Effects of Deposit Insurance on Self-Discipline of Bank Franchise Value

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Abstract

Foreign research has shown that the bank franchise value is the important mechanism of the bank's risk self-discipline. However, the relationship between the franchise value and the risk behavior of our bank must be based on our special financial background. Before the implementation of explicit deposit insurance system in China, there has been an implicit deposit insurance system guaranteed by the government. The traditional literature suggests that the implicit deposit insurance system provides a strong guarantee for commercial banks, which may weaken the risk discipline effect of the bank's franchise value, and the reasonable explicit deposit insurance system is superior to the implicit deposit insurance system. In the financial context of the explicit deposit insurance system, the self-discipline effect of the franchise value will be repaired. Based on the reality of establishing an explicit deposit insurance system in China, this paper uses the Tobin Q value to measure the franchise value of 16 listed banks in China. The relationship between the franchise value and risk of bank before and after the introduction of explicit deposit insurance is studied by using panel data model. The results show that before the implementation of the explicit deposit insurance system, the self-discipline effect of the franchise value is completely ineffective in the context of the government-guaranteed implicit deposit insurance system. The cross-item coefficient of the explicit deposit insurance system and the franchise value is significantly negative. It shows that the implementation of the explicit deposit insurance system has played a role in restoring the self-discipline effect of the bank's franchise value.

1. Introduction

As we all know, because the bank issued debt can be used as a means of pay-

ment, and banks can use more than their capital-scale liabilities to invest. This determines that the bank is a high-risk industry. At the same time, banks have been in a pivotal position in the financial system; the success or failure of bank operations is directly related to national financial stability and economic security. Therefore, the regulatory authorities clearly stipulate the bank's access conditions and ensure the orderliness and stability of the banking industry through rigorous scrutiny and restrictive issuance of business licenses. The value of the business license brought by industry access restrictions is called the franchise value. Once banks fail to operate, they are faced with the loss of the franchise value which can obtain the future excess profits. Therefore, the management will take the initiative to strengthen the management of their business risks, to ensure the stability of the operation of the agency, resulting in the risk of self-discipline.

Bank franchise value can reconcile the relationship between market mechanism and government intervention. The self-discipline effect of the franchise value is the result of the supervisor's supervisory supervision of the bank. It is an endogenous mechanism of the bank's self-strengthening and restraining the risk, which can form a concerted effort with the external restraint and other legal supervisions, and it is significant for the health of the banks' development.

However, the relationship between the franchise value and the risk will change with the background of the system. So it is necessary to consider the background of the system when studying the relationship between the franchise value and the risk. Research shows that China has a government invisible guarantee for a long time. The implicit guarantee provided by the government played a role in the poorly managed banks, which made the banks no longer worry about bankruptcy and lost the franchise value, eventually weaken the role of franchise value and made bank prudent management. In recent years, some scholars have studied the self-discipline effect of the franchise value in our country based on the invisible guarantee background. Most scholars have pointed out that the existence of the implicit insurance system does weaken the self-discipline of the franchise value to varying degrees. There are many insights on how to restore the self-discipline effect of the franchise value of our country. The mainstream view is that the establishment of reasonable deposit insurance system can reduce "bottom expected" of poorly managed banks, thereby, restoring the attention to the bank franchise value, more prudent in the management. However, the scholars' suggestions are only theoretical expectations. Since there is no explicit deposit insurance system in China, the impact of the explicit deposit insurance system on the self-regulation effect of the franchise value has not been tested empirically.

After 22 years of efforts, in May 1, 2015 China's deposit insurance regulations finally came out. The implementation of the deposit insurance regulations means that our country finally has its own explicit deposit insurance system. With the implementation of the deposit insurance regulations, it is possible to make the empirical study on the self-discipline effect of the franchise value in the context of explicit deposit insurance system. This paper intends to consider the change of the self-discipline effect of the franchise value before and after the implemen-

tation of the explicit deposit insurance system by setting the time dummy variable, and intuitively study the effect of the explicit deposit insurance system on the self-discipline effect of the franchise value.

The second chapter will elaborate the relevant research at home and abroad, and review the relevant research literature at home and abroad. The third chapter introduces the research design of the article, defines the concept of research variables and constructs the empirical model. The last part of the article is the empirical results of this paper, and according to the empirical results of the corresponding recommendations.

2. Research Literature

2.1. Foreign Research Literature

The concept of bank franchise value was first proposed by Diamond (1966) and Rajan (1968) [1], who argue that banks, by virtue of their own business advantages, replace individuals who rely on their own credit to help individuals easily perform credit and capital transactions. This advantage is often referred to as "bank franchise" because of the permission of the government or the relevant department.

Since the concept of franchise value has been put forward, the research on it has never stopped. Scholars begin to focus on the definition, calculation method and influencing factors of franchise value. However, since Marcus (1984) [2] conducted a theoretical analysis of the franchise value and bank risk, it was pointed out that the decline in the franchise value would encourage banks to engage in the risk behavior. Scholars have gradually shifted the research perspective to the relationship between the franchise value and the bank risk. The bank franchise value is considered the opportunity cost of the bank. When the investment decision is made, the bank will weigh the relationship between the risk income and the franchise value. Keeley (1990) [3] uses the state preference model to analyze the impact of the franchise value on bank risk, When the franchise value is measured by Tobin Q, the franchise value is positively related to the proportion of the private capital. The higher the franchise value, the more actively the bank supervises and manages the portfolio to maintain the stability of the institution itself. Demsetz *et al.* (1996) [4] also supports this view and conducts empirical research on 350 listed bank holding companies in the United States from 1991 to 1995, and found that there was a significant negative correlation between commercial bank's franchise value and operating risk.

After entering the 21st century, scholars extended the scope of research to financial markets other than the United States. Stolz (2007) [5] took the data of 95 commercial banks in Europe from 1997 to 2003 as a sample to distinguish the source of the bank's franchise value and analyze the relationship between the franchise value and the bank risk of different sources. It is found that there is a certain risk-restraining effect both in terms of market-related franchise value and bank-related franchise value. Ghosh (2009) [6] used the relevant data of the Bank of India in the year 1996-2006, using different indicators to measure the

risk of the bank, and empirically analyzes the relationship between the franchise value and the bank risk. It is found that under different measurement methods, the franchise value has a significant constraint on bank risk.

Although many scholars support the negative relationship between franchise value and bank risk behavior, some scholars think that there is a positive correlation between franchise value and bank risk. Park (1997) [7], Fisher and Gueyie (2001) [8] use different sample data to prove that there is a positive correlation between franchise value and bank risk.

2.2. Domestic Research Literature

Domestic research on the franchise value started late. Lu (2002) [9] first constructed a franchise value formula based on the meaning of the franchise value, Yuan (2005) [10] calculated the franchise value of commercial banks in China and the United States by using the franchise value formula of Lu (2002) [9] structure. Ma & Ou (2007) [11] used Tobin Q to measure the franchise value of China's seven commercial banks and 96 US commercial banks from 1998 to 2005, and analyzed the influencing factors of the franchise value. Han & Li (2006) [12] uses Tobin Q to calculate the franchise value, and analyzes the relationship between the franchise value and the bank risk of the five listed banks in China from 1999 to 2004, and found that there is a negative relationship between the two Related. Han & Li (2008) [13] based on the institutional background of implicit insurance, this paper examines the self-discipline effect of the franchise value of listed banks in China, and finds that the implicit insurance reduces the self-discipline effect of the franchise value. In Wei & Han (2011) [14] empirical analysis of the self-discipline effect of the franchise value of listed and unlisted banks in China under the background of implicit insurance, the study shows that the self-discipline effect of the franchise value of listed banks and unlisted banks is still significant, but under the implicit insurance, the self-discipline effect of the franchise value of the listed banks is more inhibited, and the implicit insurance encourages more risk. Sun & Huang (2010) [15] select internal risk indicators and risk indicators of external evaluation respectively to analyze the performance of franchise value self-discipline under the background of government implicit guarantee. Qu & Zhang (2012) [16] In the study of the relationship between the franchise value of Chinese listed banks and the bank's conservatism, it is found that China's implicit guarantee coverage is a variety of commercial banks, there is no state-owned and non-state differences, and implicit insurance weakened the endurance of the franchise value SELF-discipline effect. Zhang (2006) [17] analyzed the change of bank moral hazard in the process of transition from hidden deposit insurance system to explicit deposit insurance system from the bank's franchise value, the credibility of implicit deposit insurance, the insured deposit accounts for the proportion of the total amount of debt, "too big to fail" reality.

2.3. Literature Review

To sum up, because the risk management of the banking industry has been the focus of academic research, so the academic circles attach great importance to

the risk control mechanism of the franchise value. Foreign research on the self-discipline effect of franchise value has basically formed a paradigm. However, the research on franchise value and risk behavior in China has not formed a paradigm because of its late start. In China, most of the researches on the self regulatory effect of franchise value do not take into account the actual background of our country, only a small amount of literature is introduced into the system background of China's Government Implicit guarantee. Today, China's explicit deposit insurance system has been carried out; it is of practical significance to study the self-discipline effect of the franchise value under the background of explicit deposit insurance system. Therefore, this paper uses 16 listed commercial banks as the sample, and uses the Tobin Q value to measure the bank's franchise value, and analyzes the performance of the self-discipline effect of the franchise value before and after the implementation of the explicit deposit insurance system, so as to examine the explicit deposit insurance system Whether the restoration of the franchise value of the self-discipline effect, reducing the bank's risk behavior.

3. Research Design

3.1. Samples and Data

This paper chooses the financial data of 16 listed banks in the first quarter of 2013 to the third quarter of 2016 to study the relationship between the franchise value and the risk of commercial banks. The 16 listed banks are Ping An Bank, Ningbo Bank, Shanghai Pudong Development Bank, Huaxia Bank, Minsheng Bank, China Merchants Bank, Nanjing Bank, Industrial Bank, Bank of Beijing, Agricultural Bank, Bank of Communications, Industrial and Commercial Bank, Everbright Bank, China Construction Bank, Bank of China, CITIC Bank. The reason for choosing the 16 banks is that the 16 banks listed earlier and the total assets of these banks accounted for 60% of the total assets of all banks, and information disclosure system and corporate governance structure is more perfect, with a certain representation. Bank data comes from the Wind financial information database and the commercial banks regularly report. Macroeconomic data comes from the People's Bank of China.

3.2. Measurement and Definition of Variables

3.2.1. Measurement of Franchise Value

Lu (2002) [9] used the balance sheet method to calculate the franchise value, which is only the bank's past and current excess profits. Li (2006) [18] uses the pre-tax profit method to calculate the concession value, which is essentially the risk of the bank after the discount. Neither of the two methods of calculation can reflect the future benefits of the franchise value that is to a certain extent, the loss of the meaning of the calculation of the franchise value. Most foreign scholars use the Tobin Q value to calculate the franchise value. There are two main methods of calculation: one is the ratio of the market value and the book value of the bank's assets; the other is the ratio of the market value and the book value of shareholders' equity or net assets. Qu (2011) [19] argues that the franchise value

is the sum of the present value of the future rent of the bank in the course of continuing operation, which is equal to the market value of the bank's assets minus the replacement cost, thus adopting the market value and the book value of the bank's assets to calculate the franchise value is reasonable, this article follows this point of view to calculate the franchise value.

3.2.2. Measurement of Bank Risk

The research on the risk of banking industry has always been the focus of academic circles and the focus of the regulators. In the foreign franchise value research often use the listed bank stock returns standard deviation (VOL) to measure the individual risk of the bank. However in the study of the relationship between franchise value and risk in China, different research literatures choose different risk variables to measure the risk of commercial banks. Li & Han (2008) [13] adopt short-term assets/short-term liabilities (SAL), long-term assets/long-term liabilities (LAL) and loan reserve ratio (NPLRR) to reflect the risk of commercial banks in the study of the relationship between the franchise value and risk. Wei (2011) [14] used the nonperforming loan rate (NPL) to measure the risk of the bank when the study included the unlisted banks. The reason for this phenomenon is due to the late start of China's financial market, the number of listed banks is less and the time to market soon, so the choice of VOL measurement of the individual risk of the bank does not have sufficient samples. But after years of development, the number of listed banks by the end of 2016 has reached 22, of which the three quarter of 2010 the number of listed banks reached 16 these developments are for us to choose more marketization index to measure the risk of individual bank. Therefore, this paper chooses the standard deviation of stock returns (VOL) as a more market-oriented measure to measure the individual risk of banks.

3.2.3. Other Variables That Affect Bank Risk

In the individual characteristics of the bank, we choose the operating efficiency, operating structure, size, asset quality. The cost-to-income ratio (CIR) can directly reflect the operating efficiency of the bank; non-interest income (NIC) accounted for the main reaction to the bank's operating structure; there is close relationship between bank size and bank risk, the larger banks can diversified Business risk because of larger resources and business complexity may also lead to an increase in bank risk. The loan ratio (LOAN) measures the quality of the bank's assets, because the traditional view believes that the loan business is relatively stable, but also reduces the complexity of the banking business. In addition to the individual characteristics of the bank, the macroeconomic environment will also have an impact on the operation of the bank. We use GDP growth rate to control changes in bank business behavior caused by the macro-environment. The specific definition of the variable is shown in Table 1.

3.3. Empirical Model and Estimation Method

Based on the above analysis, this paper aims to study the relationship between the franchise value and the risk under the deposit insurance system, and the deposit

Table 1. Variable definition and calculation method.

	Variable Name	Variable Definitions
Risk	VOL	Standard deviation of log yield
Franchise value	Q	Tobin Q
	CIR	$\dfrac{\text{business and management fees}}{\text{operating income}}$
Bank individual characteristics	NIC	$\dfrac{\text{non}-\text{interest income}}{\text{operating income}}$
	SIZE	logarithm of bank assets
	LOAN	$\dfrac{\text{total amount of loans}}{\text{total assets}}$
Macroeconomic characteristics	GDP	quarterly real GDP growth rate

insurance system is divided into the implicit deposit insurance system and the explicit deposit insurance system. China formally promulgated the deposit insurance act in May 1, 2015, since the explicit deposit insurance system has become a kind of financial system in China, but before this many research literature and the government's actual assistance have proved that there is a implicit deposit insurance system in China. Therefore, in the case of selecting individual variables and macroeconomic variables as control variables, this paper considers the relationship between franchise value and bank risk in different insurance systems. The specific approach is the explicit deposit insurance system introduced as a reform, introducing the time dummy variables, the third quarter of 2015 to the third quarter of 2016 after the reform of the evaluation is 1 and the first quarter of 2013 to the second quarter of 2015 is before the reform (invisible insurance system as the background) is zero, and inspect the influence of the explicit deposit insurance system on the relationship between the value of the franchise and the risk by introducing the cross terms of the explicit deposit insurance system and the franchise value. For this purpose, we establish the following empirical model:

$$VOL_{it} = \alpha_i + \beta 1 Q_{it}-1 + \beta 2 dQ_{it}-1 + \beta 3 CIR_{it}-1 + \beta 4 NIC_{it}-1$$
$$+ \beta 5 SIZE_{it}-1 + \beta 6 LOAN_{it}-1 + \beta 7 GDP_{it}-1 + \varepsilon_{it}$$

where i is the i-th bank and t is the t-th season. Q_{it}-1 is the Tobin Q value of the listed banks in the previous period. Since there may be endogeneity between the current concession value and the bank risk, the delayed one Tobin Q value is used as the tool variable (Galloway *et al.* 1997), ε_{it} is the interference term.

4. Results and Discussion

4.1. Descriptive Statistics

As can be seen from Table 2 the risk difference of listed banks in China is large. The maximum value of the whole sample period is 0.0456 and the minimum value is 0.0051. In terms of the franchise value, the franchise value of commercial banks is relatively stable during the sample period. The minimum Cost income ratio is

Table 2. Descriptive statistics.

Variable Name	Mean	Standard Deviation	Minimum Value	Maximum Value
VOL	0.0187	0.0095	0.0051	0.0456
Q	0.9977	0.0129	0.9703	1.0466
CIR	0.2741	0.0510	0.1560	0.4102
NIC	0.2521	0.0721	0.0795	0.4260
SIZE	29.0389	1.0777	26.6907	30.7942
LOAN	0.4726	0.0743	0.2789	0.5714
GDP	7.2000	0.3820	6.7000	7.8000

0.1560, the maximum is 0.4102, and the mean is 0.2741. As the net interest margin business narrowed, non-interest income business in recent years showed a rapid growth rate, the maximum value of the sample period reached 0.4260. Minimum Bank size is 26.6907, the maximum bank size is 30.7942. Banks in the period of the loan business accounted for a larger gap, the minimum 0.2789, the maximum 0.5714, the proportion of more than half of the banking business. The loan business accounted for a large gap in the different period, the minimum is 0.2789, the maximum is 0.5714.

At a deeper level in the Stata time trend chart can be found in 16 commercial banks volatility in 2013-2014 showed a downward trend, which may be the government capital injection and the non-performing loans write-off policy gradually emerged after the financial crisis, coupled with the major commercial banks self-management capacity and risk control capabilities have improved significantly after the financial crisis. 2014-2015 is an upward trend, probably because of the boom and decline of the stock market during that period. Volatility showed a downward trend once again in 2016, the government enhanced the supervision after the fusing, and the introduction of the commercial bank assessment system and the deposit insurance system on the behavior of commercial banks gradually affected. The time chart of the franchise of commercial banks is not consistent, but overall, it is relatively stable in other periods after experiencing a short rise in 2014, the simultaneous rise of commercial banks in 2014 is related to the hot stock market in the second half of 2014. While in the other period the stable franchise value shows that although China's banking industry competition further intensified, the interest rate control is more and more loose, more private banks get a banking license, reduces the franchise value of market factors. But the reform also makes the bank's own business space to further expand, resource allocation and management efficiency significantly enhanced. The ability to use franchising conditions and advantages to obtain economic rents significantly enhanced, improve the franchise value of banks, the two factors make the performance of the bank's franchise value is relatively stable.

4.2. Empirical Analysis and Discussion

Here, we examine the relationship between the bank's franchise value and the

risk. Based on the regression model (1), we used Stata for panel data regression analysis. From the F test and Hausman test results that model (1) applicable to the fixed effect, the specific results shown in Table 3.

The regression results show that there is a significant positive correlation between the value of franchise and bank risk before the reform, that is, the self-discipline effect of bank franchise value disappears. It shows that the government-guaranteed stealth deposit insurance system in our country has provided strong anticipation expectation for the bank, thus enhancing the moral hazard of the bank and causing the self-discipline effect of the franchise value to be invalid. This is consistent with the results of Li & Han (2008) [13], Qu & Zhang (2012) [16]. Although the relationship between bank franchise value and bank risk is still positive after the implementation of the explicit deposit insurance system, the cross factor of the deposit insurance system and the franchise value is significantly negative, which indicates that the implementation of the explicit deposit insurance system has a significant impact to recovery the value of self-discipline. However, after the implementation of the deposit insurance system, the value of the franchise is still positively correlated with the risk of the bank, which may be due to the short time of the deposit insurance system.

In terms of the individual characteristics of the banks, the cost to income ratio has a significant positive impact on the risk, which indicates the improvement

Table 3. Empirical results.

Variable Name	Vol
Q	0.265***
	(0.0403)
dQ	−0.0173***
	(0.00158)
CIR	0.0404*
	(0.0188)
NIC	−0.0879***
	(0.0146)
$SIZE$	−0.00669
	(0.00577)
$LOAN$	−0.0272
	(0.0301)
GDP	−0.0308***
	(0.00292)
_cons	0.180
	(0.185)
N	240
R2	0.649
adj. R2	0.611

*, **, ***Represent the coefficient is significant at a significance level of 10%, 5% and 1% respectively.

of the bank's income structure and the improvement of operating efficiency can help to reduce the risk of the bank. Non-interest income accounts for a significant negative impact on bank risk, which is consistent with the findings of Zhu (2016) [20]. Because fees and commission income accounted for a relatively high of China's noninterest income business, and the fee and commission income sources are relatively stable, can reduce the impact of macroeconomic fluctuations on the bank. Bank size and bank risk have a negative impact, which is consistent with the conclusions of Moore (2013) [21]. Moore believes that large banks can reduce risk through decentralized operations, but the reform of China's banking industry and financial market development history is short, the bank has limited tools to scatter the risk, so the decentralized effects of bank size have not yet been fully realized. The loan ratio is negatively related to the risk of the bank, because the loan as a traditional business has the characteristics of stable income and helps to reduce the bank's risk. GDP is negatively correlated with bank risk behavior, indicating that the risk behavior of China's banking industry is closely related to the macroeconomic situation, and the better the economic development situation, the lower the bank's risk level.

5. Conclusions and Enlightenment

Based on the background of the system, this paper examined the relationship between the franchise value and the bank risk before and after the implementation of the explicit deposit insurance system in the first quarter of 2013 to the third quarter of 2016. The results show that: 1) The self-discipline effect of the bank's franchise value disappears before the implementation of the explicit deposit insurance system; after the implementation of the explicit deposit insurance system, the coefficient of the cross-term of the deposit insurance system and the franchise value is significantly negative, indicating that the implement of the explicit deposit insurance system helps to restore the self-regulatory effect of the bank's franchise value. 2) The bank size has not yet played a significant risk dispersion effect, which may be because China's financial investment tools are not sufficient like Western developed countries, and China's long-term government invisible guarantee may increase the moral risk of banks; the proportion of non interest income and bank risk are negatively correlated; under the current situation of deepening interest rate marketization, the bank's idea of depositing bank cannot promote the steady development of banks. Commercial banks should provide differentiated non-interest business services based on their own advantages. The loan ratio is negatively correlated with the bank risk, but this relationship is not significant. In the face of the higher proportion of mortgage in China and the possible situation of the inflection point in the real estate market, commercial banks should pay more attention to the review of loans and the management of loans quality, and thus give full play to the role of loans to reduce risk.

Bank franchise value can reconcile the relationship between market mechanism and government intervention. The self-discipline effect of the franchise value is the result of the supervisor's supervisory supervision of the bank, which is

an endogenous mechanism of the bank's self-strengthening and suppression of risk that can form a joint force with external restraint and other legal supervisions. Which is of great significance to the healthy development of China's banking industry? However, China's implicit deposit insurance system weakened the bank's power to prudent operate, so that the bank's franchise value cannot be bound by the risk of banks. China's deposit insurance regulations are much targeted in the content set after studying the experience of each country. The explicit deposit insurance system has played a positive role in restoring the self-discipline effect of the franchise value after the implementation. However, due to the implementation of the government invisibility guarantee for a long time, so it is in the transition period of explicit deposit insurance and implicit deposit insurance plays an important role in common. We should adhere to the explicit deposit insurance in our country, enhance the study of deposit insurance, and improve the deposit insurance system of our country to give play to the self-discipline effect of the franchise value, at the same time, can restrict the risk of commercial banks in the context of interest rate marketization.

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