, Cao & Li 2011).

5.3.1.6 Foreign Minority Ownership and Risk Management

Although earlier studies documented that foreign minority ownership may improve the CG of Chinese banks and reduce their risk-taking (e.g., Berger 2009; Hasan & Xie 2013), the present research offers a slightly more complicated effect of foreign minority ownership on bank risk management. The estimation indicates that the percentage of shares held by foreign investors is negatively associated with the CAR and NPL ratio with statistical significance, while its effect on the LTD ratio was non-significant with a positive sign. The positive relationship between foreign minority ownership and the CAR implies that as the percentage of shares held by a foreign investor increases, JSCBs and CCBs tend to have less risk-weighted capital and therefore lower capital risk management. However, this finding contradicts Dong et al. (2014), who found that foreign strategic investment had a non-significant effect on the NPL ratio but a significant and positive effect on the z-score and CAR. The difference may arise

because Dong et al. (2014) introduced quadratic forms of ownership structure variables in their study to account for the potential increasing of the marginal effect of these ownership structures.

However, the estimation also indicates a significant negative relationship between foreign minority ownership and the NPL ratio. This implies that as the percentage of shares held by foreign minority ownership increases, JSCBs and CCBs tend to have lower NPL ratios and better asset risk management of JSCBs and CCBs. This is consistent with studies by Berger, Hasan and Zhou's (2009) and Hasan and Xie (2013). According to Hasan and Xie (2013) and Jiang and Kim (2015), foreign acquirers are more likely to engage in post-acquisition governance activities with fewer information asymmetries. Therefore, foreign bank entry into developing countries through mergers and acquisitions may increase the governance quality of domestic banks and mitigate the risk-taking incentives of JSCBs and CCBs.

The effect of foreign minority ownership on the LTD ratio is not significant with a positive sign under the estimation, indicating that foreign minority investment does not significantly influence liquidity management of JSCBs and CCBs.

The complicated relationship between foreign ownership and bank risk management revealed in this study implies that future studies are needed to explore the relationship between these two variables.

5.3.1.7 Block Shareholding and Risk Management

The estimation reveals a statistically significant and positive relationship between block shareholding and risk management of banks. This result suggests that as the percentage of shares held by block shareholder increases, banks tend to have better risk management as measured by the CAR and the NPL and LTD ratios.

Specifically, the results show that the percentage of shares held by foreign investors and government influential shareholders were statistically significant and had a positive effect on the CAR, and they were significant and had a negative effect on the LTD ratio, implying that banks exhibit better risk management with these influential shareholders. Conversely, the percentage of shares held by SOEs and private investors as influential shareholders was significant and had a negative effect on the NPL ratio, while the CAR and LTD ratio were not significantly affected. That is, when risk management is measured by the CAR and LTD ratio, banks controlled by government agencies and foreign investors tend to have better risk management than banks controlled by SOEs and private investors, and when risk management is measured by the NPL ratio, banks controlled by SOEs and private investors tend to have better risk management than banks controlled by government agencies and foreign investors.

The results from this study are consistent with those of Shehzad, de Haan and Scholtens (2010), but contrary to those of Dong et al. (2014), who also used the NPL ratio and the CAR to measure risk. This inconsistency is not unexpected because the following differences arise between the present study and that of Dong et al. (2014): (i) variation in risk measures as a result of Dong et al. (2014) using the z-score, NPL ratio and CAR to account for risk; (ii) difference in estimation methods: as there are four board measures in the present study, the GMM estimation was used to account for the potential endogeneity problem, while Dong et al. (2014) employed OLS as the primary estimation method; (iii) Dong et al. (2014) used the Herfindahl–Hirschman index and the top three shareholders' concentration ratios to account for ownership concentration as opposed to the largest shareholding used in this study; and (iv) difference in study period: Dong et al. (2014) used a larger sample size (five SOCBs, seven RCBs, 12 JSCBs and 84 CCBs) over 2004–2011 and acquired data from Bankscope, while the

present study uses data that were manually collected from banks' annual reports, with a focus on JSCBs and CCBs. As explained in Chapter 2, the banking reform started removing or underwriting the NPLs of SOCBs in the late 1990s to late 2000s and recapitalised these banks by listing their shares on the stock market or introducing foreign investors. Consequently, the NPL ratio and CAR of these banks are more likely to be linked to the government shareholding nature of these banks. This period is largely covered in Dong et al.'s (2014) study period of 2004–2011.

5.3.1.8 Public Listing and Risk Management

The estimation results show that public listing had significant effects on bank risk management when different indicators were employed to account for risk management. Specifically, the LIST dummy variable had a significant and positive effect on the NPL ratio and a significant and negative effect on the LTD ratio. The CAR is not significantly affected by the LIST variable with a positive sign. This result suggests that publicly listed banks had a higher NPL ratio, which indicates weaker performance in managing asset risk. However, they also had a lower LTD ratio, which indicates better liquidity risk management. The positive relationship between LIST and the NPL ratio is consistent with the result of Ianotta, Nocera and Sironi (2007) and Shehzad, de Haan and Sholtens (2010), who found that ownership concentration (being unlisted) is associated with better loan quality, lower asset risk and lower insolvency risk, which does not support agency theory. These findings imply that when ownership structure is more dispersed, banks tend to have a higher NPL ratio. As suggested by Ianotta, Nocera and Sironi (2007), listed banks may face different monitoring and pressure on management compared with unlisted banks, which may contribute to the higher NPL ratio.

The negative relationship between LIST and the LTD ratio implies that listed banks have better liquidity risk management than unlisted banks. This finding contradicts the study of Chalermchatvichien et al. (2014), who found that banks tend to be more liquid and better capitalised as ownership concentration rises. Specifically, Chalermchatvichien et al. (2014) found that an increase in ownership concentration by one standard deviation resulted in an improvement in capital adequacy by 7.74%. The conflicting results may be attributed to the following reasons. First, the study period covered in Chalermchatvichien et al. (2014) was 2004–2009, while this study covers 2007–2014. The variation in the empirical results indicates that the recent GFC may have changed the fundamental associations among ownership concentration, capital adequacy and liquidity, as opposed to what has been suggested by the researchers. Second, Chalermchatvichien et al. (2014) measured ownership concentration using the largest shareholder's percentage ownership of the cash-flow rights attributable to banks' total equity, as opposed to the LIST dummy variable adopted in this research. They also explored reverse causality and the non-linear relationship between ownership concentration and risk management by including the earliest ownership concentration in the sample period and quadratic terms of both measures in their model. Third, the researchers sampled banks from 11 Asian countries/regions, which only included eight Chinese banks. Although, in general, these nations have started implementing the Basel Standards framework, different degrees of regulatory convergence may affect the relationship between ownership concentration and risk management issues in relation to capital and liquidity risk management.

To summarise the above discussion together with the research finding in Section 5.3.1.7, the empirical evidence found so far concerning ownership concentration and risk

management suggests that further research is needed to add to the understanding in the Chinese context.

5.3.2 Relationship between Lending Structure and Risk Management

The following section discusses the relationship between lending structure and risk management of JSCBs and CCBs.

5.3.2.1 Commercial Loan Ratio and Risk Management

The estimation results shows that the commercial loan ratio had a statistically significant and positive effect on NPL, but the effect on the CAR and LTD ratio was not significant. Consequently, a higher commercial loan ratio is expected to increase the NPL of banks and therefore lower their asset risk management. Although this result is in line with Cebenoyan and Strahan's (2004) assertion that commercial loans are riskier loans, the evidence contradicts the research finding of Qian, Cao and Li (2011), who documented a non-significant effect of commercial loans on NPLs. Qian, Cao and Li (2011) measured the effect of various lending variables on the NPLs of 81 CCBs over 2006–2009, controlling for bank-level factors. The lending variables included lending prudence measures, lending structures based on industry and loan terms, as well as loan scale under the OLS estimation. One problem with OLS estimation is that, as discussed in Chapters 2 and 4, if lending prudence tends to correlate with risk measures, OLS estimation may overlook the potential endogeneity problem. In addition, the conflicting empirical evidence between this study and existing studies regarding how the commercial loan ratio does not significantly affect the CAR and LTD ratio suggests that future research is needed to unravel the relationship between the commercial loan ratio and bank risk management.

5.3.2.2 Industrial Loan Ratio and Risk Management

The estimation results suggest a significant and negative relationship between the industrial loan ratio and the LTD ratio. However, the effect of the industrial loan ratio on the NPL ratio and CAR was not significant. This implies that banks with higher industrial loan ratios tend to exhibit a lower LTD ratio, which suggests better liquidity risk management. The non-significant effect of the industrial loan ratio on NPLs contradicts the study of Qian, Cao and Li (2011), who found a significant and negative relationship between the industrial loan ratio and NPLs, which suggests a positive relationship between the industrial loan ratio and risk management. Despite the conflicting results between the present study regarding the effect of industrial loans on NPLs, it appears that industrial loans may be associated with better risk management. This relationship needs to be tested further in future studies given the limited empirical evidence found to date.

5.3.2.3 Real Estate Loan Ratio and Risk Management

The estimation results suggest a significant and negative effect of the real estate loan ratio on the LTD ratio of banks, while the effect on the NPL ratio and CAR was not significant. The results indicate that banks with a higher real estate loan ratio tend to exhibit a lower LTD ratio and therefore better liquidity risk management. The non-significant relationship found in this study again contradicts Qian, Cao and Li (2011), who found a positive relationship between real estate loans and the NPL ratio, which implies a negative relationship between real estate loans and risk management of banks. The finding also contradicts the assertions of Cebenoyan and Strahan (2004) and Blaško and Sinkey Jr (2006), who suggested that real estate loans are riskier than other loans in the US banking industry because US housing prices were more volatile than in China between 2000 and 2010. Real prices of US homes grew by 5% per year between 1996

and 2006, and then declined by 6.4% per year between 2007 and 2012, whereas China experienced a real estate boom (Glaeser et al. 2017). In China's top cities, real prices grew by 13.1% annually from 2003 and 2013 (Fang et al. 2016), with real land prices in 35 large Chinese cities increasing almost five-fold between 2004 and 2015 (Wu, Gyourko & Deng 2015). However, the difference between the present study and that of Qian, Cao and Li (2011) indicates that further studies are required to determine the relationship between the real estate loan ratio and bank risk management.

To summarise the effect of bank lending structure on risk management, it can be concluded that the three lending structure variables in this study do not appear to have a consistent effect on bank risk management variables. The estimation results reveal that none of the lending structure variables had a significant effect on the CAR of banks, whereas the commercial loan ratio had a significant positive effect on the NPL ratio, the real estate loan ratio had a significant negative effect on the LTD ratio and real estate loan had a significant negative effect on the LTD ratio. The limited yet conflicting evidence of the relationship between bank lending structure and risk management indicates that further studies are required to demystify the relationship.

5.3.3 Relationship between Corporate Governance and Bank Performance

The following section discusses the relationship between various CG factors and performance of JSCBs and CCBs.

5.3.3.1 Board Size and Bank Performance

The variable board size is considered one of the most important internal CG mechanisms to appropriately monitor managers and reduce agency cost (Jensen & Meckling 1976). This study tested this important CG mechanism against the performance of JSCBs and CCBs under the GMM approach. The estimation provides

little support for the effect of board size on the three performance measurements used in the study: LROAA, LROAE and LCOI ratio. This finding indicates that board size lacks influence for banks over the performance of Chinese JSCBs and CCBs in terms of profitability and efficiency. This evidence is consistent with a subsample study in recent empirical research by Liang, Xu and Jiraporn (2013), who found no significant effect of board size on the performance of smaller banks.[50] In contrast, empirical evidence from listed firms in China tend to show a negative relationship between board size and firm performance (Hu, Tam & Tan 2010; Liu et al. 2015; Yu 2003), although this relationship does not seem to be consistent when performance measure changes. Additionally, firm performance can be improved if a large board size is determined by the directors' ownership stakes (Yu 2003) or if the size of the supervisory board is larger relative to the board size (Firth, Fung & Rui 2007). The empirical evidence from this study also contradicts studies outside of China. For example, Adams and Mehran (2012), Aebi, Sabato and Schmid (2012) and Andres and Vallelado (2008) found a significant positive effect of board size on performance among US firms.

Two reasons may explain the non-significant effect of board size on bank performance. First, as stated by Huang and Wang (2015), the size of Chinese boards is not entirely determined by the firm's needs, but is limited to a regulatory requirement, resulting in a relatively smaller variation in board size across Chinese banks. The CSRC CG guide explicitly states that the board of directors must be composed of not fewer than five but not more than 19 members. A small variation in bank board size presumably makes the estimated relationship (if any) between board size and performance weaker. Second,

[50] Liang, Xu and Jiraporn (2013) explored the relationship between board size and bank performance for banks located in the lower quartile of the sample set measured by their total assets. Their study included the 52 largest Chinese banks, which overlapped with the sample (JSCBs and CCBs) included in this study.

state and local governments still retain the ultimate decision rights in appointing directors of these banks (Fan, Wong & Zhang 2007), which implies that competence and expertise may not be the most important determining factor when a director is appointed. Consequently, there may be a misalignment of interest between directors and shareholders because politically appointed directors may prioritise the political goals of local or state governments. For instance, local governments may initiate meetings with CCBs to place political pressure on the latter to fund local infrastructure projects (Qian, Cao & Li 2011).

Interestingly, recent regulatory changes implemented by the CBRC in 2014 appear to alleviate the latter by stressing the importance of the expertise of directors. In Measures for the Administration of the Office-Holding Qualifications of the Directors (Council Members) and Senior Managers of Banking Financial Institutions ('CBRC Measures for Directors and Senior Managers'), the CBRC put forward specific requirements regarding the qualifications and experience of directors and senior managers of commercial banks, emphasising the importance of professional knowledge and expertise in banking management. Future studies should examine the potential effect of the recently released CBRC Measures for Directors and Senior Managers on board size and bank performance.

5.3.3.2 Board Political Connection and Bank Performance

This study tested the political connection of boards against bank performance. The estimation shows a significant effect of board political connection on all three performance variables: it had a negative effect on LROAA and LROAE and a positive effect on LCOI. The results suggest that a higher proportion of politically connected directors on the board is associated with lower profitability of banks measured by LROAA and LROAE and lower efficiency (higher LCOI). As discussed in Chapter 3,

the political connection of boards and CEOs can be seen as a proxy of government intervention in the firm in addition to state ownership. It can provide subsidies directly or encourage private banks through regulation and persuasion to lend to politically desirable projects. The negative relationship between board political connection and bank performance found in this study implies, as suggested by Liang, Xu and Jiraporn (2013), that politically connected boards may allow more government intervention to serve the best interests of political goals, maximise value and improve overall bank performance. The result is consistent with research undertaken by Boubakri, Cosset and Saffar (2008) in the international context and that of Fan, Wong and Zhang (2007), Liang, Xu and Jiraporn (2013) and Sun, Hu and Hillman (2016) in the Chinese context.

The finding from the present study contradicts resource dependence theory. According to resource dependence theory, politically connected directors can influence the operation of banks and improve bank performance because they are well connected with the external environment (e.g., market condition, supervision, regulation) in which banks operate (Pfeffer & Salancik 1978). An underlying assumption of resource dependence theory is that board capital can mitigate the agency problem. As pointed out by Sun, Hu and Hillman (2016), the potential tension between board capital and blockshareholder opportunism may exacerbate agency conflicts between large and small shareholders and hinder firm performance, which implies that resource dependence theory may not apply to the Chinese context.

5.3.3.3 Board Independence and Bank Performance

Board independence, which is measured by the percentage of independent directors on the board, is associated with their ability to influence management to achieve optimal performance. Under both agency theory and resource dependence theory, independent

directors on the board are regarded as an effective mechanism to monitor and inform the senior managers of firms in decision-making processes.

The estimation in this study shows that board independence had a significant and negative effect on LROAA and LCOI, but a non-significant effect on LROAE. The results indicate that increasing the proportion of independent directors on boards is associated with lower profitability as measured by LROAA, but improved operation efficiency. The negative effect of board independence on bank profitability supports the stewardship theory, with the latter considering that a majority of insider directors rather than independent directors is associated with better performance because it allows the building of trust and empowerment of management, which facilitates clear leadership for strategy formulation and implementation (Davis, Schoorman & Donaldson 1997b). In contrast, the positive relationship between board independence and bank operating efficiency supports agency theory and resource dependence theory, which assume that independent directors on boards are able to improve the operating efficiency of banks. This seemingly contradictory result indicates that independent directors may have some specific knowledge in improving the cost efficiency of banks; however, they do not contribute to optimal decision-making in terms of maximising profitability.

The estimation result contradicts Liang, Xu and Jiraporn (2013), who found a significant and positive effect of board independence on ROAA in the Chinese context. Evidence from generic listed firms in China also tends to support a positive relationship between board independence and performance, as documented by Liu et al. (2015) and Firth, Fung and Rui (2007). Additionally, Liu et al. (2015) suggested that this relationship is stronger among government-controlled firms and firms with lower information acquisition costs. Evidence outside China also indicates a positive

relationship between board independence and performance of financial institutions (e.g., Minton, Taillard & Williamson 2011).

The inconsistency between the present study and existing studies suggests the existence of a complex mechanism regarding how board independence affects bank performance. For example, ownership concentration may have a moderating effect on the effectiveness of board on performance, while other factors such as ownership types and the country's institutional environment may also affect the effectiveness, as suggested by Li et al. (2015) and Hu, Tam and Tan (2010). Future research should explore the interactive relationship between these factors and board independence to obtain more conclusive results regarding the effect of board independence on the performance of Chinese banks.

5.3.3.4 CEO Duality and Bank Performance

This study identified differing results regarding the effect of CEO duality on the performance of banks under the estimation, which highlights the complex relationship between CEO duality and bank performance in China.

The results show that CEO duality had a significant and negative effect on LROAA and LCOI, but a non-significant effect on LROAE. The negative relationship between CEO duality and profitability measured by LROAA supports agency theory, which considers that CEO duality compromises the monitoring and controlling of the CEO by the board of directors. The relationship between CEO duality and LROAA under the estimation is consistent with Bai et al. (2004) and Peng et al. (2010), who also documented a negative relationship between CEO duality and the performance of publicly listed firms in the Chinese context. However, this result is in contrast to that of Liang, Xu and Jiraporn (2013), who documented a non-significant effect of CEO duality on the ROAA

ratio of Chinese banks. This difference is not unexpected because Liang, Xu and Jiraporn's (2013) sample included the 50 largest banks in China over 2003–2010, as opposed to the 34 JSCBs and CCBs over 2007–2014 in this study, which are mainly small and medium banks. The non-significant relationship between CEO duality and LROAE of banks is supported by evidence outside China, as suggested by Aebi, Sabato and Schmid (2012), who found that CEO duality was not significantly related to bank performance improvement in the US. One possible reason why LROAE was not significantly affected by CEO duality is that ROAE is largely affected by banks' leverage ratio based on the DuPont analysis, which may weaken the relationship between CEO duality and LROAE.

The estimation showed a negative relationship between CEO duality and LCOI, which implies that CEO duality improves the cost efficiency of banks. This finding supports stewardship theory, which argues that CEO duality establishes strong, unambiguous leadership embodied in a unity of command, and that firms with CEO duality may make better and faster decisions (Donaldson & Davis 1991). Peng, Zhang and Li (2007) and Lew, Yu and Park (2017) found a similar positive relationship between CEO and the performance of listed firms in China throughout the 1990s and 2000s. To the author's best knowledge, no existing research has examined the relationship between CEO duality and the COI ratio of JSCBs and CCBs in China. This study therefore adds to the understanding of how this important CG mechanism affects bank performance in terms of the COI ratio.

The seemingly conflicting results may be explained by the moderating effect of CEO duality as suggested by Wang et al. (2014), who found a positive moderating effect of CEO duality on the relationship between organisational slack and firm performance using data collected from 967 listed firms in China over 2004 and 2005. This implies

that the presence of CEO duality is linked to more efficient use of firm resources, but not necessarily improved profitability. Future studies should test the moderating effect of CEO duality on operation efficiency for Chinese banks.

5.3.3.5 State Ownership and Bank Performance

The estimation results in this study indicate a significant and positive effect of state ownership on bank performance. Thus, as the percentage of state ownership rises, banks tend to be more profitable, with higher LROAA and higher LROAE, and more efficient, with lower LCOI. The results are consistently significant for all three measurements of performance—LROAA, LROAE and LCOI ratio—and are robust to potential endogeneity problems under the estimate. This empirical evidence adds support for state ownership of JSCBs and CCBs in China, which is in line with the 'social' view of government intervention in the banking industry, as advocated by Stiglitz (1993). The percentage of shares held by the state is linked to significant improvement in banks' performance in general. This finding offers little support for the 'agency' view and 'political' view of state ownership in the banking industry because the latter two consider government shareholding potentially detrimental to bank performance.

The empirical results contradict most existing research that has examined the relationship between ownership structure and the performance of banks in China (e.g., Berger, Hasan & Zhou 2009; Ferri 2009; Fu & Heffernan 2007; Jiang, Feng & Zhang 2012; Jiang, Yao & Feng 2013; Jiang, Yao & Zhang 2009; Lin & Zhang 2009). Several factors can be attributed to this inconsistency. First, this research focuses on a more recent research period (2007–2014) than most existing studies. Second, existing studies did not include other CG measures, such as board characteristics and CEO duality, in their framework. Consequently, the effect of ownership structure may be overstated in the absence of other CG measures. Third, the way in which government shareholding

is measured has been inconsistent in existing studies. For example, Berger et al. (2005), Ferri (2009), Fu and Heffernan (2009), Jia (2009), Jiang, Feng and Zhang (2013) and Lin and Zhang (2009) used a bank dummy to proxy government ownership, while Berger, Hasan and Zhou (2009) and Liang, Xu and Jiraporn (2013) used the percentage of shares held by the government only when the government is the controlling shareholder. The present study includes two measures to examine the effect of government ownership on bank performance: (i) a percentage measure to examine the overall government shareholding in the bank; and (ii) an interactive term between block shareholding and the identity of the block shareholder to measure the effect of the government shareholder when they are also the influential shareholders (see Section 5.3.3.7). Fourth, the sample banks included in this study focus on JSCBs and CCBs with disclosed financial reports, which are mainly medium- and small-sized banks. According to Liang, Xu and Jiraporn (2013), the effect of different CG mechanisms on bank performance can change signs based on different groups of banks clustered at different sizes. Finally, this study not only considers direct ownership and control of government organisations in measuring state shareholding, but also a broader range of economic agents that are also under the political influence of the government, including investment corporations fully established, owned and controlled by the government, state and provincial SASACs and SOEs. In doing so, this study assumes that the Chinese government can exert influence over bank operations of JSCBs and CCBs through a broader group of government-controlled organisations.

5.3.3.6 Foreign Ownership and Bank Performance

As García-Herrero, Gavilá and Santabárbara (2009) pointed out, the way in which bank ownership has been traditionally measured—through a dummy independently on the degree of different types of ownership—may not be accurate enough. Thus, this

research extends the understanding of the effect of foreign minority shareholding on bank performance by specifically estimating the percentage of shares held by different types of shareholders against various performance measures. The estimation in this study indicates that the percentage of foreign minority shareholding had a significant and negative effect on the LROAA and LROAE of banks, while the effect on LCOI was non-significant with a positive sign, although foreign ownership is expected to be associated with improvements in bank performance (Berger, Hasan and Zhou 2009).

Overall, the empirical results in this study display a negative effect of foreign minority shareholding on the performance of JSCBs and CCBs. Evidence shows that market share measured by total assets of foreign banks in China significantly declined in recent years (see Figure 2-3). This evidence tends to support the home-field views on the performance of banks with foreign ownership. That is, foreign investors may have limited access to local soft qualitative information and knowledge of bank management. There are a few possible reasons that may explain the negative effect of foreign ownership on bank profitability. First, after foreign owners take minority ownership, banks undertake further investing activities (e.g., upgrading technology) and prudential practices (e.g., more loan loss provisions), which sacrifice profitability at present or in the near future, but will only benefit the banks in the long run. Second, it takes time for the potential benefits from foreign minority owners to appear because managerial and operational skills are likely to be transferred over a longer period. Third, the Chinese government has set upper limits for foreign ownership in domestic banks: 25% for total foreign ownership and 20% for a single foreign investor. This may limit the power and ability of foreign investors to influence decision-making processes (Jiang, Feng & Zhang 2012).

The non-significant effect of foreign minority shareholding on bank performance measured by LCOI is consistent with the findings of Jiang, Feng and Zhang (2012), Liang, Xu and Jiraporn (2013) and Lin and Zhang (2009), who found little support for a significant effect of foreign minority investment on bank performance in China. The findings in this study contradict that of Berger, Hasan and Zhou (2009) and Jiang, Yao and Zhang (2009), who found a positive effect of foreign ownership on improving bank efficiency. However, their framework did not consider other CG mechanisms such as board characteristics and CEO duality. Additionally, foreign minority investment in their studies is proxied by a dummy variable indicating the existence of (at least one) foreign minority shareholder as opposed to percentage measure. The present study also contradicts the finding of García-Herrero, Gavilá and Santabárbara (2009), although the latter used the same measure to estimate the effect of foreign ownership on bank performance. García-Herrero, Gavilá and Santabárbara (2009) found a positive relationship between foreign ownership and bank performance in China using data collected from 82 banks over 1999–2006. The contradiction may be explained by the selection effect regarding foreign ownership, whereby foreign investors may choose to hold shares of banks with better efficiency (Berger, Hasan & Zhou 2009).

5.3.3.7 Block Shareholding and Bank Performance

This study identifies four types of influential/block shareholders: (i) government organisations; (ii) SOEs; (iii) foreign institutional investors; and (iv) private investors. The estimation results show differing effects of block shareholding with various measurements on bank performance. Regarding the effect of block shareholding on bank performance measured by LROAA, the estimation suggests a significant and positive relationship between the percentage of block shareholding by government organisations, foreign institutional investors and private investors and LROAA. In

relation to LROAE, the estimation result indicates that block shareholding by government organisations and foreign institutional investors had a significant and positive effect; however, block shareholding by SOEs had a significant and negative effect on LROAE. In terms of the effects on LCOI, the estimation suggests that SOEs and private investor block shareholders had a significant and positive effect on the LCOI ratio. To summarise, the results in this study suggest that the effect of block shareholding on bank performance depends on the identity of the block shareholder.

First, the percentage of block shareholding had a significant and positive effect on bank profitability when the block shareholders were government organisations and foreign investors. This result is consistent with Chen, Firth and Xu (2009) but contradicts Liang, Xu and Jiraporn (2013), who found a negative relationship between controlling ownership of government organisations and foreign institutional investors and bank performance measured by ROAA and ROAE. However, Liang, Xu and Jiraporn (2013) did not account for SOEs controlling ownership in their framework. The differences in sampling may also explain the conflicting results. The positive relationship between bank profitability and government/foreign investor block shareholding indicates that the expropriation effect of minority shareholders is unlikely to be exhibited in JSCBs and CCBs when the controlling shareholders are government organisations, SASACs and foreign investors. The positive relationship between foreign block shareholding and bank performance is consistent with Berger, Hasan and Zhou (2009) and Jiang, Yao and Feng (2013), who also found a significant and positive long-run effect of foreign ownership on bank efficiency for the study periods covered in their research.

Second, the percentage of block shareholding is negatively associated with bank performance when the block shareholders are SOEs because they tend to decrease LROAE and LCOI. This suggests that a higher level of SOEs controlling ownership

may exhibit limited business scope, restrictions on the scale of loans, insufficient knowledge of business culture and weaker governance, which leads to weaker performance of banks. Further, the negative relationship between ownership concentration and bank performance suggests the expropriation effects of controlling SOE shareholders (Liang, Xu & Jiraporn 2013). This result is consistent with that of Ferri (2009), who used data collected from 20 CCBs over 2000–2003 and found that banks with lower performance measures are controlled by SOEs. The present study extends the understanding of the relationship between SOE shareholding and performance to Chinese JSCBs and CCBs with an updated study period. The results add to the understanding of block shareholder identities and their effect on bank performance.

Finally, the percentage of block shareholding had a mixed effect on bank performance when the block shareholders were private investors. It was positively associated with banks' profitability, but negatively associated with LCOI of banks. As argued by Chen, Firth and Xu (2009), one possible reason for the positive association between private controlling shareholding and profitability is that banks that have a private investor as their dominant shareholder are actively monitored by that shareholder. Agency problems associated with the separation of ownership and management will be small when a private investor is the dominant shareholder. Conversely, a potential problem is that banks controlled by a private investor may have their income and assets diverted or expropriated away by the dominant investor (Shleifer & Vishny 1997). This may explain the negative association between private block shareholding and LCOI of banks. The results from this study are similar to the works of Chen, Firth and Xu (2009), who also documented mixed effects of private block shareholding on the performance of firms in China.

The differing results generated from this study, along with the conflicting evidence from existing studies, reveal the complexity of block shareholding as a CG mechanism. Future research is needed to understand the effect of block shareholding with different controlling shareholder identities on bank performance in the Chinese institutional context.

5.3.3.8 Public Listing and Bank Performance

The relationship between ownership concentration and the performance of JSCBs and CCBs is also tested using a binary variable for public listing. The estimation offers strong evidence regarding a significant and positive relationship between listing status and bank performance, where listed banks outperformed unlisted banks with higher LROAA, higher LROAE and lower LCOI. This indicates that listed banks are more profitable and efficient regardless of the nature of owners. This finding is consistent with other studies in the literature (e.g., Berger 2009; Jiang, Feng & Zhang 2012; Jiang, Yao & Feng 2013; Jiang, Yao & Zhang 2009). The evidence contradicts agency theory, which considers that incentive problems arising from the separation of ownership and control will become more severe when ownership is more dispersed. This study shows that banks with a dispersed ownership structure are more profitable and more efficient. The positive relationship between the listing status of banks and bank performance may be explained by the following reasons. First, listed firms are better at risk bearing, and market discipline mechanisms of public listings may offset the agency costs associated with a diffused ownership structure, making publicly owned companies more successful (Demsetz 1983; Fama 1980; Ianotta, Nocera & Sironi 2007). Second, unlisted banks are not required to produce annual reports (Jia 2009), which may make these banks behave less prudently. Third, large shareholders may benefit from their control over management at the expense of minority shareholders' interests, in which

case minority shareholders' interests should be protected by the legal system to maintain their confidence (Jiang, Feng & Zhang 2012).

5.3.4 Relationship between Risk Management and Bank Performance

The following section discusses the relationship between risk management variables and performance of JSCBs and CCBs.

5.3.4.1 NPL Ratio and Bank Performance

Existing research has demonstrated the negative relationship between the NPL ratio and bank performance (e.g., Epure & Lafuente 2015; Kasman & Carvallo 2013). The present study provides additional evidence for this relationship. The estimate reveals a significant and negative relationship between NPL and bank performance across three performance measures: the NPL ratio of JSCBs and CCBs had a significant and negative effect on the two profitability measures (LROAA and LROAE) and a significant and positive effect on LCOI. These results suggest that as banks accumulate higher NPL, they are expected to have lower profitability and lower operating efficiency. As stated in Chapter 2, a higher NPL ratio represents higher lending risk and credit risk, therefore indicating a lower level of risk management. The accumulated NPL will deteriorate banks' assets and capital. The immediate consequence of having an excessive level of NPL would be bank failure and economic slowdown (Lata 2014). This estimation highlights the importance of NPL management among Chinese JSCBs and CCBs in relation to improving financial stability in the short run and long run.

5.3.4.2 CAR and Bank Performance

The estimation result suggests a significant and negative effect of the CAR on ROAE and a significant and positive effect on LCOI, indicating the cost of holding more risk-weighted capital is decreasing equity profitability and lower operation efficiency.

According to Navanpan and Tripe (2003) and Goddard, Molyneux and Wilson (2004), a higher CAR indicates that a bank may operate overcautiously and ignore potentially profitable trading opportunities, which explains the negative relationship between the CAR and LROAE. The results indicate that banks are faced with the trade-off between having better capital risk management and performance. The negative relationship between capital risk management and bank performance supports the risk-return hypothesis, which states that banks with lower capital ratios exhibit less risk and better risk management; therefore, they are more likely to exhibit higher returns (Goddard et al. 2010).

The results contradict the positive relationship between the CAR and banks' profitability observed by Berger (1995) and Lee, Ning and Lee (2015). According to Berger (1995), a possible explanation for the positive relationship is that a higher capital ratio with reduced capital risk (risk of bankruptcy) should reduce a bank's cost of funds by reducing both the price of funds and the quantity of funds required. Consequently, this will increase banks' net interest income and profitability (Berger 1995).

5.3.4.3 LTD Ratio and Bank Performance

The estimate indicates a negative and significant effect of the LTD ratio on LROAE, while the effect on LROAA and LCOI is not significant. This result suggests that banks with lower LTD ratios are associated with having better practices in managing liquidity risk and tend to have a higher LROAE. This conclusion demonstrates a positive relationship between risk management and bank performance, although the evidence is limited to LROAE. This may be explained by the fact that loans are more profitable than other assets to hold (Iannotta, Nocera & Sironi 2007). However, loans are also more expensive to produce than other types of assets; in this case, the effect of the LTD ratio on banks' ROAA and the COI ratio may be ambiguous.

The result is consistent with Fu and Heffernan (2009)[51] and Jiang, Yao and Zhang (2009),[52] but it contradicts Jiang, Feng and Zhang (2012), who demonstrated a positive relationship between the LTD ratio and the efficiency of banks. Their result suggests that a bank that has better practice in managing liquidity risk suffers efficiency losses, which indicates a trade-off between liquidity and profitability. The different results between the present study and that of Jiang, Feng and Zhang (2012) can be attributed to the variation in efficiency measurements: the latter used an inefficiency measure to capture the inefficiency of sample banks, as opposed to the COI ratio used in the present study. Further, Jiang, Feng and Zhang (2012) only included ownership structure to account for the variation in the CG of banks. In the absence of important board characteristics, the effect of risk management may be over- or under-stated. The conflicting results indicate that future studies are needed to examine the relationship between liquidity management and the performance of Chinese JSCBs and CCBs.

5.3.5 Control Variables

5.3.5.1 Regional Economic Development

The estimation results suggest that RED measured by provincial GDP had a significant and positive effect on LROAA and LROAE and a non-significant negative effect on LCOI. Thus, it can be concluded that RED has a positive effect on bank performance as measured by profitability, which suggests that JSCBs and CCBs that operate in more developed areas had better performance. This is consistent with Ferri (2009), Liang, Xu and Jiraporn (2013)[53] and Zhang, Wang and Qu (2012).

[51] In Xu and Heffernan (2009), liquidity risk management is measured by loan-to-asset ratio instead of LTD ratio, and performance is measured by X-efficiency.
[52] Jiang, Yao and Zhang (2009) used the efficiency of earning assets production to measure performance.
[53] Liang, Xu and Jiraporn (2013) used an index to measure the effect of regional macroeconomic condition on bank performance—namely, the natural log of weighted average GDP per capita of cities in which a bank's branches are located.

5.3.5.2 Bank Growth

The bank growth rate (BGROWTH) had a significant positive effect on LROAA and LROAE and a negative effect on LCOI with statistical significance. This indicates that BGROWTH, as measured by operating income, is positively related to bank performance via the ROAA, ROAE and COI ratios.

In terms of risk management of JSCBs and CCBs, the bank growth rate had a negative effect on the NPL and LTD ratios and a positive effect on the CAR. These results are consistent, indicating that there is a positive relationship between the bank growth rate and risk management of banks in general. This evidence is supported by Laeven and Levine (2009).

5.3.5.3 Regional Government Budget Deficit

Given that JSCBs operate nationwide, this study only considers the effect of regional government budget deficit on CCBs. The estimation shows that regional government budget deficit had a positive effect on the CAR and LTD ratio with statistical significance, while the effect on the NPL ratio was not significant. The result conflicts with Zhao and Du (2013), which indicates that future studies should investigate the relationship between government budget deficit and bank risk management.

5.3.6 Effect of Banking Reform on Corporate Governance, Risk Management and Performance

The major reforms considered in this study took place in 2009, which is immediately after the 2007–2009 GFC. Therefore, it is difficult to differentiate between the effect of the GFC and reform on risk management, lending structure and performance of JSCBs and CCBs.

Comparisons between pre- and post-reform CG measures suggest that the reform on CG practice was most effective in enhancing board independence by increasing the percentage of independent directors on boards. However, for other CG mechanisms, the effect of banking reform was not significant.

Regarding lending structure of banks, after the reform, banks allocated more lending assets to the commercial sector with an increased commercial loan ratio, while loans issued to the real estate sector decreased significantly. The change in the industrial loan ratio was not significant.

Additionally, risk management measures of JSCBs and CCBs were enhanced after the banking reform began: the NPL and LTD ratios were significantly reduced, and the CAR increased. This indicates that, in general, the risk management practice of JSCBs and CCBs were more prudent after 2009.

Regarding the performance of JSCBs and CCBs, banks had significantly higher ROAA and lower COI after 2009, indicating an improvement in profitability and efficiency. The change in ROAE was not significant; however, ROAE as a measure of profitability may be affected by the leverage ratio and other macroeconomic factors and bank-level factors. For instance, banks with a lower leverage ratio (higher equity) usually report a lower ROAE but a higher ROAA (Dietrich & Wanzenried 2011).

Overall, the major banking reform that took place in 2009 significantly improved risk management and performance of banks and may have outweighed the negative effect of the GFC on Chinese JSCBs and CCBs. However, the CG mechanisms of JSCBs and CCBs were not affected, except for board independence.

5.4 Summary

This chapter reported and discussed the data analysis results based on the empirical model and methodology proposed in Chapter 4. The estimation results in the present study demonstrated that among the CG mechanisms, political connection of boards, ownership concentration and state ownership had a negative effect on bank performance represented by all three measures, while board size did not affect any of the bank performance variables. In comparison, no CG mechanism had a consistent effect on all three risk management variables, with board independence showing no effect on risk management variables. Among the risk management measures, the NPL ratio had a negative effect on all three performance measures and the CAR tended to have a negative effect on LROAE and LCOI. LROAE is negatively affected by all risk management measures, indicating that shareholders' benefits are mostly guarded when banks have more prudent practices to manage asset risk and liquidity risk, but they are negatively affected when banks increase the risk-weighted capital ratio. Lending structure variables did not appear to have a consistent effect on all three bank risk management variables, although commercial loans tended to increase the NPL ratio, while real estate loans and industry loans tended to have a positive effect on banks' LTD ratio. These results yield important implications for policy-makers and Chinese JSCBs and CCBs, which are discussed in the next chapter.

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

Chapter 5 reported the results of the data analysis. Following the discussion in Chapter 5, this chapter provides an overview of the thesis and summarises its main findings. It then examines the theoretical, methodological and policy implications of the research, as well as the limitations of the study, which suggest future research directions.

This chapter is arranged as follows. Section 6.2 summarises the thesis in terms of addressing the research problem outlined in Chapter 1. Section 6.3 summarises the conclusions drawn from the empirical results in Chapter 5. Section 6.4 summarises the contributions of the study and Section 6.5 discusses the policy implications of the research findings. Section 6.6 acknowledges the limitations of this study and proposes future directions for research.

6.2 Research Summary

Lending structure, CG and risk management are important banking management issues that are pertinent to bank performance in terms of profitability and operating efficiency. Although existing research has demonstrated the link between CG, lending structure, risk management and performance of banks, limited studies have established such a relationship for the fast-growing JSCBs and CCBs in China. This study investigated two sets of relationships between lending structure, risk management, CG and performance of Chinese JSCBs and CCBs from 2007 to 2014.

Based on Chapter 1, the research problem was presented as follows:

> *To identify whether a relationship exists between lending structure, risk management, CG and performance of Chinese JSCBs and CCBs.*

Two main research questions arose from the research problem:

> *Research Question 1: Do CG factors and lending structure of banks have significant effects on the risk management of JSCBs and CCBs?*
> *Research Question 2: Do CG factors and risk management of banks have significant effects on the performance of JSCBs and CCBs?*

The main objective of this study was to empirically examine the effect of various CG variables on risk management and bank performance along with lending structure variables and important control variables. The specific research objectives were:

1. To develop a framework that incorporates lending structure, risk management and CG factors to improve the understanding of how these combined factors affect bank performance of JSCBs and CCBs in China.
2. To develop a more comprehensive set of CG variables to more accurately capture their effect on bank performance of JSCBs and CCBs in China.
3. To estimate the effect of CG factors and the lending structure of Chinese JSCBs and CCBs on their risk management.
4. To estimate the effect of CG factors and the risk management of Chinese JSCBs and CCBs on their performance.

To address the research problem of this study, a multi-theoretic framework was developed to investigate the relationship between lending structure, risk management, CG and performance of Chinese JSCBs and CCBs. The study period of 2007–2014 comprised a final sample size of 296 bank-year observations from 49 banks (12 JSCBs and 37 CCBs). The primary data collection source was annual reports from individual bank websites, China Bond (www.chinabond.com.cn) and Sina Finance (finance.sina.com.cn). Regional GDP and government budgets/spending were acquired from the National Statistics Bureau of China.

Two sets of relationships were expressed in a structural model and then further developed into six simultaneous equations. The simultaneous equations were estimated under the GMM approach in EViews. The research conclusions are summarised in Section 6.3.

6.3 Research Conclusions

The first research question was answered by investigating the relationship between CG, lending structure and risk management of the sample banks, and the second research question was answered by analysing the relationship between CG, risk management and performance of Chinese JSCBs and CCBs. The effect of the major reform on JSCBs and CCBs was tested by performing *t*-tests on the sample means before and after the reform. The answers to the research questions are presented below.

6.3.1 Research Question One: Corporate Governance, Lending Structure and Risk Management

The first research question evaluated the effect of CG and lending structure on the risk management of JSCBs and CCBs. The estimation results indicate that: (i) no CG mechanism tended to show a consistent effect on all risk management variables; and (ii) lending structure variables did not appear to have a consistent effect on all three risk management variables. These results are summarised in Table 6-1.

Table 6-1 Summary of Hypotheses Testing Results—Research Question One

Research Question 1A: ***What is the effect of CG factors of banks, if any, on the risk management of JSCBs and CCBs?***			
CG Variables	**NPL Ratio**	**CAR**	**LTD Ratio**
Board size	**NS** H_{1A} is **supported**	**PS** H_{2A} is **supported**	**NI** H_{3A} is **not supported**
Board political connection	**NI** H_{1B} is **not supported**	**NS** H_{2B} is **supported**	**PI** H_{3B} is **not supported**
Board independence	**PI** H_{1C} is **not supported**	**NI** H_{2C} is **not supported**	**PI** H_{3C} is **not supported**
CEO duality	**PS** H_{1D} is **supported**	**PI** H_{2D} is **not supported**	**PI** H_{3D} is **not supported**
Foreign investor block shareholding	**NI** H_{1E} is **not supported**	**PS** H_{2E} is **supported**	**NS** H_{3E} is **supported**
Government block shareholding	**NI** H_{1F} is **not supported**	**PS** H_{2F} is **supported**	**NS** H_{3F} is **supported**
SOE block shareholding	**NS** H_{1G} is **supported**	**PI** H_{2G} is **not supported**	**PI** H_{3G} is **not supported**
Private investor block shareholding	**NS** H_{1H} is **supported**	**NI** H_{2H} is **not supported**	**NI** H_{3H} is **not supported**
Public listing	**PS** H_{1I} is **not supported**	**PI** H_{2I} is **not supported**	**NS** H_{3I} is **supported**
State ownership	**PI** H_{1J} is **not supported**	**NI** H_{2J} is **not supported**	**NS** H_{3J} is **supported**
Foreign ownership	**NS** H_{1K} is **supported**	**NS** H_{2K} is **not supported**	**PI** H_{3K} is **not supported**
Research Question 1B: ***What is the effect of lending structure of banks, if any, on the risk management of JSCBs and CCBs?***			
Lending Structure Variables	**NPL Ratio**	**CAR**	**LTD Ratio**
Commercial loan ratio	**PS** H_{4A} is **supported**	**PI** H_{5A} is not **supported**	**PI** H_{6A} is not **supported**
Industrial loan ratio	**PI** H_{4B} is **not supported**	**PI** H_{5B} is **not supported**	**NS** H_{6B} is **supported**
Real estate loan ratio	**NI** H_{4C} is **not supported**	**NI** H_{5C} is **not supported**	**NS** H_{6C} is **not supported**

Notes: NPL ratio, CAR and LTD ratio are risk management variables. In reporting the hypothesis-testing results, the descriptions 'supported' or 'not supported' refer to the alternative hypothesis, implying rejecting or not rejecting the null hypothesis respectively. **PS:** positive and statistically significant; **NS:** negative and statistically significant; **PI:** positive and not statistically significant; **NI:** negative and not statistically significant. Confidence level is 10%.

For Research Question 1A, the estimation results showed that no CG mechanism had a consistent effect on all three risk management variables, with board independence (i.e., proportion of independent directors) showing no effect on risk management variables. Board size had a significant and negative effect on the NPL ratio and a significant and positive effect on the CAR. This showed support for agency theory, which argues that increasing board size is associated with improved risk management outcomes. In comparison, board independence had a negative effect on the CAR, and CEO duality had a positive effect on the NPL ratio. In contrast, this evidence showed support for stewardship theory.

Regarding shareholding structure, block shareholding by foreign investors had a significant and positive effect on the CAR and a significant and negative effect on the LTD ratio. Block shareholding by government organisations had a significant and positive effect on the CAR and a significant and negative effect on the LTD ratio, while block shareholding by SOEs and the private sector had a significant and negative effect on the NPL ratio. Lastly, public listing status had a significant and positive effect on the NPL ratio and a significant and negative effect on the LTD ratio. The overall evidence supported agency theory, with concentrated ownership associated with improved risk management outcomes.

For Research Question 1B, the lending structure variables did not appear to have a consistent effect on all three risk management variables, although commercial loans increased the NPL ratio while real estate loans and industry loans had a positive effect on the LTD ratio.

6.3.2 Research Question Two: Corporate Governance, Risk Management and Bank Performance

The second research question aimed to investigate the relationship between CG, risk management and performance of JSCBs and CCBs. The estimation results indicated that: (i) some CG mechanisms (e.g., political connection of boards, ownership concentration, foreign shareholding and state ownership) had a consistent effect on bank performance via all three performance measures; and (ii) among the risk management variables, the NPL ratio had a negative effect on bank performance via all three measures consistently, while the CAR and LTD ratio had an ambiguous effect on bank performance. The research question and hypotheses are summarised in Table 6-2.

Table 6-2 Summary of Hypotheses Testing Results—Research Question Two

Research Question 2A: ***What is the effect of CG factors of banks, if any, on the performance of JSCBs and CCBs?***			
CG Variables	**LROAA**	**LROAE**	**LCOI**
Board size	**PI** H_{7A} is **not supported**	**NI** H_{8A} is **not supported**	**PI** H_{9A} is **not supported**
Board political connection	**NS** H_{7B} is **supported**	**NS** H_{8B} is **supported**	**PS** H_{9B} is **supported**
Board independence	**NS** H_{7C} is **not supported**	**NI** H_{8C} is **not supported**	**NS** H_{9C} is **supported**
CEO duality	**NS** H_{7D} is **supported**	**NI** H_{8D} is **not supported**	**NS** H_{9D} is **not supported**
Foreign investor block shareholding	**PS** H_{7E} is **supported**	**PS** H_{8E} is **supported**	**NI** H_{9E} is **not supported**
Government block shareholding	**PS** H_{7F} is **supported**	**PS** H_{8F} is **supported**	**NI** H_{9F} is **not supported**
SOE block shareholding	**PI** H_{7G} is **not supported**	**NS** H_{8G} is **supported**	**PS** H_{9G} is **supported**
Private investor block shareholding	**PS** H_{7H} is **supported**	**PI** H_{8H} is **not supported**	**PS** H_{9H} is **supported**
Public listing	**PS** H_{7I} is **supported**	**PS** H_{8I} is **supported**	**NS** H_{9I} is **supported**
State ownership	**PS** H_{7J} is **not supported**	**PS** H_{8J} is **not supported**	**NS** H_{9J} is **not supported**
Foreign ownership	**NS** H_{7K} is **not supported**	**NS** H_{8K} is **not supported**	**PS** H_{9K} is **not supported**
Research Question 2B: ***What is the effect of risk management of banks, if any, on the performance of JSCBs and CCBs?***			
Risk Management Variables	**LROAA**	**LROAE**	**LCOI**
LTD ratio	**NI** H_{10A} is **not supported**	**NS** H_{11A} is **supported**	**NS** H_{12A} is **supported**
NPL ratio	**NS** H_{10B} is **supported**	**NS** H_{11B} is **supported**	**PS** H_{12B} is **supported**
CAR	**PS** H_{10C} is **supported**	**NS** H_{11C} is **not supported**	**PS** H_{12C} is **supported**

Notes: LROAA, LROAE and LCOI represent bank performance variables. In reporting the hypothesis-testing results, the descriptions 'supported' or 'not supported' refer to the alternative hypothesis, implying rejecting or not rejecting the null hypothesis respectively. **PS:** positive and statistically significant; **NS:** negative and statistically significant; **PI:** positive and not statistically significant; **NI:** negative and not statistically significant. Confidence level is 10%.

For Research Question 2A, the estimation results indicated that, among the CG mechanisms included in this study, politically connected boards, public listing, foreign shareholding and state shareholding had a consistent significant effect on all three banking performance measurements (LROAA, LROAE and LCOI). Politically connected boards and higher percentage of shares held by foreign investors were associated with lower profitability (lower LROAA and LROAE) and lower efficiency (higher LCOI), while public listing and state shareholding were associated with better performance (higher LROAA and LROAE) and higher efficiency (lower LCOI). Theoretically, the negative relationship between CEO duality and LROAA showed evidence for agency theory. In contrast, the negative relationship between board independence, CEO duality and LCOI showed support for stewardship theory. The positive relationship between block shareholding and bank performance in general also indicated that the expropriation effect of minority shareholders was not exhibited in JSCBs and CCBs when the controlling shareholders were government organisations, SASACs and foreign investors.

For Research Question 2B, the risk management variable—NPL ratio—had a consistent effect on three banking performance variables, with the higher NPL ratio associated with lower profitability (lower LROAA and LROAE) and lower efficiency (higher LCOI). In comparison, the effect of the CAR on performance was ambiguous because a higher CAR was associated with higher LROAA and LCOI, but lower LROAE. The effect of the LTD ratio on bank performance was also ambiguous because a higher LTD ratio tended to lower LROAE, but it improved banks' operational efficiency by lowering LCOI. Among the performance measures, LROAE was negatively affected by all risk management variables, indicating that shareholders' benefits were mostly guarded when banks had more prudent practices for managing

asset risk and liquidity risk, but they were negatively affected when banks increased the risk-weighted capital ratio as a result of inefficient use of bank capital.

6.4 Contributions of the Present Research

The present research contributes to the existing body of work in the following aspects:

1. This study fills the research gap by systematically investigating the interactive relationship between CG, lending structure, risk management and performance. It adds understanding to the existing discussion on CG mechanisms, lending structure, risk management and performance of JSCBs and CCBs in China.
2. A set of comprehensive CG measurements covering board characteristics and various ownership structures was developed in this research to provide greater clarity regarding the relationship between bank performance and state ownership. Existing studies that examined state ownership as a CG mechanism for Chinese commercial banks mostly focused on types of banks and the static/dynamic effect of change of ownership (Berger, Hasan & Zhou 2009; Jia 2009; Jiang, Feng & Zhang 2012; Lin & Zhang 2009). Studies using the actual percentage of government shares were particularly lacking in the literature.
3. The evaluation of lending structure added to the understanding of the effect of this important aspect of bank lending behaviour on the risk management of JSCBs and CCBs in China.

6.5 Policy Implications of Research

The empirical results yield important policy implications for JSCBs and CCBs, as well as policy-makers, as discussed in this section.

6.5.1 Policy Implication for JSCBs and CCBs

The empirical evidence regarding the relationship between CG factors and the performance of JSCBs and CCBs suggests that these banks should focus on strengthening the function of boards of directors, maintaining block shareholding by government organisations and foreign investors, and restricting block shareholding by SOEs. These implications are discussed below.

6.5.1.1 Strengthening the Function of the Board of Directors

This study showed an insignificant effect of board size and a significant negative effect of board political connection on bank performance. Additionally, the ambiguous effect of board independence on improving the COI ratio but worsening the ROAA indicates that Chinese JSCBs and CCBs should focus on strengthening the function of boards of directors.

As discussed in Chapters 3 and 5, the appointment of directors of JSCBs and CCBs may not be meritocratic because central and local governments still retain the ultimate decision rights in appointing board members of JSCBs and CCBs (Fan, Wong & Zhang 2007). This could be improved if banks voluntarily appoint directors based on criteria of sufficient expertise and experience, provide incentive-based remuneration packages and introduce managerial ownership to avoid potential misappropriation of directors.

6.5.1.2 Maintaining Block Shareholding by Government and Foreign Investors

This study found a positive relationship between the percentage of block shareholding and bank profitability when the block shareholders were government organisations, SASACs and foreign investors. In general, small shareholders may find it difficult to exert an effect on bank management in the weak government environment in China unless they are block shareholders. This implies that banks should maintain the

percentage of block shareholding of government organisations and foreign investors to allow for these institutions to exert influence over bank management and improve bank performance.

6.5.1.3 Reducing Block Shareholding by SOEs

Chapter 5 also found a negative relationship between block shareholding by SOEs and bank performance, which tends to decrease ROAE and COI. This indicates that a higher level of SOEs controlling ownership may exhibit limited business scopes, restrictions on the scale of loans, insufficient knowledge of business culture and weaker governance, which leads to weaker performance of banks. Consequently, banks should reduce the percentage of block shares held by SOEs to avoid the expropriation effects of controlling SOE shareholders (Liang, Xu & Jiraporn 2013).

6.5.2 Policy Implication for Government Regulation

The estimation results from the present study generate important policy implications for banking regulatory bodies in China, as discussed below.

6.5.2.1 Reviewing Banking Reform to Strengthen Corporate Governance Practice

As discussed in Chapter 5, the banking reform on improving CG practice among Chinese JSCBs and CCBs was most effective in enhancing board independence by increasing the percentage of independent directors on boards. However, for other CG mechanisms, the effect was not significant. This suggests that regulatory bodies may need to review the banking reform process by strengthening the implementation of reform measures and introducing alternative measures to improve overall CG quality among JSCBs and CCBs.

6.5.2.2 Maintaining State Shareholding

The positive effect of government shareholding demonstrated by this study indicates that banks associated with higher government shareholding exhibit higher profitability, better efficiency and better practice in managing liquidity risk. This implies that the Chinese government could exert influence over bank operations in JSCBs and CCBs through a broader group of government-controlled organisations. Therefore, the government should maintain its overall shares held in these banks.

6.5.2.3 Enhancing Selection Criteria for Appointing Directors on Boards

As discussed in Chapter 5, this study identified a non-significant relationship between board size and bank performance. This non-significant effect may be attributed to two reasons. First, board size was exogenously determined by regulatory requirements, which weakens the link between board size and bank performance (Huang & Wang 2015). Second, state and local governments may maintain the decision-making ability and appoint directors of banks to serve their political goals (Fan, Wong & Zhang 2007), which suggests that the appointment of directors may not be based on experience and expertise. Consequently, to strengthen the function of boards of directors, Chinese banking regulatory bodies should enhance the standard in appointing directors on boards to moderate the agency problem, rather than aggravating the principal–principal conflict between government shareholders and small shareholders by appointing directors that serve the best interests of the state or local government.

6.5.2.4 Encourage Public Listing

This study found evidence that listing banks on the stock market is associated with better performance and more prudent risk management practices. While maintaining the percentage of block shareholding, Chinese authorities should encourage banks to

list on stock exchanges, which will allow them to exert effective discipline over bank management and restrain senior managers from taking excessive risks (Dong et al. 2014).

6.6 Limitations and Future Directions for Research

Although the results of the present research provide extensive evidence regarding CG, lending structure, risk management and bank performance, there were still limitations to the research. To fulfil the intent of this study as a basis for future research, it is important to reflect critically and recommend directions for future research.

6.6.1 Limitations of the Selected Corporate Governance Mechanisms

This study included board characteristics such as board size, board independence, board political connections and ownership structure to examine the effect of CG by collecting data from the financial reports of the JSCBs and CCBs. However, because of the incomplete disclosure of board information, which is prevalent in JSCBs and CCBs, other important board characteristics such as number of board meetings, percentage of female directors, experienced director and foreign directors on boards were overlooked in this study. The Chinese government should encourage JSCBs and CCBs to disclose this information in their financial reporting process. Additionally, this study did not include the board of supervisors; although it is perceived as ‘symbolic rather than practical’ (see Chapter 3), it can still form part of future CG empirical research.

6.6.2 Limitations of the Comprehensiveness of Risk Management Variables

This study used accounting-based risk measures—namely, NPL ratio, CAR and LTD ratio—because they were aligned with the current reform focus. Some market-based risk measures, such as z-score, are not applicable because more than two-thirds of the sample banks were not listed. As reviewed in Chapter 2, the use of accounting-based

variables has been criticised in empirical literature because the ratio method is not based on a theoretical basis (Lee & Chih 2013). Additionally, the ratios are subject to managerial discretion, providing that banks have incentives to underwrite these assets so as not to exceed the given threshold by supervisory authorities (Delis, Hasan & Tsionas 2014; Fiordelisi, Marques-Ibanez & Molyneux 2011). Another limitation associated with using risk variables calculated from accounting data is the assumption that they accurately reflect portfolio quality. As summarised by Firth, Rui and Wu (2011), the quality of financial statements is often examined with reference to 'earnings management' or 'earnings quality'. Thus, it can be difficult to measure the quality of financial reports. Finally, these measures are *ex post* informative about how risk evolves over time, but they do not seem to provide a good *ex ante* measure of bank risk. It is suggested that Chinese banking regulatory bodies should encourage the disclosure of more market-based measures of risk, which would prompt future researchers to use those risk measures to examine the relevance of risk management to bank performance.

6.6.3 Limitations of the Sample Scope

The present research included JSCBs and CCBs to investigate the effect of CG on risk management and the performance of JSCBs and CCBs. Given the limited availability of financial reports for RCBs, this bank type was not included in this study. This non-inclusion may limit the extent to which generalisations are made from the findings of this study.

6.6.4 Future Directions for Research

Future studies could build on the present study via the following aspects:

1. Future studies should examine the professional experience and expertise of directors on boards and their relevance to the performance of JSCBs and CCBs.

This analysis could incorporate the effect of the recently released CBRC Measures for Directors and Senior Managers[54] regarding this relationship. This would also shed light on evaluating the effect of board independence and board political connections on the performance of JSCBs and CCBs. Future research should also explore the interactive relationship between professional experience and the expertise of directors and board independence to obtain more conclusive results regarding the effect of board independence on the performance of Chinese banks.

2. Future studies should further specify existing ownership types to understand how the government can affect the performance and risk management of JSCBs and CCBs. For example, SOEs can be further distinguished between SOEs that are affiliated to the central government and those that are not. This is because SOEs that are affiliated to the central government are subject to strict supervision and monitoring from a number of departments under the central government (Chen, Firth & Xu 2009; Greenaway, Guariglia & Yu 2014).
3. Future studies that examine the relationship between CG factors such as board size, board political connection, ownership concentration and risk management of Chinese JSCBs and CCBs can be complemented by including a wider range of sample banks, accounting for the nature of bank establishment and employing alternative risk management measures.
4. To incorporate a more comprehensive set of risk measures, future studies should consider using questionnaires to collect information about risk management

[54] Measures for the Administration of the Office-Holding Qualifications of the Directors (Council Members) and Senior Managers of Banking Financial Institutions ('CBRC Measures for Directors and Senior Managers'), CBRC Order [2012] No. 2.

practices from JSCBs and CCBs in the event of incomplete information disclosure associated with financial reporting practices among JSCBs and CCBs.

5. Although this study suggests that there is limited evidence of the effect of lending structure on the risk management of JSCBs and CCBs, future research should test this relationship by using alternative lending structure measures such as lending prudence or small and medium enterprise lending once the data are made available in banks' financial reports.

In the context of these future research possibilities, this study has provided a strong foundation by opening up the potential for more in-depth analysis of this important area of academic research.

REFERENCES

Adams, R, Hermalin, BE & Weisbach, MS 2008, *The role of boards of directors in corporate governance: a conceptual framework and survey*, Working Paper No. 14486, National Bureau of Economic Research, Cambridge, MA.

Adams, RB & Ferreira, D 2007, 'A theory of friendly boards', *Journal of Finance*, vol. 62, no. 1, pp. 217–250.

Adams, RB & Mehran, H 2012, 'Bank board structure and performance: evidence for large bank holding companies', *Journal of Financial Intermediation*, vol. 21, no. 2, pp. 243–267.

Administrative Measures for the Capital of Commercial Banks (Provisional) (People's Republic of China), Order of CBRC [2013] no.1

Administrative Measures for the Loan Loss Reserves of Commercial Banks (People's Republic of China), Notice of CBRC [2011] no. 4

Aebi, V, Sabato, G & Schmid, M 2012, 'Risk management, corporate governance, and bank performance in the financial crisis', *Journal of Banking & Finance*, vol. 36, no. 12, pp. 3213–3226.

Agrawal, A & Knoeber, CR 1996, 'Firm performance and mechanisms to control agency problems between managers and shareholders', *Journal of Financial and Quantitative Analysis*, vol. 31, no. 3, pp. 377–397.

Ahn, S & Choi, W 2009, 'The role of bank monitoring in corporate governance: evidence from borrowers' earnings management behavior', *Journal of Banking & Finance*, vol. 33, no. 2, pp. 425–434.

Albanese, R, Dacin, MT, Harris, IC, Davis, JH, Schoorman, FD & Donaldson, L 1997, 'Dialogue', *Academy of Management Review*, vol. 22, no. 3, pp. 609–613.

Allen, F & Zhao, M 2007, 'The corporate governance model of Japan: shareholders are not rulers', *PKU Business Review*, vol. 36, no. 7, pp. 98–102.

Altunbas, Y, Carbo, S, Gardener, EPM & Molyneux, P 2007, 'Examining the relationships between capital, risk and efficiency in European banking', *European Financial Management*, vol. 13, no. 1, pp. 49–70.

Ammann, M, Oesch, D & Schmid, MM 2011, 'Corporate governance and firm value: international evidence', *Journal of Empirical Finance*, vol. 18, no. 1, pp. 36–55.

Anderson, CW & Campbell II, TL 2004, 'Corporate governance of Japanese banks', *Journal of Corporate Finance*, vol. 10, no. 3, pp. 327–354.

Anderson, PF 1982, 'Marketing, strategic planning and the theory of the firm', *Journal of Marketing*, vol. 46, no. 2, pp. 15–26.

Anderson, RC & Fraser, DR 2000, 'Corporate control, bank risk taking, and the health of the banking industry', *Journal of Banking & Finance*, vol. 24, no. 8, pp. 1383–1398.

Andres, PD & Vallelado, E 2008, 'Corporate governance in banking: the role of the board of directors', *Journal of Banking & Finance*, vol. 32, no. 12, pp. 2570–2580.

Antoniou, A, Guney, Y & Paudyal, K 2008, 'The determinants of capital structure: capital market-oriented versus bank-oriented institutions', *Journal of Financial and Quantitative Analysis*, vol. 43, no. 1, pp. 59–92.

Ariff, M & Can, L 2008, 'Cost and profit efficiency of Chinese banks: a non-parametric analysis', *China Economic Review*, vol. 19, no. 2, pp. 260–273.

Arthurs, JD & Busenitz, LW 2003, 'The boundaries and limitations of agency theory and stewardship theory in the venture capitalist/entrepreneur relationship', *Entrepreneurship Theory and Practice*, vol. 28, no. 2, pp. 145–162.

Arun, TG & Turner, JD 2004, 'Corporate governance of banks in developing economies: concepts and issues', *Corporate Governance: An International Review*, vol. 12, no. 3, pp. 371–377.

Ayyagari, M, Demirgüç-Kunt, A & Maksimovic, V 2008, 'How well do institutional theories explain firms' perceptions of property rights?', *Review of Financial Studies*, vol. 21, no. 4, pp. 1833–1871.

Azofra, V & Santamaría, M 2011, 'Ownership, control, and pyramids in Spanish commercial banks', *Journal of Banking & Finance*, vol. 35, no. 6, pp. 1464–1476.

Bai, C-E, Liu, Q, Lu, J, Song, FM & Zhang, J 2004, 'Corporate governance and market valuation in China', *Journal of Comparative Economics*, vol. 32, no. 4, pp. 599–616.

Baker, M & Gompers, PA 2003, 'The determinants of board structure at the initial public offering', *Journal of Law and Economics*, vol. 46, no. 2, pp. 569–598.

Barney, JB 1990, 'The debate between traditional management theory and organizational economics: substantive differences or intergroup conflict?', *Academy of Management Review*, vol. 15, no. 3, pp. 382–393.

Barros, C, Fujii, H & Managi, S 2015, 'How scale and ownership are related to financial performance? A productivity analysis of the Chinese banking sector', *Journal of Economic Structures*, vol. 4, no. 1, pp. 1-14.

Barry, TA, Lepetit, L & Tarazi, A 2011, 'Ownership structure and risk in publicly held and privately-owned banks', *Journal of Banking & Finance*, vol. 35, no. 5, pp. 1327–1340.

Basel Committee on Banking Supervision 2006, *Enhancing corporate governance for banking organisations*, Bank for International Settlements, Basel.

—— 2010a, *Basel III: a global regulatory framework for more resilient banks and banking systems*, Bank for International Settlements, Basel.

—— 2010b, *Principles for enhancing corporate governance*, Bank for International Settlements, Basel.

Baums, T 1992, 'Corporate governance in Germany: the role of the banks', *American Journal of Comparative Law*, vol. 40, no. 2, pp. 503–526.

Berger, AN 1995, 'The relationship between capital and earnings in banking', *Journal of Money, Credit and Banking*, vol. 27, no. 2, pp. 432-56.

Berger, AN, Clarke, GR, Cull, R, Klapper, L & Udell, GF 2005, 'Corporate governance and bank performance: a joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership', *Journal of Banking & Finance*, vol. 29, no. 8, pp. 2179–2221.

Berger, AN, Hasan, I & Zhou, M 2009, 'Bank ownership and efficiency in China: what will happen in the world's largest nation?', *Journal of Banking & Finance*, vol. 33, no. 1, pp. 113–130.

Berger, AN, Saunders, A, Scalise, JM & Udell, GF 1998, 'The effects of bank mergers and acquisitions on small business lending', *Journal of Financial Economics*, vol. 50, no. 2, pp. 187–229.

Berger, AN 1995, 'The relationship between capital and earnings in banking', *Journal of Money, Credit and Banking*, vol. 27, no. 2, pp. 432-56.

Berger, AN & Udell, GF 1995, 'Relationship lending and lines of credit in small firm finance', *Journal of Business*, vol. 68, no. 3, pp. 351–381.

—— 2002, 'Small business credit availability and relationship lending: the importance of bank organisational structure', *Economic Journal*, vol. 112, no. 477, pp. F32–F53.

Berlin, M & Mester, LJ 1998, 'On the profitability and cost of relationship lending', *Journal of Banking & Finance*, vol. 22, no. 6, pp. 873–897.

Bertrand, M, Kramarz, F, Schoar, A & Thesmar, D 2006, *Politicians, firms and the political business cycle: evidence from France*, unpublished working paper, University of Chicago, IL.

Bessis, J 2015, *Risk management in banking*, 4th edn, John Wiley & Sons, New York, NY.

Bikker, JA 2010, 'Measuring performance of banks: an assessment', *Journal of Applied Business and Economics*, vol. 11, no. 4, pp. 141–159.

Blaško, M & Sinkey, Jr, JF 2006, 'Bank asset structure, real-estate lending, and risk-taking', *Quarterly Review of Economics and Finance*, vol. 46, no. 1, pp. 53–81.

Bonin, JP, Hasan, I & Wachtel, P 2005, 'Bank performance, efficiency and ownership in transition countries', *Journal of Banking & Finance*, vol. 29, no. 1, pp. 31–53.

Boone, AL, Field, LC, Karpoff, JM & Raheja, CG 2007, 'The determinants of corporate board size and composition: an empirical analysis', *Journal of Financial Economics*, vol. 85, no. 1, pp. 66–101.

Booth, JR & Deli, DN 1996, 'Factors affecting the number of outside directorships held by CEOs', *Journal of Financial Economics*, vol. 40, no. 1, pp. 81–104.

Boubakri, N, Cosset, J-C & Saffar, W 2008, 'Political connections of newly privatized firms', *Journal of Corporate Finance*, vol. 14, no. 5, pp. 654–673.

Bouvatier, V, Lepetit, L & Strobel, F 2014, 'Bank income smoothing, ownership concentration and the regulatory environment', *Journal of Banking & Finance*, vol. 41, April, pp. 253–270.

Boyd, JH & Runkle, DE 1993, 'Size and performance of banking firms: testing the predictions of theory', *Journal of Monetary Economics*, vol. 31, no. 1, pp. 47–67.

Brandt, L & Li, H 2003, 'Bank discrimination in transition economies: ideology, information, or incentives?', *Journal of Comparative Economics*, vol. 31, no. 3, pp. 387–413.

Bruton, GD, Ahlstrom, D & Li, H-L 2010, 'Institutional theory and entrepreneurship: where are we now and where do we need to move in the future?', *Entrepreneurship Theory and Practice*, vol. 34, no. 3, pp. 421–440.

Busta, I, Sinani, E & Thomsen, S 2014, 'Ownership concentration and market value of European banks', *Journal of Management & Governance*, vol. 18, no. 1, pp. 159–183.

Byrd, DT & Mizruchi, MS 2005, 'Bankers on the board and the debt ratio of firms', *Journal of Corporate Finance*, vol. 11, no. 1, pp. 129–173.

Caprio, G, Laeven, L & Levine, R 2007, 'Governance and bank valuation', *Journal of Financial Intermediation*, vol. 16, no. 4, pp. 584–617.

Carter, DA & McNulty, JE 2005, 'Deregulation, technological change, and the business-lending performance of large and small banks', *Journal of Banking & Finance*, vol. 29, no. 5, pp. 1113–1130.

Carvallo, O & Kasman, A 2005, 'Cost efficiency in the Latin American and Caribbean banking systems', *Journal of International Financial Markets, Institutions and Money*, vol. 15, no. 1, pp. 55–72.

Cebenoyan, AS & Strahan, PE 2004, 'Risk management, capital structure and lending at banks', *Journal of Banking & Finance*, vol. 28, no. 1, pp. 19–43.

Chalermchatvichien, P, Jumreornvong, S, Jiraporn, P & Singh, M 2014, 'The effect of bank ownership concentration on capital adequacy, liquidity, and capital stability', *Journal of Financial Services Research*, vol. 45, no. 2, pp. 219–240.

Chen, B & Xu, W 2009, ‘Bank lending and economic fluctuations in China: 1993–2005’, *China Economic Quarterly*, vol. 3, 969–994.

Chen, G, Firth, M, Gao, DN & Rui, OM 2006, ‘Ownership structure, corporate governance, and fraud: evidence from China’, *Journal of Corporate Finance*, vol. 12, no. 3, pp. 424–448.

Chen, G, Firth, M & Xu, L 2009, ‘Does the type of ownership control matter? Evidence from China’s listed companies’, *Journal of Banking and Finance*, vol. 33, no. 1, pp. 171–181.

Chen, W 2009, ‘The effect of financial liberalization on Chinese banking system’, MBA dessertation, The University of Nottingham, Nottingham.

Chen, X, Skully, M & Brown, K 2005, ‘Banking efficiency in China: application of DEA to pre-and post-deregulation eras: 1993–2000’, *China Economic Review*, vol. 16, no. 3, pp. 229–245.

Chen, Y, Liu, M & Su, J 2013, ‘Greasing the wheels of bank lending: evidence from private firms in China’, *Journal of Banking & Finance*, vol. 37, no. 7, pp. 2533–2545.

China Banking Regulatory Commission 2007, *CBRC annual report 2006*, Beijing.

—— 2011, *Guidelines on corporate governance of commercial banks* (in Chinese), Beijing.

—— 2014, *CBRC Annual report 2013*, Beijing.

—— 2015, *CBRC Annual report 2014*, Beijing.

—— 2016, *CBRC Annual report 2015*, Beijing.

—— 2017, *CBRC Annual report 2016*, Beijing.

—— n.d., *About the CBRC*, viewed 27 September 2016, available at: http://www.cbrc.gov.cn/showyjhjjindex.do.

Chow, GC 2006, 'Globalization and China's economic development', *Pacific Economic Review*, vol. 11, no. 3, pp. 271-85.

Circular on Revising the Basis for Calculating the Loan-to-Deposit Ratios for Commercial Banks (People’s Republic of China), Notice of CBRC [2014] no. 34

Claessens, S., Demirgüç-Kunt, A. and Huizinga, H., 2001. ‘How does foreign entry affect domestic banking markets?’, *Journal of Banking & Finance*, vol. 25, no. 5, pp. 891-911.

Clarke, T 2007, *International corporate governance: a comparative approach*, Routledge, New York.

Clarke, T 2009, 'A critique of the Anglo-American model of corporate governance', *CLPE Research Paper*, no. 15/09.

Coase, RH 1937, ‘The nature of the firm’, *Economica*, vol. 4, no. 16, pp. 386–405.

Coles, JL, Daniel, ND & Naveen, L 2008, ‘Boards: does one size fit all?’, *Journal of Financial Economics*, vol. 87, no. 2, pp. 329–356.

Core Indicators for the Risk Management of Commercial Banks (Provisional) (People’s Republic of China), Notice of CBRC [2005] no. 256.

Correa, R, Goldberg, LS & Rice, T 2014, *Liquidity risk and US bank lending at home and abroad*, Working Paper No. 20285, National Bureau of Economic Research, Cambridge, MA.

Corporate Governance and Regulatory Guidelines for State-Owned Commercial Banks (People’s Republic of China), Notice of CBRC [2005] no. 21.

Guidance on Corporate Governance of Joint Stock Commercial Banks (People’s Republic of China), Notice of PBoC [2002] no. 15.

Cull, R & Xu, LC 2003, ‘Who gets credit? The behavior of bureaucrats and state banks in allocating credit to Chinese state-owned enterprises’, *Journal of Development Economics*, vol. 71, no. 2, pp. 533–559.

Cumming, CM & Hirtle, BJ 2001, ‘The challenges of risk management in diversified financial companies’, *Economic Policy Review*, vol. 7, no. 1, pp. 1–13.

Daily, CM, Dalton, DR & Cannella, AA 2003, ‘Corporate governance: decades of dialogue and data’, *Academy of Management Review*, vol. 28, no. 3, pp. 371–382.

Davis, JH, Schoorman, FD & Donaldson, L 1997a, ‘Davis, Schoorman, and Donaldson reply: The distinctiveness of agency theory and stewardship theory’, *Academy of Management Review*, vol. 22, no. 3, pp. 611–613.

—— 1997b, ‘Toward a stewardship theory of management’, *Academy of Management Review*, vol. 22, no. 1, pp. 20–47.

Deelchand, T & Padgett, C 2009, *The relationship between risk, capital and efficiency: evidence from Japanese cooperative banks*, ICMA Centre Discussion Papers in Finance No. 2009–12, University of Reading, Reading.

Degryse, H & Van Cayseele, P 2000, ‘Relationship lending within a bank-based system: evidence from European small business data’, *Journal of Financial Intermediation*, vol. 9, no. 1, pp. 90–109.

Delios, A, Wu, ZJ & Zhou, N 2006, ‘A new perspective on ownership identities in China’s listed companies’, *Management and Organization Review*, vol. 2, no. 3, pp. 319–343.

Delis, MD, Hasan, I & Tsionas, EG 2014, ‘The risk of financial intermediaries’, *Journal of Banking & Finance*, vol. 44, July, pp. 1–12.

Delis, MD, Tran, KC & Tsionas, EG 2012, 'Quantifying and explaining parameter heterogeneity in the capital regulation-bank risk nexus', *Journal of Financial Stability*, vol. 8, no. 2, pp. 57–68.

Demsetz, H 1983, 'The structure of ownership and the theory of the firm', *Journal of Law and Economics*, vol. 26, no. 2, pp. 375–390.

Denis, DK & McConnell, JJ 2003, 'International corporate governance', *Journal of Financial and Quantitative Analysis*, vol. 38, no. 1, pp. 1–36.

Diamond, DW 1984, 'Financial intermediation and delegated monitoring', *The Review of Economic Studies*, vol. 51, no. 3, pp. 393-414.

Dietrich, A & Wanzenried, G 2011, 'Determinants of bank profitability before and during the crisis: Evidence from Switzerland', *Journal of international financial Markets, Institutions and Money*, vol. 21, no. 3, pp. 307-27.

Dinç, IS 2005, 'Politicians and banks: political influences on government-owned banks in emerging markets', *Journal of Financial Economics*, vol. 77, no. 2, pp. 453–479.

Donaldson, L & Davis, JH 1991, 'Stewardship theory or agency theory: CEO governance and shareholder returns', *Australian Journal of Management*, vol. 16, no. 1, pp. 49–64.

Donaldson, L 1990, 'The ethereal hand: Organizational economics and management theory'. *Academy of management Review*, vol. 15, no. 3, pp.369-381.

Donaldson, T 1999, 'Making stakeholder theory whole', *Academy of Management Review*, vol. 24, no. 2, pp. 237–241.

Donaldson, T & Preston, LE 1995, 'The stakeholder theory of the corporation: concepts, evidence, and implications', *Academy of Management Review*, vol. 20, no. 1, pp. 65–91.

Dong, Y, Meng, C, Firth, M & Hou, W 2014, 'Ownership structure and risk-taking: comparative evidence from private and state-controlled banks in China', *International Review of Financial Analysis*, vol. 36, December, pp. 120–130.

Douma, S, George, R & Kabir, R 2006, 'Foreign and domestic ownership, business groups, and firm performance: evidence from a large emerging market', *Strategic Management Journal*, vol. 27, no. 7, pp. 637–657.

Du Plessis, JJ, Hargovan, A & Bagaric, M 2010, *Principles of contemporary corporate governance*, 2nd edn, Cambridge University Press, Cambridge.

Dunfee, T & Warren, D 2001, 'Is guanxi ethical? A normative analysis of doing business in China', *Journal of Business Ethics*, vol. 32, no. 3, pp. 191–204.

Edwards, J & Nibler, M 2000, 'Corporate governance in Germany: the role of banks and ownership concentration', *Economic Policy*, vol. 15, no. 31, pp. 238–267.

Eisenberg, T, Sundgren, S & Wells, MT 1998, 'Larger board size and decreasing firm value in small firms', *Journal of Financial Economics*, vol. 48, no. 1, pp. 35–54.

Eisenhardt, KM 1989, 'Agency theory: an assessment and review', *Academy of Management Review*, vol. 14, no. 1, pp. 57–74.

Epure, M & Lafuente, E 2015, 'Monitoring bank performance in the presence of risk', *Journal of Productivity Analysis*, vol. 44, no. 3, pp. 265–281.

Erkens, DH, Hung, M & Matos, P 2012, 'Corporate governance in the 2007–2008 financial crisis: evidence from financial institutions worldwide', *Journal of Corporate Finance*, vol. 18, no. 2, pp. 389–411.

Faccio, M 2006, 'Politically connected firms', *American Economic Review*, vol. 96, no. 1, pp. 369–386.

Fang, H., Gu, Q., Xiong, W. and Zhou, L.A., 2016. Demystifying the Chinese housing boom. *NBER Macroeconomics Annual*, vol. 30, no. 1, pp.105-166.

Fama, EF 1980, 'Agency problems and the theory of the firm', *Journal of Political Economy*, vol. 88, no. 2, pp. 288–307.

Fama, EF & Jensen, MC 1983, 'Separation of ownership and control', *Journal of Law and Economics*, vol. 26, no. 2, pp. 301–325.

Fan, CS 1998, 'Why China has been successful in attracting foreign direct investment: a transaction cost approach', *Journal of Contemporary China*, vol. 7, no.17, pp. 21–32.

Fan, JP, Wei, KJ & Xu, X 2011, 'Corporate finance and governance in emerging markets: a selective review and an agenda for future research', *Journal of Corporate Finance*, vol. 17, no. 2, pp. 207–214.

Fan, JP, Wong, TJ & Zhang, T 2007, 'Politically connected CEOs, corporate governance, and post-IPO performance of China's newly partially privatized firms', *Journal of Financial Economics*, vol. 84, no. 2, pp. 330–357.

Fang, Y, Hasan, I & Marton, K 2011, 'Bank efficiency in South-Eastern Europe', *Economics of Transition*, vol. 19, no. 3, pp. 495–520.

Ferri, G 2009, 'Are new tigers supplanting old mammoths in China's banking system? Evidence from a sample of city commercial banks', *Journal of Banking & Finance*, vol. 33, no. 1, pp. 131–140.

Fiordelisi, F, Marques-Ibanez, D & Molyneux, P 2011, 'Efficiency and risk in European banking', *Journal of Banking & Finance*, vol. 35, no. 5, pp. 1315–1326.

Firth, M, Fung, PMY & Rui, OM 2007, 'Ownership, two-tier board structure, and the informativeness of earnings: evidence from China', *Journal of Accounting and Public Policy*, vol. 26, no. 4, pp. 463–496.

Firth, M, Lin, C, Liu, P & Wong, SM 2009, 'Inside the black box: bank credit allocation in China's private sector', *Journal of Banking & Finance*, vol. 33, no. 6, pp. 1144–1155.

Firth, M, Lin, C & Wong, SM 2008, 'Leverage and investment under a state-owned bank lending environment: evidence from China', *Journal of Corporate Finance*, vol. 14, no. 5, pp. 642–653.

Firth, M, Rui, OM & Wu, W 2011, 'Cooking the books: recipes and costs of falsified financial statements in China', *Journal of Corporate Finance*, vol. 17, no. 5, pp. 371–390.

Freeman, RE 1984, *Strategic management: a stakeholder approach*, Pitman, Massachusetts.

Friedman, AL & Miles, S 2002, 'Developing stakeholder theory', *Journal of Management Studies*, vol. 39, no. 1, pp. 1–21.

Fu, XM & Heffernan, S 2007, 'Cost X-efficiency in China's banking sector', *China Economic Review*, vol. 18, no. 1, pp. 35–53.

—— 2009, 'The effects of reform on China's bank structure and performance', *Journal of Banking & Finance*, vol. 33, no. 1, pp. 39–52.

Gambacorta, L & Mistrulli, PE 2004, 'Does bank capital affect lending behavior?', *Journal of Financial Intermediation*, vol. 13, no. 4, pp. 436–457.

García-Herrero, A, Gavilá, S & Santabárbara, D 2006, 'China's banking reform: an assessment of its evolution and possible impact', *CESifo Economic Studies*, vol. 52, no. 2, pp. 304–363.

—— 2009, 'What explains the low profitability of Chinese banks?', *Journal of Banking & Finance*, vol. 33, no. 11, pp. 2080–2092.

García-Herrero, A & Santabárbara, D 2008, *Does the Chinese banking system benefit from foreign investors?*, Discussion Paper No. 11, Bank of Finland, Institute for Economies in Transition, Helsinki.

Gedajlovic, E, Yoshikawa, T & Hashimoto, M 2005, 'Ownership structure, investment behaviour and firm performance in Japanese manufacturing industries', *Organization Studies*, vol. 26, no. 1, pp. 7–35.

Gedajlovic, ER & Shapiro, DM 1998, 'Management and ownership effects: evidence from five countries', *Strategic Management Journal*, vol. 19, no. 6, pp. 533–553.

Genay, H, Udell, GF, DeYoung, R & Berger, AN 2000, 'Globalization of financial institutions: evidence from cross-border banking performance', *Brookings–Wharton Papers on Financial Services*, vol. 3, no. 1, pp. 23–158.

Gerschenkron, A 1992, 'Economic backwardness in historical perspective', in M Granovetter & R Swedberg (eds), *The sociology of economic life*, Westview Press, Boulder, CO, pp. 111–130.

Gillan, SL 2006, ‘Recent developments in corporate governance: an overview’, *Journal of Corporate Finance*, vol. 12, no. 3, pp. 381–402.

Glaeser, E., Huang, W., Ma, Y. and Shleifer, A., 2017. A real estate boom with Chinese characteristics. *Journal of Economic Perspectives*, vol. 31, no. 1, pp.93-116.

Gleason, AE & Simpson, WG 1999, 'Board structure, ownership, and financial distress in banking firms', *International Review of Economics & Finance*, vol. 8, no. 3, pp. 281-92.

Goddard, J, Molyneux, P & Wilson, JO 2004, ‘The profitability of European banks: a cross-sectional and dynamic panel analysis’, *The Manchester School*, vol. 72, no. 3, pp. 363–381.

Gomes, AR & Novaes, W 2005, *Sharing of control as a corporate governance mechanism*, Working Paper No. 01-029, Penn Institute for Economic Research, Philadelphia, PA.

Gonzalez, F 2005, ‘Bank regulation and risk-taking incentives: an international comparison of bank risk’, *Journal of Banking & Finance*, vol. 29, no. 5, pp. 1153–1184.

Gorton, G & Schmid, F 1999, ‘Corporate governance, ownership dispersion and efficiency: empirical evidence from Austrian cooperative banking’, *Journal of Corporate Finance*, vol. 5, no. 2, pp. 119–140.

Greenaway, D, Guariglia, A & Yu, Z 2014, ‘The more the better? Foreign ownership and corporate performance in China’, *European Journal of Finance*, vol. 20, no. 7-9, pp. 681–702.

Greenwald, BC & Stiglitz, JE 1986, ‘Externalities in economies with imperfect information and incomplete markets’, *Quarterly Journal of Economics*, vol. 101, no. 2, pp. 229–264.

Grove, H, Patelli, L, Victoravich, LM & Xu, PT 2011, ‘Corporate governance and performance in the wake of the financial crisis: evidence from US commercial banks’, *Corporate Governance: An International Review*, vol. 19, no. 5, pp. 418–436.

Guidance on Internal Control of the Commercial Banks (People’s Republic of China), Notice of PBoC [2002] no. 19.

Guideline for Disclosure of Evaluation Index for Global Systemic Importance of Commercial Banks (People’s Republic of China), Notice of CBRC [2014] no. 1.

Guidelines for Internal Control of Commercial Banks (2007 Amendment) (People’s Republic of China), Order of CBRC [2007] no. 6.

Guidelines for Internal Control of Commercial Banks (2014 Amendment) (People’s Republic of China), Notice of CBRC [2014] no. 40.

Guidelines for Introducing Independent Directors to the Board of Directors of Listed Companies (People’s Republic of China), Notice of CSRC [2001] no. 102.

Guidelines for the Management of Off-Balance-Sheet Business Risks of Commercial Banks (People's Republic of China), Notice of CBRC [2011] no. 31.

Guidelines on Corporate Governance of Commercial Banks (People's Republic of China), Notice of CBRC [2013] no. 34.

Guidelines on Market Risk Management of Commercial Banks (People's Republic of China), Notice of CBRC [2004] no. 10.

Guiding Opinions on Improving Corporate Governance of Small and Medium Commercial Banks (People's Republic of China), Notice of CBRC [2009] no. 15.

Gunji, H & Yuan, Y 2010, 'Bank profitability and the bank lending channel: evidence from China', *Journal of Asian Economics*, vol. 21, no. 2, pp. 129–141.

Haβ, LH, Müller, MA & Zhang, Z 2015, 'Corporate fraud and bank loan contracting: evidence from China', in *Sustainable entrepreneurship in China: ethics, corporate governance, and institutional reforms*, Springer, pp. 1-21.

Hannan, TH & Hanweck, GA 1988, 'Bank insolvency risk and the market for large certificates of deposit', *Journal of Money, Credit and Banking*, vol. 20, no. 2, pp. 203–211.

Hansen, LP 2010, 'Generalized method of moments estimation', in SN Durlauf & LE Blume (eds), *Macroeconometrics and time series analysis*, Palgrave Macmillan, London, pp. 105–118.

Harris, M & Raviv, A 2008, 'A theory of board control and size', *Review of Financial Studies*, vol. 21, no. 4, pp. 1797–1832.

Hart, O 1995, 'Corporate governance: some theory and implications', *Economic Journal*, vol. 105, no. 430, pp. 678–689.

Hasan, I & Xie, R 2013, 'Foreign bank entry and bank corporate governance in China', *Emerging Markets Finance and Trade*, vol. 49, no. 2, pp. 4–18.

Hass, LH, Johan, S & Schweizer, D 2013, *Is corporate governance in China related to performance persistence?*, Discussion Paper No. 2013-015, Tilburg Law and Economics Center, Tilburg University, The Netherlands.

Hassan, MK, Karels, GV & Peterson, MO 1993, 'Off-balance sheet activities and bank default-risk premia: a comparison of risk measures', *Journal of Economics and Finance*, vol. 17, no. 3, pp. 69–83.

Heffernan, SA & Fu, X 2010, 'Determinants of financial performance in Chinese banking', *Applied Financial Economics*, vol. 20, no. 20, pp. 1585–1600.

Hermalin, BE & Weisbach, MS 2001, *Boards of directors as an endogenously determined institution: a survey of the economic literature*, Working Paper No. 8161, National Bureau of Economic Research, Cambridge, MA.

Heugens, PP, Van Essen, M & Van Oosterhout, JH 2009, 'Meta-analyzing ownership concentration and firm performance in Asia: towards a more fine-grained understanding', *Asia Pacific Journal of Management*, vol. 26, no. 3, pp. 481–512.

Hillman, AJ & Dalziel, T 2003, 'Boards of directors and firm performance: integrating agency and resource dependence perspectives', *Academy of Management Review*, vol. 28, no. 3, pp. 383–396.

Hillman, AJ, Withers, MC & Collins, BJ 2009, 'Resource dependence theory: a review', *Journal of Management*, vol. 35, no. 6, pp. 1404–1427.

Hoechle, D, Schmid, M, Walter, I & Yermack, D 2012, 'How much of the diversification discount can be explained by poor corporate governance?', *Journal of Financial Economics*, vol. 103, no. 1, pp. 41–60.

Hu, HW, Tam, OK & Tan, MGS 2010, 'Internal governance mechanisms and firm performance in China', *Asia Pacific Journal of Management*, vol. 27, no. 4, pp. 727–749.

Hu, MY & Chen, H 1993, 'Foreign ownership in Chinese joint ventures: a transaction cost analysis', *Journal of Business Research*, vol. 26, no. 2, pp. 149–160.

Huang, F & Rice, J 2012, 'Firm networking and bribery in China: assessing some potential negative consequences of firm openness', *Journal of Business Ethics*, vol. 107, no. 4, pp. 533–545.

Huang, Y, Wang, X & Lin, N 2013, 'Financial reform in China: progresses and challenges', in H Patrick & YC Park (eds), *How finance is shaping the economies of China, Japan, and Korea*, Columbia University Press, New York, pp. 44–142.

Huang, YS & Wang, C-J 2015, 'Corporate governance and risk-taking of Chinese firms: the role of board size', *International Review of Economics & Finance*, vol. 37, May, pp. 96–113.

Hughes, JP & Mester, LJ 2013, 'Who said large banks don't experience scale economies? Evidence from a risk-return-driven cost function', *Journal of Financial Intermediation*, vol. 22, no. 4, pp. 559–585.

Hung, H 1998, 'A typology of the theories of the roles of governing boards', *Corporate Governance*, vol. 6, no. 2, pp. 101–111.

Iannotta, G, Nocera, G & Sironi, A 2007, 'Ownership structure, risk and performance in the European banking industry', *Journal of Banking & Finance*, vol. 31, no. 7, pp. 2127–2149.

Implementing Opinions on Encouraging and Guiding of Private Capital into the Banking Sector (People's Republic of China), Notice of CBRC [2012] no. 27

Interim Measures on Information Disclosure of Commercial Banks (People's Republic of China), Order of PBoC [2002] No. 6

Iskander, MR & Chamlou, N 2000, *Corporate governance: a framework for implementation—overview*, World Bank Group, Washington, DC.

Ivashina, V & Scharfstein, D 2010, 'Bank lending during the financial crisis of 2008', *Journal of Financial Economics*, vol. 97, no. 3, pp. 319–338.

Jamali, D 2008, 'A stakeholder approach to corporate social responsibility: a fresh perspective into theory and practice', *Journal of Business Ethics*, vol. 82, no. 1, pp. 213–231.

Jensen, MC 1983, 'Organization theory and methodology', *Accounting Review*, vol. 58, no. 2, pp. 319–339.

—— 1993, 'The modern industrial revolution, exit, and the failure of internal control systems', *Journal of Finance*, vol. 48, no. 3, pp. 831–880.

—— 2010, 'Value maximization, stakeholder theory, and the corporate objective function', *Journal of Applied Corporate Finance*, vol. 22, no. 1, pp. 32–42.

Jensen, MC & Meckling, WH 1976, 'Theory of the firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, vol. 3, no. 4, pp. 305–360.

Jia, C 2009, 'The effect of ownership on the prudential behavior of banks—the case of China', *Journal of Banking & Finance*, vol. 33, no. 1, pp. 77–87.

Jiang, C, Feng, G & Zhang, J 2012, 'Corporate governance and bank performance in China', *Journal of Chinese Economic and Business Studies*, vol. 10, no. 2, pp. 131–146.

Jiang, C, Yao, S & Feng, G 2013, 'Bank ownership, privatization, and performance: evidence from a transition country', *Journal of Banking & Finance*, vol. 37, no. 9, pp. 3364–3372.

Jiang, C, Yao, S & Zhang, Z 2009, 'The effects of governance changes on bank efficiency in China: a stochastic distance function approach', *China Economic Review*, vol. 20, no. 4, pp. 717–731.

Jiang, F & Kim, KA 2015, 'Corporate governance in China: a modern perspective', *Journal of Corporate Finance*, vol. 32, June, pp. 190–216.

Jiménez, G, Lopez, JA & Saurina, J 2013, 'How does competition affect bank risk-taking?', *Journal of Financial Stability*, vol. 9, no. 2, pp. 185–195.

John, K, Litov, L & Yeung, B 2008, 'Corporate governance and managerial risk taking: theory and evidence', *Journal of Finance*, vol. 63, no. 4, pp. 1679–1728.

John, K & Qian, Y 2003, 'Incentive features in CEO compensation in the banking industry', *Economic Policy Review*, vol. 9, no. 1, pp. 109–121.

Johnson, JL, Daily, CM & Ellstrand, AE 1996, 'Boards of directors: a review and research agenda', *Journal of Management*, vol. 22, no. 3, pp. 409–438.

Jones, TM 1995, ‘Instrumental stakeholder theory: a synthesis of ethics and economics’, *Academy of Management Review*, vol. 20, no. 2, pp. 404–437.

Kang, J-K & Shivdasani, A 1999, ‘Alternative mechanisms for corporate governance in Japan: an analysis of independent and bank-affiliated firms’, *Pacific-Basin Finance Journal*, vol. 7, no. 1, pp. 1–22.

Kasman, A & Carvallo, O 2013, ‘Efficiency and risk in Latin American banking: explaining resilience’, *Emerging Markets Finance and Trade*, vol. 49, no. 2, pp. 105–130.

Keister, LA 2002, ‘Financial markets, money, and banking’, *Annual Review of Sociology*, vol. 28, no. 1, pp. 39–61.

Kiel, GC & Nicholson, GJ 2003, ‘Board composition and corporate performance: how the Australian experience informs contrasting theories of corporate governance’, *Corporate Governance: An International Review*, vol. 11, no. 3, pp. 189–205.

Kirkpatrick, G 2009, ‘The corporate governance lessons from the financial crisis’, *OECD Journal: Financial Market Trends*, vol. 1, no. 1, pp. 61–87.

Klein, A 2002, ‘Audit committee, board of director characteristics, and earnings management’, *Journal of Accounting and Economics*, vol. 33, no. 3, pp. 375–400.

Konishi, M & Yasuda, Y 2004, ‘Factors affecting bank risk taking: evidence from Japan’, *Journal of Banking & Finance*, vol. 28, no. 1, pp. 215–232.

Kozak, S, Jurzyk, EM, Degryse, H & Havrylchyk, O 2009, *Foreign bank entry and credit allocation in emerging markets*, Working Paper No. 09/270, International Monetary Fund, Washington, DC.

Kumbhakar, SC & Wang, D 2007, ‘Economic reforms, efficiency and productivity in Chinese banking’, *Journal of Regulatory Economics*, vol. 32, no. 2, pp. 105–129.

Kwan, SH 2004, 'Risk and return of publicly held versus privately owned banks', *Economic Policy Review*, vol. 10, no. 2, pp. 97-107.

La Porta, R, Lopez-de-Silanes, F & Shleifer, A 1999, ‘Corporate ownership around the world’, *Journal of Finance*, vol. 54, no. 2, pp. 471–517.

—— 2002, ‘Government ownership of banks’, *Journal of Finance*, vol. 57, no. 1, pp. 265–301.

Laeven, L & Levine, R 2009, ‘Bank governance, regulation and risk taking’, *Journal of Financial Economics*, vol. 93, no. 2, pp. 259–275.

Lane, PJ, Cannella, AA & Lubatkin, MH 1998, ‘Agency problems as antecedents to unrelated mergers and diversification: Amihud and Lev reconsidered’, *Strategic Management Journal*, vol. 19, no. 6, pp. 555–578.

Laplume, AO, Sonpar, K & Litz, RA 2008, ‘Stakeholder theory: reviewing a theory that moves us’, *Journal of Management*, vol. 34, no. 6, pp. 1152–1189.

Lata, RS 2014, *Non-performing loan and its impact on profitability of state owned commercial banks in Bangladesh: an empirical study*, 11th Asian Business Research Conference, 26–27 December, Bangladesh Institute of Administration and Management Foundation, Dhaka, Bangladesh.

Lau, KLA & Young, A 2013, 'Why China shall not completely transit from a relation based to a rule-based governance regime: a Chinese perspective', *Corporate Governance: An International Review*, vol. 21, no. 6, pp. 577–585.

Lau, LJ, Qian, Y & Roland, G 2000, 'Reform without losers: an interpretation of China's dual-track approach to transition', *Journal of Political Economy*, vol. 108, no. 1, pp. 120–143.

Laux, V 2010, 'Effects of litigation risk on board oversight and CEO incentive pay', *Management Science*, vol. 56, no. 6, pp. 938–948.

Law of the People's Republic of China on Commercial Banks (2003), the Nation People's Congress.

Law of the People's Republic of China on Regulation of and Supervision over the Banking Industry (2006), the Nation People's Congress.

Law of the People's Republic of China on the People's Bank of China (2003), the Nation People's Congress.

Lee, A 2012, 'How Basel III will change Chinese bank financing', *China Law & Practice (Euromoney Institutional Investor PLC)*, vol. 26, no. 11/12, p. 31.

Lee, C-C & Hsieh, M-F 2013, 'The impact of bank capital on profitability and risk in Asian banking', *Journal of International Money and Finance*, vol. 32, February, pp. 251–281.

Lee, C-C, Ning, S-L & Lee, C-C 2015, 'How does bank capital affect bank profitability and risk? Evidence from China's WTO accession', *China & World Economy*, vol. 23, no. 4, pp. 19–39.

Lee, L-F & Liu, X 2010, 'Efficient GMM estimation of high order spatial autoregressive models with autoregressive disturbances', *Econometric Theory*, vol. 26, no. 1, pp. 187–230.

Lee, T-H & Chih, S-H 2013, 'Does financial regulation affect the profit efficiency and risk of banks? Evidence from China's commercial banks', *North American Journal of Economics and Finance*, vol. 26, December, pp. 705–724.

Lepetit, L, Nys, E, Rous, P & Tarazi, A 2008, 'Bank income structure and risk: an empirical analysis of European banks', *Journal of Banking & Finance*, vol. 32, no. 8, pp. 1452–1467.

Leverage Ratio Rules for Commercial Banks (People's Republic of China), Notice of CBRC [2011] no. 3.

Levine, R 2002, ‘Bank-based or market-based financial systems: which is better?’, *Journal of Financial Intermediation*, vol 11, no. 4, pp. 398-428.

Levine, R 2003, *The corporate governance of banks*, Global Corporate Governance Forum, The World Bank, Washington, DC.

Lew, YK, Yu, J & Park, JY 2017, ‘The impacts of independent director and CEO duality on performance in the Chinese post-institutional-transition era’, *Canadian Journal of Administrative Sciences*. DOI: 10.1002/CJAS.1468.

Li, H, Meng, L, Wang, Q & Zhou, L-A 2008, ‘Political connections, financing and firm performance: evidence from Chinese private firms’, *Journal of Development Economics*, vol. 87, no. 2, pp. 283–299.

Li, S 2013, ‘China’s (painful) transition from relation-based to rule-based governance: when and how, not if and why’, *Corporate Governance: An International Review*, vol. 21, no. 6, pp. 567–576.

Li, W & Cao, T 2004, ‘Ownership structure, governance and performance of city commercial banks: evidence from Shandong and He’nan’ (in Chinese), *Economic Research*, vol. 12, pp. 4-15.

Li, W & Qian XH 2012, 'Local official governance and credit supply of the city commercial banks *(in Chinese)*', *China Economic Quarterly*, vol. 11, no. 4, pp. 1239-1260.

Li, Y 2014, Governance, regulation and performance of non-listed small corporations in Australia: a structural equation modelling approach, PhD thesis, Victoria University, Victoria.

Li, Y & Li, WH 2008, ‘On the market competition of foreign bank in the banking industry in China: an empirical analysis based on Panzar–Rosse model’, *Journal of Financial Research*, vol. 5, pp. 10-19.

Li, Z. and Dai, S., 2009. *Which Theory Is Directing China’s Reform of State-Owned Enterprises: From 1978 to 2008 and Onward?* (No. 42305). University Library of Munich, Germany.

Liang, Q, Xu, P & Jiraporn, P 2013, ‘Board characteristics and Chinese bank performance’, *Journal of Banking & Finance*, vol. 37, no. 8, pp. 2953–2968.

Lin, X & Zhang, Y 2009, ‘Bank ownership reform and bank performance in China’, *Journal of Banking & Finance*, vol. 33, no. 1, pp. 20–29.

Liu, Q 2006, ‘Corporate governance in China: current practices, economic effects and institutional determinants’, *CESifo Economic Studies*, vol. 52, no. 2, pp. 415–453.

Liu, Y, Miletkov, MK, Wei, Z & Yang, T 2015, ‘Board independence and firm performance in China’, *Journal of Corporate Finance*, vol. 30, February, pp. 223–244.

Louzis, DP, Vouldis, AT & Metaxas, VL 2012, 'Macroeconomic and bank-specific determinants of non-performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios', *Journal of Banking & Finance*, vol. 36, no. 4, pp. 1012–1027.

Lozano-Vivas, A & Pasiouras, F 2014, 'Bank productivity change and off-balance-sheet activities across different levels of economic development', *Journal of Financial Services Research*, vol. 46, no. 3, pp. 271–294.

Lu, D, Thangavelu, SM & Hu, Q 2005, 'Biased lending and non-performing loans in China's banking sector', *Journal of Development Studies*, vol. 41, no. 6, pp. 1071–1091.

Lu, Y & Sun, T 2013, *Local government financing platforms in China: a fortune or misfortune?*, Working Paper No. 13/243, International Monetary Fund, Washington, DC.

Luo, D 2016, 'Evolution of the Chinese banking system', *The development of the Chinese financial system and reform of Chinese commercial banks*, The Nottingham China Policy Institute Series, Springer, pp. 1–24.

Luo, Y 2015, 'CEO power, ownership structure and pay performance in Chinese banking', *Journal of Economics and Business*, vol. 82, Novermber-December, pp. 3–16.

Ma, G & Fung, BSC 2002, *China's asset management corporations*, Working Paper No. 115, Bank for International Settlements, Basel.

Macey, JR & Miller, GP 1995, 'Corporate governance and commercial banking: a comparative examination of Germany, Japan, and the United States', *Stanford Law Review*, vol. 48, no. 1, pp. 73–112.

Macey, JR & O'Hara, M 2003, 'The corporate governance of banks', *Economic Policy Review*, vol. 9, no. 1, pp. 91–107.

Mallin, CA 2010, *Corporate governance*, Oxford University Press, Oxford.

Martin, MF 2012, *China's banking system: issues for congress*, Report for Congress, Congressional Research Service, Washington, DC.

Matthews, K 2013, 'Risk management and managerial efficiency in Chinese banks: a network DEA framework', *Omega*, vol. 41, no. 2, pp. 207–215.

Matthews, K & Zhang, NX 2010, 'Bank productivity in China 1997–2007: measurement and convergence', *China Economic Review*, vol. 21, no. 4, pp. 617–628.

Measures for Evaluating the Performance of Directors of Commercial Banks (Provisional) (People's Republic of China), Order of CBRC [2010] no. 7.

Measures for the Administration of the Leverage Ratio of Commercial Banks (2015 Revised) (People's Republic of China), Order of CBRC [2015] no. 1.

Measures for the Administration of the Office-Holding Qualifications of the Directors (Council Members) and Senior Managers of Banking Financial Institutions (People's Republic of China), Order of CBRC [2012] no. 3.

Measures for the Liquidity Risk Management of Commercial Banks (Provisional) (People's Republic of China), Notice of CBRC [2014] No. 2.

Measures for the Management of Capital Adequacy Ratios of Commercial Banks (2007 Amendment) (People's Republic of China), Order of CBRC [2007] No. 11.

Mehran, H, Morrison, AD & Shapiro, JD 2011, *Corporate governance and banks: what have we learned from the financial crisis?*, Staff Report No. 502, Federal Reserve Bank of New York, New York, NY.

Meier, HH & Meier, NC 2014, 'Corporate governance: an examination of US and European models', *Corporate Ownership & Control*, vol. 11, no. 2, pp. 347–351.

Micco, A & Panizza, U 2006, 'Bank ownership and lending behavior', *Economics Letters*, vol. 93, no. 2, pp. 248–254.

Miccolis, J, Shah, S & Tillinghast, TP 2000, *Enterprise risk management: an analytic approach*, Tillinghast–Towers Perrin, Parsippany, NJ.

Miller, KD 1992, 'A framework for integrated risk management in international business', *Journal of International Business Studies*, vol. 23, no. 2, pp. 311–331.

Minnick, K & Noga, T 2010, 'Do corporate governance characteristics influence tax management?', *Journal of Corporate Finance*, vol. 16, no. 5, pp. 703–718.

Minton, BA, Taillard, J & Williamson, R 2011, *Do independence and financial expertise of the board matter for risk taking and performance?*, Working Paper No. 014, Fisher College of Business, Columbus, OH.

Mitchell, DW 1982, 'The effects of interest-bearing required reserves on bank portfolio riskiness', *Journal of Financial and Quantitative Analysis*, vol. 17, no. 2, pp. 209–216.

Mitchell, J 1997, *Strategic creditor passivity, regulation, and bank bailouts*, Discussion Paper No. 1780, Centre for Economic Performance, London.

Mitchell, RK, Agle, BR & Wood, DJ 1997, 'Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts', *Academy of Management Review*, vol. 22, no. 4, pp. 853–886.

Mitnick, BM 1992, *The theory of agency and organizational analysis*, in N Bowie & RE Freeman (eds), *Ethics and agency theory: an introduction*, Oxford University Press, New York, NY, pp. 75–96.

Molyneux, P, Liu, H & Jiang, C 2014, *Bank capital, adjustment and ownership: evidence from China*, Discussion Paper No. 16/2014, Bank of Finland Institute for Economies in Transition, Helsinki.

Molyneux, P, Remolona, E & Seth, R 1998, ‘Modeling foreign bank performance and lending behavior’, *Financial Markets, Institutions & Instruments*, vol. 7, no. 4, pp. 26–41.

Morris, T 2007, ‘Internal and external sources of organizational change: corporate form and the banking industry’, *Sociological Quarterly*, vol. 48, no. 1, p. 119-140.

Mülbert, PO 2009, ‘Corporate governance of banks’, *European Business Organization Law Review*, vol. 10, no. 3, pp. 411–436.

Muth, M & Donaldson, L 1998, ‘Stewardship theory and board structure: a contingency approach’, *Corporate Governance: An International Review*, vol. 6, no. 1, pp. 5–28.

Navapan, K & Tripe, D 2003, 'An exploration of the relationship between bank capital levels and return on equity', in *Proceeding of the 16th Australasian Finance and Bank. Conf.(AFBC’03)*. Palmerston North, pp. 1-15.

Nguyen, BD & Nielsen, KM 2010, ‘The value of independent directors: evidence from sudden deaths’, *Journal of Financial Economics*, vol. 98, no. 3, pp. 550–567.

Nocco, BW & Stulz, RM 2006, ‘Enterprise risk management: theory and practice’, *Journal of Applied Corporate Finance*, vol. 18, no. 4, pp. 8–20.

Okazaki, K 2007, *Banking system reform in China: the challenge of moving toward a market-oriented economy*, Occasional Paper, RAND Corporation, Santa Monica, CA.

Oliver, J, Qu, W & Wise, V 2014, 'Corporate Governance: A Discussion on Minority Shareholder Protection in China', *International Journal of Economics and Finance*, vol. 6, no. 3, pp. 111-119.

Ooghe, H & De Langhe, T 2002, ‘The Anglo–American versus the Continental European corporate governance model: empirical evidence of board composition in Belgium’, *European Business Review*, vol. 14, no. 6, pp. 437–449.

Opinions on the Adjustment to the Market Access Policy for Branches and Sub-Branches of Small and Medium Commercial Banks (Provisional) (People’s Republic of China), Notice of CBRC [2009] no. 143.

Organisation for Economic Co-Operation and Development (OECD) 2004, *OECD principles of corporate governance*, OECD, Paris.

—— 2005, ‘Overview of Governance of State-owned Listed Companies in China’, *OECD Policy Dialogue on Corporate Governance in China*, 19 May, Beijing.

—— 2010, ‘Corporate governance and the financial crisis: conclusions and emerging good practices to enhance implementation of the Principles’, *OECD Steering Group on Corporate Governance*, view on 20 October 2016, available at: http://www.oecd.org/corporate/ca/corporategovernanceprinciples/44679170.pdf

Orts, EW & Strudler, A 2002, ‘The ethical and environmental limits of stakeholder theory’, *Business Ethics Quarterly*, vol. 12, no. 2, pp. 215–233.

Otchere, I 2005, 'Do privatized banks in middle- and low-income countries perform better than rival banks? An intra-industry analysis of bank privatization', *Journal of Banking & Finance*, vol. 29, no. 8, pp. 2067–2093.

Park, SH & Luo, Y 2001, 'Guanxi and organizational dynamics: organizational networking in Chinese firms', *Strategic Management Journal*, vol. 22, no. 5, pp. 455–477.

Parmar, BL, Freeman, RE, Harrison, JS, Wicks, AC, Purnell, L & de Colle, S 2010, 'Stakeholder theory: the state of the art', *Academy of Management Annals*, vol. 4, no. 1, pp. 403–445.

Pathan, S 2009, 'Strong boards, CEO power and bank risk-taking', *Journal of Banking & Finance*, vol. 33, no. 7, pp. 1340–1350.

Pathan, S & Skully, M 2010, 'Endogenously structured boards of directors in banks', *Journal of Banking & Finance*, vol. 34, no. 7, pp. 1590–1606.

Patro, S, Lehn, K & Zhao, M 2009, 'Determinants of the size and structure of corporate boards: 1935–2000', *Financial Management*, vol. 38, no. 4, pp. 747–780.

Peng, MW, Li, Y, Xie, E & Su, Z 2010, 'CEO duality, organizational slack, and firm performance in China', *Asia Pacific Journal of Management*, vol. 27, no. 4, pp. 611–624.

Peng, MW, Sun, SL & Markóczy, L 2015, 'Human capital and CEO compensation during institutional transitions', *Journal of Management Studies*, vol. 52, no. 1, pp. 117–147.

Peng, MW, Zhang, S & Li, X 2007, 'CEO duality and firm performance during China's institutional transitions', *Management and Organization Review*, vol. 3, no. 2, pp. 205–225.

Perry, T 2000, 'Incentive compensation for outside directors and CEO turnover', Unpublished paper, Arizona State University.

Pfeffer, J., 1972. 'Interorganizational influence and managerial attitudes', *Academy of Management Journal*, vol. 15, no. 3, pp.317-330.

Pfeffer, J & Salancik, GR 1978, 'Social control of organizations', in J Greenman (ed), *The external control of organizations: a resource dependence perspective*, Harper & Row, New York, pp. 39–61.

Pham, PK, Suchard, J-A & Zein, J 2011, 'Corporate governance and alternative performance measures: evidence from Australian firms', *Australian Journal of Management*, vol. 36, no. 3, pp. 371–386.

Phillips, R, Freeman, RE & Wicks, AC 2003, 'What stakeholder theory is not', *Business Ethics Quarterly*, vol. 13, no. 4, pp. 479–502.

Podpiera, R 2006, *Progress in China's banking sector reform: has bank behavior changed?*, Working Paper No. 13/243, International Monetary Fund, Washington, DC.

Polo, A 2007. *Corporate governance of banks: the current state of the debate* (No. 2325). University Library of Munich, Germany.

Polski, MM 2000, 'Measuring transaction costs and institutional change in the US commercial banking industry', paper presented at the *Annual Conference of the International Society for New Institutional Economics*, Tübingen, 22–24 September.

Prowse, S 1997, 'The corporate governance system in banking: what do we know?', *Banca del Lavoro Quarterly Review*, vol. 50, no. 200, pp. 11–40.

Qian, X 2012, 'Officials' tenure, political connection and credit supply of city commercial banks' (in Chinese), *Economic Science*, vol. 2, pp. 89-101.

Qian, X, Cao, T & Li, WA 2011, 'Promotion pressure, officials' tenure and lending behavior of the city commercial banks' (in Chinese), *Economic Research Journal*, vol. 12, pp. 72-85.

Qian, X, Zhang, G & Liu, H 2015, 'Officials on boards and the prudential behavior of banks: evidence from China's city commercial banks', *China Economic Review*, vol. 32, no. C, pp. 84–96.

Qian, Y 1996, 'Enterprise reform in China: agency problems and political control', *Economics of Transition*, vol. 4, no. 2, pp. 427–447.

Rajagopalan, N & Zhang, Y 2008, 'Corporate governance reforms in China and India: challenges and opportunities', *Business Horizons*, vol. 51, no. 1, pp. 55–64.

Redmond, P 2000, *Companies and securities law: commentary and materials*, Lawbook Company, Pyrmont, NSW.

Regulating Joint Stock Commercial Banks' Annual Reports (People's Republic of China), Notice of CBRC [2004] no. 8.

Regulating the Interbank Business Governance of Commercial Banks (People's Republic of China), Notice of CBRC [2014] no. 140.

Regulation for Foreign Financial Institutions Investing in China's Financial Institutions (People's Republic of China), Order of CBRC [2003] no. 6.

Regulation Governing Capital Adequacy of Commercial Banks (People's Republic of China), Order of CBRC [2004] no. 2.

Roland, G 2000, *Transition and economics: politics, markets, and firms*, MIT Press, Cambridge, MA.

Ross, SA 1973, 'The economic theory of agency: the principal's problem', *American Economic Review*, vol. 63, no. 2, pp. 134–139.

Rules on Information Disclosure of Commercial Banks (People's Republic of China), Order of CBRC [2007] no. 7.

Sabato, G 2010, 'Financial crisis: where did risk management fail?', *International Review of Applied Financial Issues and Economics*, vol. 2, no. 2, pp. 315–327.

Sami, H, Wang, J & Zhou, H 2011, 'Corporate governance and operating performance of Chinese listed firms', *Journal of International Accounting, Auditing and Taxation*, vol. 20, no. 2, pp. 106–114.

Sapienza, P 2004, 'The effects of government ownership on bank lending', *Journal of Financial Economics*, vol. 72, no. 2, pp. 357–384.

Schultz, EL, Tan, DT & Walsh, KD 2010, 'Endogeneity and the corporate governance-performance relation', *Australian Journal of Management*, vol. 35, no. 2, pp. 145–163.

Scott, JA & Dunkelberg, WC 1999, 'Bank consolidation and small business lending: a small firm perspective', in JL Blanton, A Williams & SLW Rhine (eds), *Business access to capital and credit*, Federal Reserve Bank of Chicago, Chicago, IL, pp. 328–361.

Scott, K 1998, 'The role of corporate governance in South Korean economic reform', *Journal of Applied Corporate Finance*, vol. 10, no. 4, pp. 8–15.

Shan, G & Xu, L 2012, 'Do internal governance mechanisms impact on firm performance? Empirical evidence from financial sector in China', *Journal of Asia-Pacific Business*, vol 13, no. 2, pp. 114-142.

Shapiro, SP 2005, 'Agency theory', *Annual Review of Sociology*, vol. 31, pp. 263–284.

Sharma, A 1997, 'Professional as agent: knowledge asymmetry in agency exchange', *Academy of Management Review*, vol. 22, no. 3, pp. 758–798.

Shehzad, CT, de Haan, J & Scholtens, B 2010, 'The impact of bank ownership concentration on impaired loans and capital adequacy', *Journal of Banking & Finance*, vol. 34, no. 2, pp. 399–408.

Shen, Y, Shen, M, Xu, Z & Bai, Y 2009, 'Bank size and small- and medium-sized enterprise (SME) lending: evidence from China', *World Development*, vol. 37, no. 2, pp. 800–811.

Shen, Z, Liao, H & Weyman-Jones, T 2009, 'Cost efficiency analysis in banking industries of ten Asian countries and regions', *Journal of Chinese Economic and Business Studies*, vol. 7, no. 2, pp. 199–218.

Shih, V, Zhang, Q & Liu, M 2007, 'Comparing the performance of Chinese banks: a principal component approach', *China Economic Review*, vol. 18, no. 1, pp. 15–34.

Shleifer, A 1998, 'State versus private ownership', *Journal of Economic Perspectives*, vol. 12, no. 4, pp. 133–150.

Shleifer, A & Vishny, RW 1986, 'Large shareholders and corporate control', *Journal of Political Economy*, vol. 94, no. 3 (part 1), pp. 461–488.

—— 1997, 'A survey of corporate governance', *Journal of Finance*, vol. 52, no. 2, pp. 737–783.

—— 2002, *The grabbing hand: government pathologies and their cures*, Cambridge, MA: Harvard University Press.

Shrieves, RE & Dahl, D 2003, 'Discretionary accounting and the behavior of Japanese banks under financial duress', *Journal of Banking & Finance*, vol. 27, no. 7, pp. 1219–1243.

Smith, A 1776, *The wealth of nations*, Modern Library, New York, NY.

Soedarmono, W, Tarazi, A, Agusman, A, Monroe, GS & Gasbarro, D 2012, *Loan loss provisions and lending behaviour of banks: Asian evidence during 1992–2009*, viewed on 14 September 2016, available at: http://dx.doi.org/10.2139/ssrn.2049217

Soon, A & Straub, DW 1998, 'Production and transaction economies and IS outsourcing: a study of the US banking industry', *MIS Quarterly*, vol. 22, no. 4, pp. 535–552.

Stiglitz, JE 1993, 'The role of the state in financial markets', *World Bank Economic Review*, vol. 7, no. suppl 1, pp. 19–52.

Stiglitz, JE & Weiss, A 1981, 'Credit rationing in markets with imperfect information', *American Economic Review*, vol. 71, no. 3, pp. 393–410.

Stiles, P & Taylor, B 2001, *Boards at work: How directors view their roles and responsibilities: How directors view their roles and responsibilities*, Oxford University Press, Oxford.

Su, C, Mitchell, RK & Sirgy, MJ 2007, 'Enabling guanxi management in China: a hierarchical stakeholder model of effective guanxi', *Journal of Business Ethics*, vol. 71, no. 3, pp. 301–319.

Sufian, F 2012, 'For which option is credit risk more representative on China banks' total factor productivity: efficiency change or technological progress?', *China Finance Review International*, vol. 2, no. 2, pp. 180–202.

Sullivan, RJ & Spong, KR 2007, 'Manager wealth concentration, ownership structure, and risk in commercial banks', *Journal of Financial Intermediation*, vol. 16, no. 2, pp. 229–248.

Sun, J, Harimaya, K & Yamori, N 2013, 'Regional economic development, strategic investors, and efficiency of Chinese city commercial banks', *Journal of Banking & Finance*, vol. 37, no. 5, pp. 1602–1611.

Sun, P, Hu, HW & Hillman, AJ 2016, 'The dark side of board political capital: enabling blockholder rent appropriation', *Academy of Management Journal*, vol. 59, no. 5, pp. 1801–1822.

Supporting Policy Documents for the Capital Regulation of Commercial Banks (People's Republic of China), Notice of CBRC [2013] no. 33.

Talaulicar, T & Werder, AV 2008, 'Patterns of compliance with the German corporate governance code', *Corporate Governance: An International Review*, vol. 16, no. 4, pp. 255–273.

Thadden, E-L & Berglöf, E 1999, 'The changing corporate governance paradigm: implications for transition and developing countries', *Annual World Bank Conference on Development Economics*, Washington DC.

The Company Law of the People's Republic of China (2005), the Nation People's Congress.

The Security Law of the People's Republic of China (2006), the Nation People's Congress.

Tirole, J 1994, 'The internal organization of government', *Oxford Economic Papers*, vol. 46, no. 1, pp. 1–29.

Tricker, RI 1994, 'Editorial', *Corporate Governance: An International Review*, vol. 2, no. 1, pp. 1-4.

University of Cambridge, n.d., *The Cadbury archive*, viewed on 20 September 2016, available at: http://cadbury.cjbs.archios.info/report.

Useem, M & Zelleke, A 2006, 'Oversight and delegation in corporate governance: deciding what the board should decide', *Corporate Governance: An International Review*, vol. 14, no. 1, pp. 2–12.

Van Slyke, DM 2007, 'Agents or stewards: using theory to understand the government-nonprofit social service contracting relationship', *Journal of Public Administration Research and Theory*, vol. 17, no. 2, pp. 157–187.

Vesala, T 2007, 'Switching costs and relationship profits in bank lending', *Journal of Banking & Finance*, vol. 31, no. 2, pp. 477-493.

Wei, LL 2015, 'China to begin with deposit insurance in May', *The Wall Street Journal*, 31 March, http://www.wsj.com/articles/china-to-begin-deposit-insurance-from-may-1427794649

Wei, S-J & Wang, T 1997, 'The Siamese twins: do state-owned banks favor state-owned enterprises in China?', *China Economic Review*, vol. 8, no. 1, pp. 19–29.

Wen, W 2010, *Ownership structure and banking performance: new evidence in China*, Universitat Autònoma de Barcelona Departament D'economia de L'empresa, Barcelona.

Williams, J & Nguyen, N 2005, 'Financial liberalisation, crisis, and restructuring: a comparative study of bank performance and bank governance in South East Asia', *Journal of Banking & Finance*, vol. 29, no. 8, pp. 2119–2154.

Williamson, OE 1979, 'Transaction-cost economics: the governance of contractual relations', *Journal of Law and Economics*, vol. 22, no. 2, pp. 233–261.

—— 1981, 'The economics of organization: the transaction cost approach', *American Journal of Sociology*, vol. 87, no. 3, pp. 548–577.

—— 1984, 'Corporate governance', *Yale Law Journal*, vol. 93, no. 7, pp. 1197–1230.

—— 1988, 'Corporate finance and corporate governance', *Journal of Finance*, vol. 43, no. 3, pp. 567–591.

Windmeijer, F 2005, 'A finite sample correction for the variance of linear efficient two-step GMM estimators', *Journal of Econometrics*, vol. 126, no. 1, pp. 25–51.

Wintoki, MB, Linck, JS & Netter, JM 2012, 'Endogeneity and the dynamics of internal corporate governance', *Journal of Financial Economics*, vol. 105, no. 3, pp. 581–606.

Wong, SC 2008, *Developing and implementing corporate governance codes*, Northwestern Law & Econ Research Paper no. 10-31, Northwestern University Pritzker School of Law, Chicago.

Woodward, S 1988, 'A transaction cost analysis of banking activity and deposit insurance', *Cato Journal*, vol. 7, no. 3, pp. 683–700.

Wooldridge, JM 2001, 'Applications of generalized method of moments estimation', *Journal of Economic Perspectives*, vol. 15, no. 4, pp. 87–100.

Wu, J, Gyourko, J, and Deng, Y, 2016. 'Evaluating the risk of Chinese housing markets: What we know and what we need to know', *China Economic Review*, vol. 39, July, pp. 91-114.

Wu, W, Wu, C & Rui, OM 2012, 'Ownership and the value of political connections: evidence from China', *European Financial Management*, vol. 18, no. 4, pp. 695–729.

Wu, Y & Bowe, M 2010, 'Information disclosure, market discipline and the management of bank capital: evidence from the Chinese financial sector', *Journal of Financial Services Research*, vol. 38, no. 2-3, pp. 159–186.

Yang, J, Chi, J & Young, M 2011, 'A review of corporate governance in China', *Asian–Pacific Economic Literature*, vol. 25, no. 1, pp. 15–28.

Yao, S 2007, 'On the efficiency of Chinese banks and WTO challenges', *Applied Economics*, vol. 39, no. 5, pp. 629–643.

Zahra, SA & Pearce, JA 1989, 'Boards of directors and corporate financial performance: a review and integrative model', *Journal of Management*, vol. 15, no. 2, pp. 291–334.

Zhang, J, Wang, P & Qu, B 2012, 'Bank risk taking, efficiency, and law enforcement: evidence from Chinese city commercial banks', *China Economic Review*, vol. 23, no. 2, pp. 284–295.

Zhao, H, Ou, P, Lin, JW & Zhang, J 2014, 'Introducing foreign strategic investors and net interest margins in Chinese banks', *Journal of Applied Business Research*, vol. 30, no. 2, pp. 1377–1393.

Zhao, S & Du, H 2013, 'Government holding, local debt and local financial security in China—a study of local government's tunneling in city commercial banks', *Advances in Information Sciences and Service Sciences*, vol. 5, no. 8, pp. 714–721.

Zhou, X, Han, Y & Wang, R 2013, 'An empirical investigation on firms' proactive and passive motivation for bribery in China', *Journal of Business Ethics*, vol. 118, no. 3, pp. 461–472.

Zhuang, C & Wheale, P 2007, 'The new capital accord and the Chinese banking industry', *Journal of Banking Regulation*, vol. 8, no. 3, pp. 262–289.

Zou, Y 2012, 'Basel III and its implementation in China's banking industry', *The Euro financial crisis: impacts on banking, capital markets, and regulation*, Postdam, 20-21 July.

Zsohar, P 2012, 'Short introduction to the generalized method of moments', *Hungarian Statistical Review*, Special Number 16, pp. 150–170.

APPENDIX 1: OLS ESTIMATION RESULTS

OLS Estimation for NPL Ratio

Explanatory Variables	Coefficient	Std Error	*t*-statistic	Prob.
Constant	0.00673	0.00266	2.53464	0.01190
NPL(−1)	0.45938	0.04249	10.81200	0.00000
BOARDSIZE	−0.00011	0.00010	−1.05346	0.29320
BOARDPC	−0.00121	0.00171	−0.70553	0.48120
BOARDIND	0.00137	0.00259	0.52853	0.59760
CEO	0.00064	0.00046	1.38964	0.16600
NISFOREIGN*BLOCK	−0.00190	0.00551	−0.34398	0.73120
NISGOV*BLOCK	−0.00195	0.00316	−0.61487	0.53930
NISSOE*BLOCK	−0.00243	0.00244	−0.99739	0.31960
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	−0.00636	0.00461	−1.37862	0.16940
LIST	0.00051	0.00072	0.70630	0.48070
OSSTATE	0.00034	0.00137	0.25068	0.80230
OSFOREIGN	−0.00245	0.00347	−0.70552	0.48120
(1-TYPE)*LRGD	−0.00002	0.00010	−0.18222	0.85560
BGROWTH	−0.00493	0.00110	−4.47744	0.00000
LOANCOM	0.00772	0.00322	2.39975	0.01720
LOANIND	0.00121	0.00253	0.47687	0.63390
LOANRE	−0.00232	0.00589	−0.39325	0.69450

Note: Dependent variable: NPL; Adjusted R^2: 0.4670; F-statistics: 13.6788 (prob.: 0.0000).

OLS Estimation for CAR

Explanatory Variables	Coefficient	Std Error	*t*-statistic	Prob.
Constant	0.07288	0.01144	6.37200	0.00000
CAR(−1)	0.31161	0.04557	6.83752	0.00000
BOARDSIZE	0.00043	0.00042	1.03398	0.30220
BOARDPC	−0.00643	0.00683	−0.94094	0.34770
BOARDIND	−0.00687	0.01064	−0.64632	0.51870
CEO	0.00076	0.00190	0.40226	0.68790
NISFOREIGN*BLOCK	0.03144	0.02280	1.37931	0.16910
NISGOV*BLOCK	0.01810	0.01301	1.39135	0.16550
NISSOE*BLOCK	0.00446	0.01004	0.44411	0.65740
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	−0.01600	0.01901	−0.84178	0.40080
LIST	0.00384	0.00301	1.27829	0.20240
OSSTATE	−0.00321	0.00562	−0.57226	0.56770
OSFOREIGN	−0.03217	0.01435	−2.24184	0.02590
(1-TYPE)*LRGD	0.00152	0.00044	3.41583	0.00080
BGROWTH	0.01143	0.00437	2.61295	0.00960
LOANCOM	−0.00220	0.01294	−0.16991	0.86520
LOANIND	0.00064	0.01047	0.06113	0.95130
LOANRE	−0.02100	0.02430	−0.86420	0.38840

Note: Dependent variable: CAR; Adjusted R^2: 0.3634; F-statistics: 9.2598 (prob.: 0.0000).

OLS Estimation for LTD Ratio

Explanatory Variables	Coefficient	Std Error	*t*-Statistic	Prob.
Constant	0.12688	0.04358	2.91150	0.00400
LTD(−1)	0.82689	0.04013	20.60624	0.00000
BOARDSIZE	0.00079	0.00147	0.53816	0.59100
BOARDPC	0.04515	0.02401	1.88062	0.06130
BOARDIND	0.06710	0.03760	1.78449	0.07570
CEO	−0.00599	0.00677	−0.88531	0.37690
NISFOREIGN*BLOCK	−0.08436	0.08006	−1.05370	0.29310
NISGOV*BLOCK	−0.02521	0.04588	−0.54943	0.58320
NISSOE*BLOCK	−0.02247	0.03545	−0.63399	0.52670
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	0.02244	0.06684	0.33568	0.73740
LIST	−0.01284	0.01039	−1.23630	0.21760
OSSTATE	−0.02534	0.01972	−1.28505	0.20010
OSFOREIGN	0.03820	0.05035	0.75861	0.44890
(1-TYPE)*LRGD	−0.00317	0.00156	−2.03563	0.04290
BGROWTH	−0.05471	0.01550	−3.52890	0.00050
LOANCOM	−0.01753	0.04566	−0.38405	0.70130
LOANIND	0.02811	0.03893	0.72220	0.47090
LOANRE	−0.19916	0.08461	−2.35377	0.01940

Note: Dependent variable: LTD; Adjusted R^2: 0.8071; F-statistics: 61.5419 (prob.: 0.0000).

OLS Estimation for LROAA

Explanatory Variables	Coefficient	Std Error	*t*-Statistic	Prob.
Constant	−2.66780	0.31708	−8.41365	0.00000
LROAA(−1)	0.48075	0.03832	12.54462	0.00000
BOARDSIZE	−0.00173	0.00512	−0.33867	0.73520
BOARDPC	−0.31129	0.08565	−3.63456	0.00030
BOARDIND	−0.17872	0.13049	−1.36961	0.17220
CEO	−0.02685	0.02473	−1.08563	0.27880
NISFOREIGN*BLOCK	0.83805	0.28907	2.89908	0.00410
NISGOV*BLOCK	0.32159	0.16469	1.95271	0.05210
NISSOE*BLOCK	0.05280	0.12013	0.43949	0.66070
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	0.48859	0.24244	2.01528	0.04500
LIST	0.05485	0.03557	1.54195	0.12450
OSSTATE	0.12051	0.07094	1.69873	0.09070
OSFOREIGN	−0.56122	0.18518	−3.03069	0.00270
LRED	0.03823	0.02256	1.69425	0.09160
BGROWTH	0.15470	0.06177	2.50463	0.01300
LTD	−0.13964	0.12953	−1.07804	0.28220
NPL	−13.34870	2.89847	−4.60543	0.00000
CAR	1.84361	0.71753	2.56937	0.01080

Note: Dependent variable: LROAA; Adjusted R^2: 0.5992; F-statistics: 22.6341 (prob.: 0.0000).

OLS Estimation for LROAE

Explanatory Variables	Coefficient	Std Error	*t*-Statistic	Prob.
Constant	−0.66769	0.31068	−2.14915	0.03270
LROAE(−1)	0.45279	0.04560	9.93052	0.00000
BOARDSIZE	−0.00035	0.00605	−0.05747	0.95420
BOARDPC	−0.24473	0.10296	−2.37690	0.01830
BOARDIND	−0.11925	0.15528	−0.76797	0.44330
CEO	−0.01949	0.02950	−0.66087	0.50940
NISFOREIGN*BLOCK	0.47358	0.34265	1.38211	0.16830
NISGOV*BLOCK	0.21511	0.19575	1.09890	0.27300
NISSOE*BLOCK	−0.08185	0.14358	−0.57009	0.56920
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	0.29354	0.28853	1.01737	0.31000
LIST	0.10501	0.04261	2.46436	0.01450
OSSTATE	0.22057	0.08325	2.64943	0.00860
OSFOREIGN	−0.34152	0.21720	−1.57237	0.11720
LRED	0.02412	0.02669	0.90376	0.36710
BGROWTH	0.28185	0.07306	3.85782	0.00010
LTD	−0.28973	0.15319	−1.89134	0.05980
NPL	−13.29765	3.56568	−3.72934	0.00020
CAR	−2.19262	0.85870	−2.55342	0.01130

Note: Dependent variable: LROAE; Adjusted R^2: 0.4669; F-statistics: 13.6740 (prob.: 0.0000).

OLS Estimation for LCOI

Explanatory Variables	Coefficient	Std Error	*t*-Statistic	Prob.
Constant	0.26328	0.18595	1.41584	0.15700
LCOI(−1)	0.72608	0.04234	17.14724	0.00000
BOARDSIZE	−0.00179	0.00367	−0.48874	0.62510
BOARDPC	0.06381	0.06200	1.02931	0.30350
BOARDIND	−0.07393	0.09601	−0.77005	0.44140
CEO	−0.03500	0.01804	−1.94080	0.05250
NISFOREIGN*BLOCK	0.04782	0.21002	0.22770	0.81990
NISGOV*BLOCK	−0.19819	0.12039	−1.64629	0.09990
NISSOE*BLOCK	0.05750	0.08730	0.65862	0.51030
(1-NISFOREIGN-NISGOV-NISSOE)*BLOCK	0.06634	0.17614	0.37663	0.70650
LIST	−0.05818	0.02582	−2.25377	0.02440
OSSTATE	−0.12656	0.05088	−2.48756	0.01300
OSFOREIGN	0.10151	0.13241	0.76666	0.44340
LRED	−0.04521	0.01657	−2.72772	0.00650
BGROWTH	−0.17672	0.04602	−3.84052	0.00010
LTD	0.11420	0.09581	1.19191	0.23350
NPL	2.62152	2.09523	1.25118	0.21110
CAR	−0.44331	0.51948	−0.85337	0.39360

Note: Dependent variable: LCOI; Adjusted R^2: 0.6212; F-statistics: 24.7306 (prob.: 0.0000).

APPENDIX 2: SUMMARY OF OLS ESTIMATION RESULTS

Explanatory Variables	NPL	CAR	LTD	LROAA	LROAE	LCOI
Constant	0.00673** (2.53)	0.07288*** (6.37)	0.12688*** (2.91)	−2.66780*** (−8.41)	−0.66769** (−2.15)	0.26328 (1.42)
Lagged Endogenous variable	0.45938*** (10.81)	0.31161*** (6.84)	0.82689*** (20.61)	0.48075*** (12.54)	0.45279*** (9.93)	0.72608*** (17.15)
BOARDSIZE	−0.00011 (−1.05)	0.00043 (1.03)	0.00079 (0.54)	−0.00173 (−0.34)	−0.00035 (−0.06)	−0.00179 (−0.49)
BOARDPC	−0.00121 (−0.71)	−0.00643 (−0.94)	0.04515* (1.88)	−0.31129*** (−3.63)	−0.24473** (−2.38)	0.06381 (1.03)
BOARDIND	0.00137 (0.53)	−0.00687 (−0.65)	0.06710* (1.78)	−0.17872 (−1.37)	−0.11925 (−0.77)	0.07393 (0.77)
CEO	0.00064 (1.39)	0.00076 (0.40)	−0.00599 (−0.89)	−0.02685 (−1.09)	−0.01949 (−0.66)	−0.03500* (−1.94)
NISFOREIGN* BLOCK	−0.00190 (−0.34)	0.03144 (1.38)	−0.08436 (−1.05)	0.83805*** (2.90)	0.47358 (1.38)	0.04782 (0.23)
NISGOV* BLOCK	−0.00195 (−0.61)	0.01810 (1.39)	−0.02521 (−0.55)	0.32159* (1.95)	0.21511 (1.10)	−0.19819* (−1.65)
NISSOE*BLOCK	−0.00243 (−1.00)	0.00446 (0.44)	−0.02247 (−0.63)	0.05280 (0.44)	−0.08185 (−0.57)	0.05750 (0.66)
(1-NISFOREIGN-NISGOV-NISSOE)* BLOCK	−0.00636 (−1.38)	−0.01600 (−0.84)	0.02244 (0.34)	0.48859* (2.02)	0.29354 (1.02)	0.06634 (0.38)
LIST	0.00051 (0.71)	0.00384 (1.28)	−0.01284 (−1.24)	0.05485 (1.54)	0.10501** (2.46)	−0.05818** (−2.25)
OSSTATE	0.00034 (0.25)	−0.00321 (−0.57)	−0.02534 (−1.29)	0.12051* (1.70)	0.22057*** (2.65)	−0.12656** (−2.49)
OSFOREIGN	−0.00245 (−0.71)	−0.03217** (−2.24)	0.03820 (0.76)	−0.56122*** (−3.03)	−0.34152 (−1.57)	0.10151 (0.77)
LRED	–	–	–	0.03823* (1.69)	0.02412 (0.90)	−0.04521*** (−2.73)
(1-TYPE)*LRGD	−0.00002 (−0.18)	0.00152*** (3.42)	−0.00317** (−2.04)	–	–	–
BGROWTH	−0.00493*** (−4.48)	0.01143*** (2.61)	−0.05471*** (−3.53)	0.15470*** (2.50)	0.28185*** (3.86)	−0.17672*** (−3.84)
LTD	–	–	–	−0.13964 (−1.08)	−0.28973* (−1.89)	0.11420 (1.19)
NPL	–	–	–	−13.34870*** (−4.61)	−13.29765*** (−3.73)	8.19235 (1.25)
CAR	–	–	–	1.84361*** (2.57)	−2.19262** (−2.55)	−0.46552 (−0.85)
LOANCOM	0.00772** (2.40)	−0.00220 (−0.17)	−0.01753 (−0.38)	–	–	–
LOANIND	0.00121 (0.48)	0.00064 (0.06)	0.02811 (0.72)	–	–	–
LOANRE	−0.00232 (−0.39)	−0.02100 (−0.86)	−0.19916** (−2.35)	–	–	–
Adjusted R^2	**0.4670**	**0.3634**	**0.8071**	**0.5992**	**0.4669**	**0.6212**

Note: Table based on the results of the OLS estimation of Equations 4.6–4.11. LROAA, LROAE and LCOI are the natural logarithm forms of ROAA, ROAE and COI, respectively. Figures in parentheses are t-statistics. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.