Market Discipline and City Commercial Banks' Risk Taking

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Abstract

Since the end of 2006, commitment period of China's joining into the WTO is over, Chinese bank industry fully opened, and market competition has become stronger. But China has an implicit deposit insurance, under this circumstances whether market discipline exists in city commercial banks has become an important question. This paper used data from 60 city commercial banks between 2003 and 2010 to analyze this issue. Study shows that before Chinese bank sector fully opened, the power of market is weak, market is unable to restrict city commercial bank's risk effectively; in the wake of Chinese bank sector opening at the end of 2006, the power of market discipline gradually appeared, which controlled risk taking efficiently by price mechanism, but quantity discipline is always not obvious.

Key words: Market discipline; Banking sector; Risk taking

INTRODUCTION

Market discipline means to apply a restriction publicly or implicitly on the economic agent to make its function stable, for banks market discipline behaves as request a higher rate of interest to a bank whose risk is higher or move their deposit to a bank which is much safer and so on. In the Discussion paper of Basel II Accord published in 2001, the importance of market discipline has been emphasized unprecedentedly; market discipline, capital adequacy ratio and external supervision constitute the three pillars of Basel II.

In China there isn't an explicit deposit insurance system. But actually the government has offered an implicit deposit guarantee by its credit. Many professors' research has explained this. Li Zongyi pointed it out in the book Bank of China to Build a Safety Net for Basic Research that, though there isn't an explicit deposit insurance system in our country, the nature of deposit insurance system is using regulator's credit to replace bank's credit. Once government announced it will take the responsibility of payback to depositor, deposit insurance actually exists. Our country actually undertakes the insurance to bank deposit, and implements this kind of implicit deposit insurance system that country pays the full number to depositor, but in the truth a "super" deposit insurance system is always functioning, Zhang and He (2006) pointed out that in our county, not only the four state-owned banks, but also urban credit cooperatives has an insurance offered by government, so in the truth, non-state-owned banks also take advantage of country's implicit insurance. Zhang (2003, 2005) pointed out in the process of progressive reform that, government using "county credit" to offer banks implicit insurance is an indispensable guarantee to get saving resources and achieve country's financial resources control.

Economical theory tells us, when there's existing an implicit insurance, a depositor has less motivation to concern about bank's risk change, then market discipline is wake, in the wake of Chinese joining WTO and fully opened banking market, Chinese banks faced the same competition as foreign bank, with both backgrounds, whether marketing discipline can restrain commercial bank's risk or not is the main point of this paper, we chose city commercial banks as the object of our study.

The remainder of this paper is organized as follows. section I is the literature review; section II is the model specification; section III is the descriptive statistic; section IV is empirical results and section V is conclusions.

1. LITERATURE REVIEW

Market discipline includes price discipline and quantity discipline.

1.1 Price Discipline

Most literature studied the existence of market discipline through bank's uninsured liabilities, however Park (1995) discovered that interest rate of CDs rise significantly due to bank's risk. E1lis and Flannery (1992) made a relation between changes of interest rate of CDs and discovered that interest rate of CDs usually changed as market has a new anticipation about bank's risk.

Gbrton and Santomero (1990)'s research about spread of subordinated debt between 1983-1984 showed that spread of subordinated debt isn't sensitive about the measure of accounting risk,F1annery and Sorescu (1996) also supported this opinion, between 1983-1984, sensitivity analysis failed to discover a relationship. However, when they take data after 1989 into consideration, there's a significant positive correlation between them. They think there are two reasons. Firstly government announced that it will end its tremendous and endless deposit insurance system, secondly, Federal Deposit Insurance Reform Act end in 1991. Changes in these two policies strengthen uninsured creditor's sensitive about bank risk,so marketing discipline appeared.

Imai (2006) studied bank deposit market in order to find out existence of market discipline, and through considering Japanese government reducing Deposit insurance coverage discovered that revolution strengthens market discipline in bank deposit market, but tremendous and endless implicit deposit insurance partly offsets the positive influence from deposit insurance reform.

1.2 Quantity Discipline

Some other literatures tried to test the existence of marketing discipline studying about trading volume of bank debt market which can be considering as availability of bank's funds, most empirical research has showed that,

when bank's environment is changing worse, quantity constrained the risk taking, Gorton and Pennacchi (1990) make an examination that a bank's deposit increasing would slow down when its expectation is bad. Park (1995), Park and Peristiani (1998) examines the relations between each bank's deposit increasing and its expected default and found there was an negative correlation, which means savings institutions will have a lower deposit increasing as its risk is higher. Peria and Schmukler (2001) discovered that bank in Argentina, Chile and Mexico has reverse reaction between deposit and accounting risk taking, in Chile deposit insurance seems to be the most reliable, uninsured depositors is effective supervisor of bank risk. Calomiris and Wison (1998) found that depositors can distinguish banks through its risk using samples of New York banks in 1920s, and move their money to a safer one.

1.3 The Market Discipline in China

In china, banks aren't sensitive to risk, which shows that depositor's marketing discipline is actually weak, there's no difference between State-owned banks, unlisted Joint-stock banks and listed banks, Huang (2007) is using mathematic model to analyze factors which influence strength of depositor's market discipline and then bring forward some proposals to strengthen this discipline. Mi Chuanmin *et al.* (2007) using Demirguc-Kunt model empirically analyzed this issue through both marketing interest and deposit growth. Xu (2009) empirically analyzed the relation between information disclosure and risk taking, pointed out that whether information disclosure can depend on its institution basement and environment, only when financial system is strongly market-oriented and bank can efficiently disclose its risk information, depositors can actually restrict bank risk taking.

Based on the existing literature, in the background of implicit insurance and Chinese banking sectors open, this paper studied whether there's marketing discipline existing in Chinese banking sector.

2. MODEL SPECIFICATION

2.1 Variables

In this paper, we use the ratio of Non-performing loan to measure the risk taking, and use Interest expense/Deposits to measure price discipline and the growth rate of total deposits to measure quantity discipline. We also controlled other variables, banks' scale and whether the bank is listing. So we have our regression model:

$$RISK = \alpha + \beta_1 PD + \beta_2 QD + \beta_3 \ln asset + \beta_4 list + \mu_i + \varepsilon_i \quad (1)$$

And μ_i means each banks' heterogeneity.

Table 1
Main Variables Definition

Variable name		Variable	Variable definition
Bank risk		RISK	Bad Loan Ratio
Marketing discipline index	Price discipline	PD	Interest expense/ Deposits
	Quantity discipline	QD	Growth rate of total deposits
	Total Assets	Lnasset	Natural logarithm of Total Assets
Control variables	Listing or not	List	Listing:1, not: 0
	Banks' Size	Lnasset	Log of Total Asset

2.2 Data

We collect the data of 60 city commercial banks from their annual report, over 2003-2010, including 255 observations. Sample's distribution in time is in Table 2.

Table 2
Sample's Distribution in Time

| Time	2003	2004	2005	2006	2007	2008	2009	2010
Observations	27	32	30	38	55	38	25	10

3. DESCRIPTIVE STATISTICS

First we make a descriptive statistics to this sample, as shown in Table 3.

Table 3
Descriptive Statistics

	2003	2004	2005	2006	2007	2008	2009	2010
RISK	0.22	0.11	0.05	0.04	0.028	0.025	0.018	0.009
	(0.3)	(0.19)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.005)
PD	1.45	1.32	1.38	1.46	1.66	2.08	1.62	1.69
	(1.05)	(0.55)	(0.25)	(0.28)	(0.56)	(0.6)	(0.41)	(0.64)
QD	0.36	0.22	0.34	0.28	0.27	0.25	0.37	0.33
	(0.17)	(0.17)	(0.29)	(0.14)	(0.24)	(0.17)	(0.23)	(1.91)

Standard deviation in parentheses.

Overall, the risk of city commercial banks is lower year after year, Non-performing loan ratio reduce from 0.22 (2003) to 0.009 (2010). Market discipline has an upward trend from 1.45 (2003) to 2.08 (2008) with a little reduce in 2009 (1.62) and 2010 (1.69), and the changing of quantity discipline is not clear. in order to observe better, we draw out this three main variables' trends after 2003.
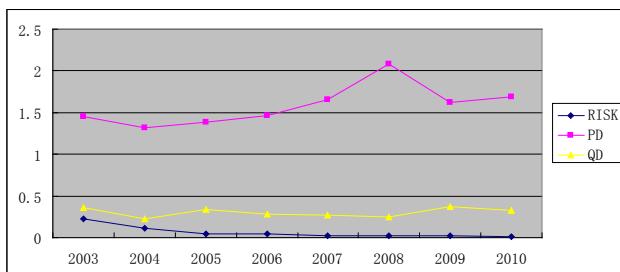
Figure 1
The Main Variables' Time Trend

As we can see in Figure 1, after 2003 the relationship between price discipline and risk is basically negative, but there seems no relationship between quantity discipline and risk, also from descriptive Statistics we can see there's price discipline existing in city commercial banks.

4. EMPIRICAL RESULTS

To analyze further market discipline in city commercial banks, we did some regression analysis. We use stata 10.0 software and chose Panel Data Analysis, using Housman test to make a decision whether to use fixed effects model or random effects model. First we do regression estimation on entire sample, and Hausman test suggests we use fixed effects model.

Table 4
The Regression Results of the Whole Sample

	(1) RISK
PD	0.0275
	(1.06)
QD	-0.0594
	(0.76)
Lnasset	-0.283***
	(-8.46)
List	0.0195
	(0.23)
Constant	5.002***
	(8.74)
Observations	255
R-sq	0.3082
Prob > F	0.0000

t statistics in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

From the result of Table 4 we can see that, both the coefficients of price discipline and quantity discipline aren't significant, and coefficient of price discipline is positive number, but coefficient of quantity discipline is negative number. The coefficient of scale is -0.283, significant at 1%, so the bigger scale is getting, the smaller risk is changing.

Consider that our country didn't open bank market until the end of 2006, it's obvious that market discipline system isn't significant, but after the market's opening in the end of 2006, power of market is sure to be stronger, so we divided sample into two period as 2003-2006 and 2007-2010 to analyze, the result is in Table 5.

From 2003 to 2006, regression results are the same as entire regression results, market discipline isn't significant, the coefficient of price discipline is positive, but the coefficient of scale is negative, significant at 1%, so in this period, the bigger scale is getting, the smaller risk is changing.

From 2007 to 2010, as we analyzed, in the wake of Chinese bank sector opened in 2006, there's a discipline from market, the coefficient of price discipline is -0.0548, significant at 1%, showing that in this period market restrict bank's risk significantly through price, coefficient of quantity discipline is -0.0111, but not significant. And the coefficient of scale is 0.0178, significant at 10%, showing that in this period risk is changing bigger following scale, in the impact of implicit insurance, city commercial banks became too big to fail.

Table 5
The Regression Result of Different Periods

	2003-2006 RISK	2007-2010 RISK
PD	0.0934	-0.0548***
	(1.62)	(-3.71)
QD2	-0.144	-0.0111
	(-1.49)	(-0.30)
Lnasset	-0.437***	0.0178*
	(-5.46)	(1.67)
List	0	-0.0780
	(.)	(-1.54)
Constant	7.519***	-0.154
	(5.60)	(-0.82)
Observations	120	92
R-sq	0.3388	0.1635
Prob > F	0.0000	0.0010

t statistics in parentheses,* p < 0.1, ** p < 0.05, *** p < 0.01

In short, from the analysis above we can see, by the end of 2006, commitment period of Chinese joining WTO is over, in the wake of Chinese bank sector opened, marketing discipline controlled risk taking efficiently by price mechanism.

CONCLUSIONS

This paper analyzed the market discipline in city commercial banks in China using the data from 60 city commercial banks in the background of implicit insurance and Chinese banking sector opened in the end of 2006,we find that before Chinese bank sector fully opened, market can't restrict city commercial banks' risk efficiently, the power of market is very weak, in the wake of Chinese banking sector opening at the end of 2006, the power of marketing discipline gradually appeared, marketing discipline controlled risk taking efficiently by price mechanism, but quantity discipline is always not obvious.

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