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Dose Managerial Optimism Affect Bank Risk-Taking? An Empirical Analysis Based on A-Share Listed Banks in China

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Abstract

In order to study the impact of management optimism on commercial banks' risk-taking, this paper uses the unbalanced panel data of 28 A-share listed banks in China to analysis. The empirical results of the OLS estimation show that the excessive optimism of management has a significant positive impact on the risk-taking of commercial banks. The bank's risk-taking level is also positively related to its deposit-loan ration and cost-income ratio, and has negative correlation with core capital adequacy and asserting scale. Therefore, when formulating policies, the supervisory authority should take into account the possible impact of managerial optimism on bank risk-taking. Commercial banks themselves should also pay attention to the excessive optimism of management in the design of compensation incentive system.

Keywords

Managerial Optimism, Commercial Bank, Risk-Taking

1. Introduction

Banks are the main pillar of China's financial system. The risk-taking of commercial banks not only affects its own operating performance, but also has a great impact on the stability of the entire financial and economic system. As the strategy maker and executor of commercial banks, management will undoubtedly affect the risk-taking level of commercial banks.

The issue of bank risk-taking is a hot topic in current academic research. A large number of studies have shown that bank risk-taking is affected by multiple factors such as external macro environment, market structure, and micro-silver enterprise characteristics. At the micro level, management is one of the impor-

tant factors influencing bank risk-taking. The heterogeneity of the management's gender, age, education and other backgrounds, executive compensation, management power, etc. is all empirically proven to have an impact on bank risk exposure.

Also, with the development of psychology, a large number of literatures point out that people are optimistic about the uncertain future. Managers are corporate risk decisions who directly formulate the policy, their attitude towards uncertainty will inevitably impact on corporate risk-taking.

However, as China's banking industry continues to deepen reforms, by strengthening corporate governance to improve its own profit efficiency, management's role in bank management is more prominent. In the context of the complexity of the global economic environment and the entry of the domestic economy into a new normal, the banking industry has entered a low return with a high-risk development stage.

In this context, this paper analyzes the relationship between the excessive optimism of the management of China's listed banks and the level of risk-taking, and explores whether management's excessive optimism will have a positive and significant impact on the bank's risk-taking level. The results of the study are of great significance for commercial banks to improve internal governance, design compensation incentives. Also the result of this paper can be used to improve the government's regulatory system on bank.

2. Theoretical Analysis and Hypothesis

2.1. Managerial Factors on Bank Risk-Taking

At present, the academic community analyzes the risk-taking behavior of banks, mainly from the four perspectives, like market structure, capital supervision, macroeconomic factors and internal governance. There are a lot of literatures on how internal governance affects bank risk behavior. Gorton and Rosen (1995) [1] first proposed that managers as the controllers of the company and were the direct decision makers of risk-taking, but management was limited by information asymmetry and high supervision costs (Anderson and Fraser, 2000 [2]). There is a difference in the views of how managers' salaries affect the level of bank risk-taking. The research of Zhuang Yu, Zhu Jing and Sun Yanan (2013) [3] shows that the higher the salary of manager, the smaller the risk-taking of banks. But Xu Xin and Cheng Chunlin (2016) [4] believes that the salary incentives of bank managers are positively related to bank risks. Bao Huiling's (2018) [5] study shows that the heterogeneity of management in terms of gender, age, professional experience, and education level will all affect the bank's risk-taking level.

2.2. Managerial Optimistic and Risk-Taking

Kim, Jeong-Bon, Wang, Zheng, Zhang, Liandong (2014) [6] find that firms with overconfident CEOs have higher stock price crash risk than firms with

non-overconfident CEOs. Tim R. Adam, Chitru S. Fernando, Evgenia Golubeva (2015) [7] found that managerial overconfidence, which has been found to influence a number of corporate decisions, also affects corporate risk management decisions.

Specifically for banks, Wang Wei (2005) [8] found that overconfidence can lead managers to favor more investment in more volatile projects, especially during the financial crisis. Bank managers' overconfidence behavior will increase bank risk, and for the larger scale banks, correlation between managerial overconfidence and bank risk are more positive. Xu Jia's (2018) [9] study shows that the higher the optimism of bank managers, the smaller the negative impact of investor sentiment on bank risk exposure. The empirical evidence of Wang Xiaoxu, Zhang Cheng and Zhao Lijiang (2015) [10] also shows that there is a stable quantitative relationship between managerial optimism and risk-taking levels.

2.3. Literature Review

Through the above combing, it can be seen that the management has an important impact on the level of risk-taking of the enterprise. For the bank is the same. Some scholars have studied the impact of management's overconfidence on bank-taking. Scholars in China already have paid attention to the impact of managerial over-optimism on the risk-taking of non-listed banks, but there are few studies related to listed banks in China. The overall volume of listed banks accounts for a large proportion of the Chinese banking industry. And the listed banks are subject to stricter supervision. Whether these banks have excessive management optimism leads to an increase in the level of bank risk-taking, which is the significance of this article.

According to the combing of the literature, the paper puts forward the hypothesis

H_0: the higher the level of optimism of managers, the higher the level of risk-taking of enterprises. The more optimistic managers tend to underestimate risks and overestimate the benefits.

3. Empirical Research

3.1. Sample and Data Source

The sample for this article is 29 commercial banks that have been listed on the A-share market, and the research period is from 2006 to 2017. The data sources are the wind database, the annual bank reports and the National Bureau of Statistics. Excluding those with unsound data, a total of 201 samples from 28 banks were obtained.

The choice of data is primarily due consideration of availability, reliability and integrity. The sample of this paper includes five state-owned banks, seven national joint-stock banks and 16 city commercial banks and rural commercial banks. The deposits and loans of these banks are more than 70% of the bank in

China. So the samples are representative.

3.2. Research Design

In order to test the research hypothesis H_0 and analyze the impact of manager optimism on bank risk-taking, this paper establishes the following measurement model:

$$\text{Risk}_{it} = \beta_0 + \beta_1 Op_{it} + \gamma \text{Control}_{it} + \varepsilon_{it} \quad (1)$$

Risk_{it} represents the bank's risk-taking. This paper chooses bankruptcy risk as a proxy variable. At present, the agent variables of bank-taking mainly include expected default rate, non-performing loan ratio, bankruptcy risk Z-score and risk-weighted assets as a percentage of total assets. Among them, the data of the expected default rate is poorly available. The calculation of non-performing loan ratio has great subjectivity and operability. And the non-performing loan ratio can not accurately reflect the bank's risk exposure. At the same time, with the continuous expansion of the bank's intermediary business and off-balance-sheet business, only considering the risk of the loan business cannot fully reflect the overall risk exposure of the bank. The Z Index is a comprehensive measure of a bank's profitability, leverage ratio and earnings volatility. And related financial data is easier to collect. Therefore, this paper chooses to use the Z index as a proxy variable for bank risk-taking in the empirical study.

The formula for calculating the Z index is as follows:

$$Z_{it} = \frac{ROA_{it} + (E/A)_{it}}{(\sigma_{ROA})_{it}} \quad (2)$$

OP represents manager optimism. For manager optimism and overconfidence, the existing measurement methods include the continuous increase of management shareholding, the growth rate of total bank loans and the proportion of management compensation. Considering the availability and comparability of data, this paper refers to Wu Zhaohui's (2018) [11] methods to select the executive compensation concentration, that is, whether the ratio of the top three managers' compensation to the total managers' compensation is greater than the median.

In addition, based on theoretical analysis and previous research *r*, the empirical model of this paper also introduces the relevant control variables, namely Control_{it}. The specific definition is shown in Table 1.

3.3. Stationarity Test and Descriptive Statistics

Table 2 shows the stationarity test result of all variables. All variables expect rm2 are stable and can be used directly in the regression. Since the growth rate of the broad money is not stable, the paper used HP Filter to smooth the data.

Table 3 shows the descriptive statistics of the main variables.

The table reports the descriptive statistics of the main research variables under the full sample. It can be seen from the table that the bankruptcy risks of 28

Table 1. Definition of variables.

	Variables	Symbol	Variable definition
Explained variable	Bank risk-taking	RISK	Z-score
Explaining variable	Managerial Optimism	OP	If the sum of the top three managers' compensation/the sum of all managers' compensation over average op = 1, else op = 0
Control variables	Capital adequacy	CAR	Total capital/weighted risk assets
	Liquidity	DL	Deposit-loan ratio = Sum of deposit/sum of loan
	Provisioning coverage rates	PCR	Actual provision for loan loss/non-performing loan
	Cost-income ratio	CIR	Business and management expenses/operating income
	Non-interest income ratio	NIR	Non-interest income ratio = non-interest income/Total interest income
	Net interest margin	NIM	Net interest margin= (interest income − interest expense)/average interest-earning assets
	Scale	LNA	LNA = Ln(Total Assert)
	Market structure	CR5	Total loans of the five state-owned banks/balance of loans of national financial institutions
	Macroeconomic variable	RGDP	GDP growth rate
		RM2	M2 growth rate

Table2. Stationarity test result.

	P	Z	L*	Pm	Result
op	0.0026	0.0003	0.0001	0.0004	Stable
risk	0	0	0	0	Stable
dl	0	0.5418	0.0214	0	Stable
pcr	0	0	0	0	Stable
cir	0	0	0	0	Stable
nir	0	0.7806	0.0064	0	Stable
nim	0	0	0	0	Stable
lna	0	0	0	0	Stable
cr5	0	0	0	0	Stable
rgdp	0	0	0	0	Stable
rm2	1	1	1	0.9996	Unstable

listed banks range from 0.395 (Pingan Bank, 2009) to 343.1 (China Construction bank, 2013), with an average of 21.99. This shows that the difference in risk-taking between listed commercial banks varies greatly. The over-optimistic average of the dummy variable is 0.401.

Table 3. Descriptive statistics.

Variables	mean	sd	min	max	p50	N
zscore	21.989	42.300	0.395	343.062	11.603	201
op	0.483	0.501	0.000	1.000	0.000	201
ccar	0.122	0.027	0.037	0.307	0.121	201
dl	0.681	0.080	0.390	0.920	0.699	201
pcr	2.257	0.894	0.476	4.996	2.069	201
cir	0.324	0.055	0.216	0.477	0.316	201
nir	0.193	0.087	-0.016	0.423	0.185	201
nim	0.025	0.004	0.013	0.043	0.025	201
lna	9.930	1.465	6.627	12.472	10.012	201
rgdp	0.126	0.050	0.070	0.231	0.104	201
rm2	0.146	0.048	0.082	0.277	0.136	201
cr5	0.503	0.040	0.443	0.576	0.509	201

Also, it is generally believed that when the correlation coefficient reaches 0.8 or more, there may be multiple collinearity problems. By performing correlation analysis, it can be seen that the model does not have serious multi-collinearity problems. So this paper chooses to use OLS to regress the model.

3.4. Regression Result

By doing Hausmann's test, Prob > chi2 = 0.0615 which means we cannot reject the null hypothesis at the 5% confidence level, so this paper uses the random effects model for regression. Table 4 shows the regression result of the relationship between managerial optimism and bank risk-taking.

This paper examines the sensitivity of bank risk-taking to managerial optimism. The regression results are shown in the Table 3. It can be seen from the table, the bank's Z-value is significantly negatively correlated with management optimism at a 5% confidence level. The higher the Z value, the more stable the bank, the less risk the bank will go bankrupt. Therefore, the empirical results of this paper show that the more optimistic of management of commercial banks are, the higher risk the banks take. Hypothesis is confirmed.

In addition, in terms of the influencing factors of bank risk exposure, the empirical results of the table also show that the core capital adequacy ratio will reduce the bank's risk exposure. Capital adequacy can reduce the willingness of banks to take risks through the value of the concession, thereby reducing risk. At the same time, as the loan-to-deposit ratio (DL) increases, bank liquidity reserves decrease and risks increase. The larger the bank, the higher the probability of receiving government support in times of crisis and the lower the risk of bankruptcy. In addition, the more adequate the money supply (RM2), the increased market liquidity, and the lower the bank risk.

Table 4. Regression result.

zscore	Coef.	Std. Err.	p-value
op	−13.69173**	6.49334	0.035
ccar	0.75031	1.30678	0.566
dl	−0.12272	0.4155821	0.768
pcr	0.06455*	0.037215	0.083
nim	15.66408*	9.206046	0.089
nir	0.15019	0.5543189	0.786
cir	-0.21879	0.6899699	0.751
lna	5.425803**	2.686436	0.043
rgdp	−155.0694**	76.21006	0.042
rm2	−92.78595	84.26688	0.271
cr5	138.5046	92.70359	0.135
_cons	−112.4224*	64.17748	0.080
R-sq			0.1351

t-value in parentheses, *, **, *** indicate the level of significance of 10%, 5% and 1%, respectively.

3.5. Robustness Test

In order to test the robustness of the research, this paper also uses Zhang Cheng *et al.*'s (2014) [12] method calculate management optimism. If the bank's loan growth rate is above 30% of the ranking, OP equals to 1, indicating optimism. If the ranking is below 70%, OP equals to −1, standing for pessimism. And for the rest of banks, OP is defined as 0. The regression results of managerial optimism and bank risk-taking calculated by this method are not significantly different from the regression results above. In addition, this paper uses the weighted risk assets to account for the proportion of total assets to represent the bank's risk-taking, and there is no significant difference in the regression results either. Therefore, the research results in this paper can be considered to be robust.

3.6. Conclusions

By the regression analysis of the annual data of 28 listed banks in China from 2006 to 2017, we empirically analyzed the impact of management optimism on bank risk exposure. The results show that the excessive optimism of the management of listed banks in China will have a significant impact on their risk exposure. Excessive optimism in management can lead to an increase in bank bankruptcy risk.

Since a large number of city commercial banks and rural commercial banks are not listed, their financial data are difficult to obtain or there are a lot of missing. This paper only studies the relationship between the managerial optimism and risk-taking of the listed banks. But for small banks, the lack of supervision makes the management of these banks more likely to be overly optimistic.

In the future, if the banks in the sample can be enriched, the research will be more convincing.

4. Policy Suggestions

Based on the above conclusions, combined with the actual development of China's banking industry, this paper proposes the following policy recommendations:

First, we should continue to reform the management incentive model. For example, we can prevent the management from overconfidence by limiting the management's holdings of shares and setting the highest salary. At the same time, the owner may employ an external independent director or supervisor to supervise the management.

Second, the core capital adequacy ratio, deposit-to-deposit ratio, net interest margin, net interest spread, asset size and other factors and the degree of optimism of bank managers are intertwined and interact, which will lead to more complex risk-taking relationships. Therefore, when formulating relevant policies, the authorities must not only consider the direct effects of individual policies, but also consider the impact of these policies on managers' optimism and consider the effect of such indirect policies.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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