Proceedings of the 10th International Conference on Economic Management and Green Development
DOI: 10.54254/2754-1169/2026.39027

The Impact of Credit Risk Management on the Profitability of Commercial Banks in China

Hanya Zhang

New York University, New York, USA
maryzhang2004@gmail.com

Abstract. Banking institutions' credit risk management policies is having a dramatic effect on their financial performance, particularly in the upcoming markets in various markets in China. In China, the credit growth rates, and shifting regulations, have affected the way financial institutions act and behave. Concurrently, the primary aim for this research is to explore "the impact of credit risk management on the profitability of commercial banks in the Chinese banking sector" by using two key variables of "Non-performing Loans and Loan Loss Provisions to measure" the credit risk exposure that the banks face. Secondary data and regression analysis are applied in order to analyze the impact that these indicators have on "Return on Assets and Return on Equity" followed by comparative assessment. The crucial poor relationship between HNRs and profitability (due to effects on net interest income and provisioning) can be seen from the results. The requirements to provide for loans that could be lost also prevent short-term profitability since it siphons money away from productive lending operations. The discussion entails the essential risk profile differences portrayed in the bigger banks owned by the government and the commercial banks found in the smaller cities, that the former had smaller capital buffers, and fewer advanced risk governance processes, exposing them to greater risk of deteriorating credit. The findings have significant policy, banking management, and banking regulatory implications for China to make its banking system more resilient and profitable. The paper also offers critical recommendations for future research at the end.

Keywords: credit risk, non-performing loans, bank profitability, commercial banks, China

1. Introduction

Banks are playing essential function in any economy, transferring funds from surplus to deficit units and subject to the risks of intermediation. Credit risk is perhaps the most ubiquitous and significant of financial risks faced by banks, since the largest asset held by most banks is their lending portfolio [1]. "Credit risk" occurs when the loan recipient fails to fulfil the obligations stated in a contract, leaving behind non-performing loans that lead to reduced asset quality, lower income and eventually to institutional insolvency [2]. The changes in the Chinese banking industry over the last 30 years are significant, and the study of "Chinese credit risk management" and its effects on the profitability of a bank is theoretically important and practically relevant. The macroeconomic conditions under which Chinese banks operate have created significant credit risk issues in recent years, such as the

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2754-1169/2026.39027

economic downturn after the outbreak of COVID-19, the real estate sector's problems, and the increase in local government debt, which are all exerting pressure on NPL rates within the banking sector [3]. The paper explore "the effect of CRM on the profitability of the commercial banks in China and focuses on the effect of the two credit risk indicators, NPLs and LLP, on the basis of three banks, the large state-owned banks and the city commercial banks, respectively."

1.1. Research questions

RQ1: What is the relationship between non-performing loans and the profitability of commercial banks in China?

RQ2:How do loan loss provisions affect bank profitability?

RQ3: Does the effect of credit risk differ between large state-owned banks and smaller city commercial banks?

1.2. Research objectives

RO1: To examine the effect of credit risk on the profitability of Chinese commercial banks.

RO2: To assess the relationship between non-performing loans, loan loss provisions, and bank performance.

RO3: To compare credit risk effects across different types of Chinese banks.

2. Literature review

2.1. Credit risk and bank profitability

Credit risk and bank profitability have been a subject of much research in various geographical settings. In their study on NPLs in commercial banks in South Asia, higher NPL ratios resulted in significantly lower ROA and ROE, which they explained in terms of the two-way burden on the commercial banks: the loss of interest income and the raising of provisioning [4]. An increase in NPLs in commercial banks in Vietnam had a significant negative impact on profitability, especially in times of macroeconomic stress [5]. The results are corroborated by other theories that suggest that the credit risk of a banking system is a significant factor affecting the performance of a banking sector, since most banking systems have the largest interest income coming from their loan portfolios [6]. Credit risk (measured by NPL ratios) continued to negatively affect profitability in pre- and post-COVID-19 periods and the profitability determinants of city "commercial banks" in China and determined that NPLs and capital adequacy were among the most important determinants of profitability, with smaller banks being affected even when asset quality declined [7].

2.2. Non-performing loans

While managing credit risk, it is essential to understand the causes of NPLs. Climate change impacts on NPL ratios in 31 Chinese provinces. They identified physical risks, such as extreme weather and agricultural impacts, as new sources in addition to macroeconomic and firm-level risks [8]. The research investigated spatial credit risk in Chinese "commercial banks." They found systematic differences between coastal and inland areas, attributable to geographic economic gaps. Researchers conducted stress tests addressing local government debt, finding city "Commercial banks" more sensitive to default scenarios than state-owned peers [9].

DOI: 10.54254/2754-1169/2026.39027

2.3. Diversity in institutions and risk management skills

The risk management environment differs among the two types of banks due to the dual banking structure in China, tier institutional types and small-scale regional banks dominates the small scale banks, affecting profitability results. The present study, found that competitive pressures did not have an equal effect on both lending to state-owned banks and small-to-medium enterprises (SMEs), with smaller banks taking advantage of competition by engaging in risk-taking behaviour and large banks enjoying scale economies and diversification buffers [10]. Authors analyzed "the impact of the branching deregulation on the credit risk of local city "commercial banks" and found that the deregulation led to an increase in credit risk for city "commercial banks" that have low abilities in credit risk assessment [11]." Foreign investors affect the "credit risk of Chinese banks" positively such as disclosure of credit risk and quality of credit assessment, thereby reducing the buildup of NPLs over time [12]. The results of these studies suggest that institutional attributes can significantly affect the "relationship between the credit risk and profitability," including the extent of institutional ownership, institutional size, institutional geographic dispersion, and institutional governance quality.

2.4. Loan loss provisions and profitability

Recognizing expected credit losses is most closely interconnected with loan loss provisions with a strong direct relationship to profitability. The study examined green credit and banking risk-taking behaviour in China, and discovered that the requirement for the same criterion on the green loan portfolio and the conventional loan portfolio differed, as the default probability profile differed and the nature of the liabilities was different [13]. The differences in the effect of the LLP on profitability between an emerging and developed country, and found that LLP's effect on profitability decreased with the improvement of credit scoring and fewer loan defaults [14]. To examine the linkage between provisioning behavior and competitiveness in the dual banking structure, study reported the effects of competitiveness on provisioning behaviour, indicating that when a bank operates in a more competitive environment, it will restrict the level of discretionary provisions to ensure its existing profit rather than future resilience [15].

2.5. Research gap

A wealth of research shows that, credit risk negatively impacts bank profitability. But there are some loopholes in the study. However, limited research has conducted the comparative analysis on the differential impacts of credit risk in large SOEs and small city SOEs in China as most panel data study lumps together the various types of banks and thus masked out the difference in the implementation of "the credit risk management and credit profitability of large and small city SOEs." Furthermore, interdependence of "non-performing loans (NPLs) and loan loss provisions (LLPs)" is acknowledged but combination of both profitability has been overlooked so far in China's contextual. This study fills some of these gaps through a disaggregated comparative approach and the investigation of both indicative measures of credit risk in an analytical framework.

DOI: 10.54254/2754-1169/2026.39027

3. Methodology

3.1. Research design

The applied design for this research is quantitative, since it is based on the epistemology tradition of positivist of which most empirical banking studies are based. This study is quantitative because it uses monetary financial data, measures correlation between two sets of indicators "credit risk indicators and profitability indicators" and uses a comparative approach. Taking the second-hand panel data provided by the "annual report of the Chinese commercial banks" and the regulatory disclosure and financial data sources, the panel data analysis is appropriate for this case, which can show the time variation during the researching period as well as present the cross-sectional difference between the banks.

3.2. Using samples and data sources

The focus is on the commercial banks of China (ZIBs) which is divided into institutions of "the State-owned commercial banks and city commercial banks" based on their institutional characteristics. The banks selected for the sample have financial data that is consistent across the sample span. Data come from *"the China Banking and Insurance Regulatory Commission"* (*CBIRC*) statistical reports, "annual reports of individual banks, Wind Financial Database and the BankFocus (Bankscope) database." These sources encapsulate each of the variables on the balance sheet, income statement and the regulatory ratios that would be employed in the operationalisation of the study's variables.

3.3. Variable operationalisation

ROA = Net Income , Total Assets and ROE = Net Income, Total Shareholders' Equity are two of the most popular measures of profitability. They are described across the banking profitability literature, and represent different components of financial performance that capture concepts of how effectively banks use their assets (ROA) and what they add to the value of shareholders (ROE). The credit risk is operationalized in the following indicators: "the NPL ratio, defined as the ratio of NPLs to total loans; and the ratio of the LLP to total loans, defined as loan loss provisions to the total loans." The two indicators are commonly used empirical measures in empirical banking literature that are considered credit risk exposures.

Table 1. Variables used

Variable Type	Variable	Measurement
"Dependent Variable"	"Return on Assets (ROA)"	"Net income / Total assets"
Dependent Variable	"Return on Equity (ROE)"	"Net income / Shareholder equity"
"Independent Variable"	Non-performing Loans	"Ratio of bad loans to total loans"
Independent Variable	Loan Loss Provisions (LLPs)	Reserve funds for loan defaults

3.4. Analytical framework

The main method of analysis is panel data regression, both fixed-effects and random-effects specifications are used, and the Hausman test is applied to determine which specification is more

DOI: 10.54254/2754-1169/2026.39027

preferred, given its consistency and efficiency properties. The base regression is defined as a regression of profitability (ROA or ROE) on the NPL ratio, LLPs and a set of bank-specific and macroeconomic control variables. "The regression models are estimated separately for the state-owned banks and the city "commercial banks" and Chow tests are used to determine if there is a significant difference between the coefficients of the credit risk variables across groups." Mitigating potential endogeneity concerns entails two critical robustness checks: the use of alternative profitability measures and lagged specifications.

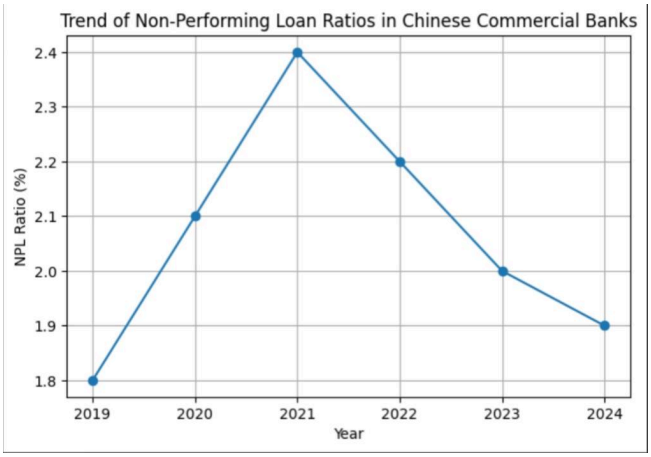


Figure 1. Changes in NPL ratios over time in China

4. Findings and discussion

4.1. Non-performing loans and profitability

According to theories and abundance of empirical evidence uncovered in literature, positive theory is formed that the NPL ratios will be negatively related with ROA and ROE. This is a straightforward theory, as NPLs accumulate in banks, a decrease in the interest income that the bank would expect through a loan in default is observed [16]. Further, the CBIRC has mandated that banks classify their loans into five categories and provision for it which, in addition, constitutes a regulatory and, of more significance, an earnings burden on the banks. The loss of profitability due to NPLs may be significant after the end of Corona Virus era, as weaknesses in corporate loan portfolio have been exposed by the COVID-19 situation.

4.2. LLP (loan loss provisions) and profitability

In short term, loan loss provisions are anticipated to impact negatively on profitability in that they are a charge to the income statement related to the recognition of expected credit losses, and an increase in loan loss provisions will be at the expense of pre-tax profit [17]. Although the correlation between LLPs and profitability the same with relationship between NPLs and profitability, its relationship is a reactive process to poor asset quality, and it is also a management decision. As per the literature study, higher the LLP, lower will be the ROA and ROE, and this will be dependent on the model applied by banks while provisioning and the regulatory stipulation for the minimum level of coverage as well.

DOI: 10.54254/2754-1169/2026.39027

4.3. The bank types have varying effects

For a number of interconnected reasons, credit risk is likely to be an essential negative factor in profitability of "city commercial banks" than of large state-owned banks." First, many "city commercial banks" possess concentrated loan portfolios, often with large exposure to the local real estate developer, small or medium-sized businesses, and local government financing vehicles, increasing the amount of idiosyncratic risk exposure and hence decreasing the diversification benefits [18]. Second, the capital ratio is generally lower for city "commercial banks" than for their risk-weighted assets making it more vulnerable to credit losses without breaching its capital requirements. Third, the quantitative credit modelling, stress testing and loan monitoring systems of the city's "commercial banks" which are relatively poor and fewer of these resources are allocated to them. In local government debt stress testing. "The sensitivity of local government "commercial banks" to adverse debt scenarios is significantly higher than that of state-run commercial banks, providing empirical evidence for this differential vulnerability of the two types of commercial banks in local governments.

4.4. Implications for risk management practice

After concluding the research contains, there are various implications associated with practicing the Credit Risk Management in all "banks in China." The research results and findings suggest that for "city commercial banks" to be profitable, implementation of better loan origination practices, borrower monitoring, and early warning systems is a prerequisite [19]. More sophisticated credit risk assessment models could be using more sophisticated "models of credit risks, such as credit risk assessment models" based on FinTech, such as machine learning-based credit risk assessment models, can enable smaller banks to identify credit deterioration indications earlier and take corrective action to address the issue [20].

5. Conclusion

The study has explored CRM effects on profitability for Chinese Commercial Banks"and primary effects of the two credit risks indicators (NPLs and LLP) have been studied in the context of three "types of commercial banks," namely ″the large state-owned commercial bank," the city commercial bank, and hybrid commercial banks. The analysis reveals that, the NPLs and LLPs will have a vast and a "strong negative impact on the other two indicators. This study has three contributions: It is theoretically possible to use it as a comparative model in analysing interaction between the credit risk-profitability relationship in an emerging market banking system, moderated by institutional heterogeneity. It is an empirical study and complements existing literature on credit risk in the Chinese context by disaggregating the credit risk effects of the banking sector by bank type, as opposed to assuming that the banking sector is a homogenous group. In practice, it provides practical suggestions for the management of China's banks and guidance for bank regulators who want to enhance "credit risk management" and boost the financial situation of China's banking system.

References

[1] Ali, M., Khattak, M. A., & Alam, N. (2023). Credit risk in dual banking systems: Does competition matter? Empirical evidence. *International Journal of Emerging Markets, 18*(4), 822-844. https://doi.org/10.1108/IJOEM-01-2020-0035

DOI: 10.54254/2754-1169/2026.39027

[2] Anestiawati, C. A., Amanda, C., Khantinyano, H., & Agatha, A. (2026). Bank FinTech and credit risk: Comparison of selected emerging and developed countries. *Studies in Economics and Finance, 43*(2), 281-309. https://doi.org/10.1108/SEF-12-2023-0714
[3] Butola, P., Dube, P., & Jain, V. K. (2022). A study on impact of credit risk management on the profitability of Indian banks. *International Journal of Management and Sustainability, 11*(3), 103-114. https://www.doi.org/10.18488/11.v11i3.3068
[4] Deng, L., Li, W., Liu, J., & Ouyang, Y. (2024). Credit risk of China's commercial banks based on the KMV model —taking 18 listed commercial banks as an example. *Journal of Computational Methods in Sciences and Engineering, 24*(6), 3446-3454. https://doi.org/10.1177/14727978241292905
[5] Do, H., Ngo, T., & Phung, Q. (2020). The effect of non-performing loans on profitability of commercial banks: Case of Vietnam. *Accounting, 6*(3), 373-386. http://doi.org/10.5267/j.ac.2020.1.001
[6] Fan, W., Wang, F., Zhang, H., Yan, B., Ling, R., & Jiang, H. (2024). Is climate change fueling commercial banks' non-performing loan ratio? Empirical evidence from 31 provinces in China. *International Review of Economics & Finance, 96*, 103585. https://doi.org/10.1016/j.iref.2024.103585
[7] Feng, Y., Pan, Y., Sun, C., & Niu, J. (2024). Assessing the effect of green credit on risk-taking of commercial banks in China: Further analysis on the two-way Granger causality. *Journal of Cleaner Production, 437*, 140698. https://doi.org/10.1016/j.jclepro.2024.140698
[8] Gao, H., Ouyang, Y., & Wang, Y. (2024). Corporate bond defaults and spillover effects on bank risk: Evidence from city commercial banks in China. *Research in International Business and Finance, 69*, 102252. https://doi.org/10.1016/j.ribaf.2024.102252
[9] Hu, S., Liu, Y., & Elahi, E. (2025). Divergent credit risk responses to local government debt among Chinese banks: A stress test analysis. *Applied Economics, 57*(45), 7268-7287. https://doi.org/10.1080/00036846.2024.2387873
[10] Jigeer, S., & Koroleva, E. (2023). The determinants of profitability in the city commercial banks: Case of China. *Risks, 11*(3), 53. https://doi.org/10.3390/risks11030053
[11] Liang, Y., Zhou, B., & Zhao, S. (2024). Risking or de-risking? The effect of banking competition on large state-owned banks and small and medium-sized enterprise lending: Evidence from China. *International Review of Financial Analysis, 94*, 103258. https://doi.org/10.1016/j.irfa.2024.103258
[12] Ma, C., Cheng, D., Ge, M., Cao, J., Kou, J., & Chen, Z. (2024). The impact of geographic factors on credit risk: A study of Chinese commercial banks. *Economics, 18*(1), 20220086. https://doi.org/10.1515/econ-2022-0086
[13] Shah, W. U. H., Hao, G., Yan, H., & Yasmeen, R. (2022). Efficiency evaluation of commercial banks in Pakistan: A slacks-based measure Super-SBM approach with bad output (non-performing loans). *PLoS One, 17*(7), e0270406. https://doi.org/10.1371/journal.pone.0270406
[14] Siddique, A., Khan, M. A., & Khan, Z. (2022). The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks. *Asian Journal of Accounting Research, 7*(2), 182-194. https://doi.org/10.1108/AJAR-08-2020-0071
[15] Sun, X., & Liu, L. (2023). Determinants of branching decisions of state-controlled commercial banks: Evidence from China. *International Journal of Bank Marketing, 41*(6), 1389-1413. https://doi.org/10.1108/IJBM-03-2022-0093
[16] Twum, A. K., Agyemang, A. O., & Sare, Y. A. (2022). Revisiting credit risk and banks performance of China's commercial banks before and after COVID 19 pandemic. *Journal of Corporate Accounting & Finance, 33*(3), 16-30. https://doi.org/10.1002/jcaf.22539
[17] Veizi, Z. A. M. I. R. A., & Çelo, R. O. B. E. R. T. (2024). The impact of non-performing loans ratio on banking profitability in the Albanian banking system. *WSEAS Transactions on Business and Economics, 21*, 448-457. https://doi.org/10.37394/23207.2024.21.38
[18] Yuan, L., Zhong, Y., & Lu, Z. (2022). Foreign strategic investors and bank credit risk in China: Disclosure, finance or management effects?. *Pacific-Basin Finance Journal, 73*, 101762. https://doi.org/10.1016/j.pacfin.2022.101762
[19] Wang, C., Dong, Y., & Ge, R. (2023). Bank branching deregulation and the credit risk of the regional banking sector: Evidence from city commercial banks in China. *Emerging Markets Review, 55*, 100969. https://doi.org/10.1016/j.ememar.2022.100969
[20] Zhou, X. Y., Caldecott, B., Hoepner, A. G., & Wang, Y. (2022). Bank green lending and credit risk: An empirical analysis of China's Green Credit Policy. *Business Strategy and the Environment, 31*(4), 1623-1640. https://doi.org/10.1002/bse.2973