

Speed for Safety: The Establishment of Bankruptcy Courts and Bank Credit Risk in China

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Abstract

We investigate the effect of bankruptcy court establishment on the credit risk of municipal commercial banks in China from 2013 to 2020. Establishing bankruptcy courts reduces the non-performing loan ratio of municipal commercial banks. The effect is more pronounced in cities with low fiscal transparency and market fragmentation, and a strong rule of law. Furthermore, we argue that the bank's loan provision and provision coverage ratio is the crucial intermediate variable in the relationship between bankruptcy court establishment and credit risk management. Our findings demonstrate the critical role of judicial system reform in promoting financial stability in China.

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Keywords: Bankruptcy court, Credit risk, Judicial reform.

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1. Introduction

On June 1, 2007, the Enterprise Bankruptcy Law was enacted in China. However, the judicial practice of the Bankruptcy Law was not proceeding well. According to a survey conducted by scholars (Shuguang Li and Zuofa Wang, 2011), while the number of companies that were exiting the market had increased in the three years since the implementation of the law, the number of filed bankruptcy cases had declined. This was attributed to various factors, including interference by local government authorities, the lack of an apt judiciary, and high bankruptcy costs for enterprises (Shuguang Li, 2019). After the establishment of the bankruptcy court, the above situation has been improved. Compared to ordinary civil courts, the bankruptcy court has achieved a 20% reduction in the duration of cases heard (Bo Li and Jacopo Ponticelli, 2022).

In this study, we investigate the effect of the bankruptcy court establishment on bank credit risk. We employ micro-data from municipal commercial banks in China from 2013 to 2020 and demonstrate that bankruptcy court establishment decreases the bank's non-performing loan ratio, particularly in regions with low fiscal transparency, low market fragmentation, and a high level of rule of law. Furthermore, we argue that the bank's loan provision and provision coverage ratio is the crucial intermediate variable in the relationship between bankruptcy court establishment and credit risk management. To test this argument empirically, we conduct a regression analysis, which allows us to quantify the extent to which the hypothesized channel drives the observed relationship.

Our study contributes to the literature in two ways. First, our study adds to the emerging literature exploring the impact of the judiciary system on economic growth and financial development (Bo Li and Jacopo Ponticelli, 2022). While most existing studies focus on listed firms, our study expands the research scope by examining the impact of bankruptcy court establishment on bank credit risk, an essential part of the financial markets. Second, we demonstrate the causal evidence of judiciary system reform for the stability of the banking sector and contribute to the understanding of the policy effect on credit risk management.

2. Preliminary Notes

In past studies, bankruptcy laws and bankruptcy proceedings have been shown to have a positive impact on various economic activities, such as business operations and investment (Maria-del-Mar Camacho-Minano, 2013; Giacomo Rodano, 2016), credit conditions (Aloisio P. Araujo, 2012), and promote economic growth and innovation (Blazej Prusak). As a professional institution, the bankruptcy court plays a significant role in promoting bankruptcy law and procedure (Bo Li and Jacopo Ponticelli, 2022). For bankruptcy court, scholars focus on its efficiency, pointing out that its efficiency will affect the cost of credit (Karsten Muller, 2022), local economic performance (Matthieu Chemin, 2012), and the capital structure of enterprises (Todd C. Pulvino, 1999).

The establishment of a bankruptcy court can not only foster economic growth but also enhance risk management awareness, which can significantly impact the risk of banks. Lucia Alessi (2021) highlights the relationship between the non-performing loan ratio and the rate of loan loss provision coverage. Increasing the coverage level, which entails increasing attention to risk, can result in a reduction in the non-performing loan ratio. Therefore, our main hypothesis is that establishing bankruptcy courts will lead to a decrease in the non-performing loan ratio of municipal commercial banks.

3. Data and Methodology

3.1 Data and Sample

The data in this study is collected from several sources. First, the data about the establishment of the bankruptcy court was manually collected from the official website of The People's Court, official documents from local governments, and related news. The financial data of municipal commercial banks are obtained from the BVD-BankFocus, and the regional economic indicators are obtained from the China City Statistical Yearbook, China City Commercial Credit Environment Index, and local statistical bureaus.

Our initial sample starts with all municipal commercial banks from 2013 to 2020. Then we merge with municipal-level economic indicators using the registration location of the banks. We exclude 62 observations with the missing value in the key variables. The final sample consists of 850 bank-year observations with 113 banks. To avoid the impact of extreme values on the primary findings, we perform winsorization at the 0.5% and 99.5% percentiles for all continuous variables.

3.2 Empirical Design

Since bankruptcy courts were established at different times in different regions, we employ a multi-period DID model to explore the relationship between the establishment of these institutions and bank credit risk. The formula for this model is as follows:

$$NPLR_{i,t} = \alpha_0 + \beta BC_{i,t} + \gamma X_{i,t} + \lambda Y_{c,t} + \theta_i + \eta_t + \mu_{i,t} \quad (1)$$

where i denotes bank, c denotes bank and t denotes year, θ and η represent the bank and year fixed effects, respectively. The standard errors are clustered at the bank level.

We selected the non-performing loan ratio $NPLR$ as the dependent variable for two reasons. Firstly, this data is crucial to the bank's credit risk monitoring system and is readily available. Secondly, there is a strong theoretical relationship between the non-performing loan ratio and the outstanding debt of the enterprises, making it a relevant choice as a dependent variable. Bankruptcy court indicator BC is a dummy variable that equals one if the region has established the bankruptcy court and zero otherwise.

The control variables involve two aspects: one is the bank-level characteristics, including the natural logarithm of total assets *SIZE*, loan-to-deposit ratio *LDR*, the capital adequacy ratio *CAR*, and strategic digitalization *SD* through text analysis referring to the details (Xuanli Xie and Shihui Wang, 2022), related to the operating structure and risk management. The second set is municipal-level macroeconomic indicators, including the growth rate of municipal *GDPG* and Credit Environment Index *CEI*. There is also regional financial institution savings index *DEPOSIT* and fiscal gap index *GAP* with the denominator of gross regional product.

3.3 Summary Statistics

Table 1 reports descriptive statistics for the main variables in the study. From the table, it can be concluded that there is a large gap in the non-performing loan ratio among banks. When considering control variables, it becomes apparent that the discrepancies between regions are more significant than those among banks. Especially, substantial discrepancies in the growth rate of GDP exist among regions. Further, local fiscal deficits are a common phenomenon.

Table 1: Descriptive Statistics

	Mean	S.D.	Q25	Median	Q75	N
<i>NPLR</i>	0.016	0.009	0.011	0.015	0.017	850
<i>NPL</i>	20.567	1.228	19.777	20.680	21.361	850
<i>BC</i>	0.229	0.421	0.000	0.000	0.000	850
<i>SIZE</i>	25.678	1.032	24.963	25.604	26.336	850
<i>LDR</i>	63.981	12.439	55.700	64.910	71.960	850
<i>CAR</i>	13.110	2.265	11.850	12.690	13.940	850
<i>LPR</i>	3.301	0.894	2.689	3.129	3.781	850
<i>GDPG</i>	6.934	3.162	5.900	7.500	8.520	850
<i>GAP</i>	-0.075	0.066	-0.105	-0.055	-0.031	850
<i>SD</i>	0.940	0.803	0.318	0.729	1.361	850
<i>CEI</i>	72.521	3,921	69.539	72.276	75.249	850
<i>DEPOSIT</i>	1.920	0.774	1.399	1.759	2.284	850

Notes: This table presents the descriptive statistics for a sample of financial data of 113 municipal commercial banks in China and the economic data of the banks' corresponding regions from 2013 to 2020.

4. Empirical Results

4.1 Baseline Regression

Table 2 represents the outcomes of the baseline regression. By implementing 1, we evaluate the influence of the establishment of bankrupt banks on bank credit risk. Column (2) is the result of adding bank financial control variables, and Column (3) is the result of adding regional control variables on the basis of Column (2). After adding control variables gradually, the coefficients of *BC* remain negative and

statistically significant at the 5% level. The regression results indicate that the establishment of bankruptcy courts has the potential to mitigate the credit risk of municipal commercial banks, thus buttressing our hypothesis. The regression analysis of the control variables reveals that the scale of bank assets is negatively correlated with the capital adequacy ratio and non-performing loan ratio. Meanwhile, boosting the commercial credit environment level can considerably decrease the non-performing loan ratio of municipal commercial banks.

Table 2: Bankruptcy Court Establishment and NPL Ratio

	(1)	(2)	(3)
	<i>NPLR</i>	<i>NPLR</i>	<i>NPLR</i>
<i>BC</i>	-0.002* (-1.97)	-0.002** (-1.99)	-0.002** (-2.01)
<i>SIZE</i>		-0.008** (-2.22)	-0.008** (-2.45)
<i>LDR</i>		0.000 (1.60)	0.000 (1.60)
<i>SD</i>		-0.001** (-2.05)	-0.001 (-1.47)
<i>CAR</i>		-0.001** (-2.59)	-0.001** (-2.53)
<i>GDPG</i>			0.000 (1.49)
<i>GAP</i>			-0.006 (-0.20)
<i>CEI</i>			-0.001*** (-2.81)
<i>DEPOSIT</i>			0.004* (1.89)
N	850	850	850
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Number of Banks	113	113	113
Adjusted R ²	0.46	0.52	0.54

Notes: This table presents the association between bankruptcy court establishment and the non-performing loan ratio of commercial banks based on cross-sectional heterogeneity using a sample of 113 municipal commercial banks in China from 2013 to 2020, using the median level of the market fragmentation, fiscal transparency, and the rule of law index. All regressions include bank and year fixed effects. The robust t-statistics clustered by the bank are reported in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

4.2 Parallel Trend Test

To generate Figure 1, the base period is set as the one year before the bankruptcy court was established. The results from this figure illustrate that the impact of establishing the bankruptcy court was not significant in the five years preceding its implementation. However, the impact gradually increased in significance following the bankruptcy court establishment. Therefore, this conclusion passes the parallel trend test.

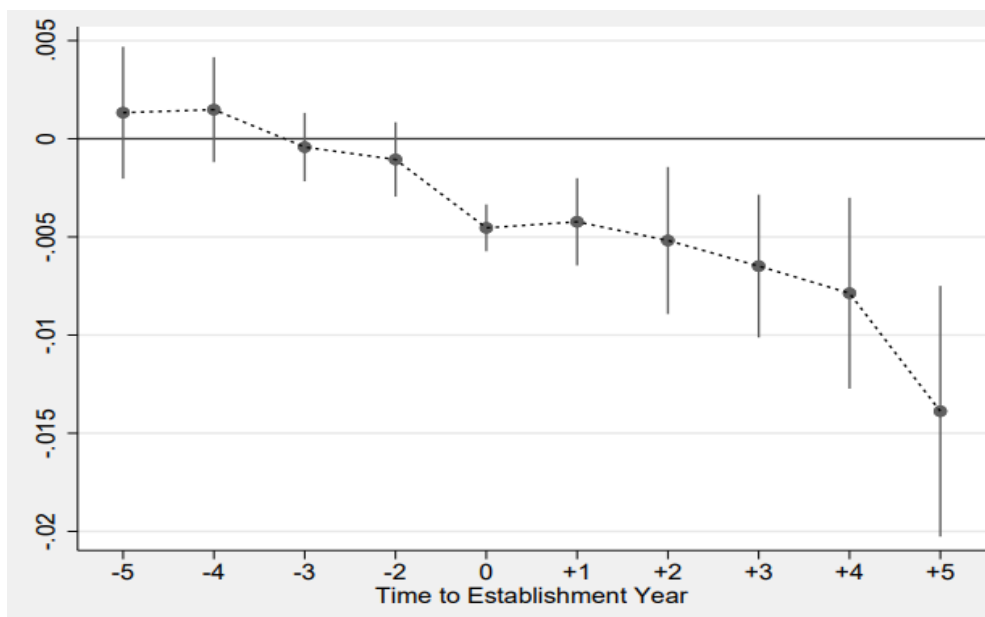


Figure 1: Dynamic Effect of Bankruptcy Courts Establishment on Bank NPL Ratio

4.3 Cross-sectional Heterogeneity

We conduct heterogeneity analysis based on the regional economic activities, using the median of the market segmentation (Ming Lu and Zhao Chen, 2009) fiscal transparency (Lijun Xia and Zhiqiang Fang, 2005), and the level of the rule of law. Conventional theories suggest that regions with higher fiscal transparency limit the influence of special interests and rent-seeking activities on policies (Elif Arbatli and Julio Escolano, 2015). Fiscal transparency reflects the intervention of local governments in banking institutions. In areas with fiscal opacity, local governments more commonly force banks to lend to designated enterprises, which results in opaque fiscal revenue. Therefore, we contend that bankruptcy courts are more effective at preventing local fiscal interference in regions with low fiscal transparency. The regression results in regions with low fiscal transparency will be more pronounced (Aloisio P. Araujo, 2012). The market fragmentation index is used to measure the level of commodity market fragmentation between different regions. This index is calculated by assessing the relative price index of goods

across regions and their fluctuations (Paul A. Samuelson, 1964). Regions with a high market segmentation index generally have limited trade activities. The market fragmentation phenomenon is quite prevalent in China (Ming Lu and Zhao Chen, 2009), which helps certain firms gain unique market positions (Xiao-Feng Qi and Lihong Zhou, 2022), which protect them from going bankrupt even if they are in a prolonged state of financial loss. This situation may not change with the establishment of the bankruptcy court. Therefore, we assume that areas with less market fragmentation will have a more significant impact.

Moreover, the level of the rule of law is an essential external factor that can significantly impact the non-performing loan ratio of banks. Numerous Scholars (Stephan Haggard, 2008; Daron Acemoglu, 2001) argue that an excellent legal environment, which protects property ownership, contributes to economic growth. Therefore, it is likely that the establishment of bankruptcy courts could have a more significant effect on the non-performing loan ratio in regions with higher levels of the rule of law.

Table 3 represents the results of the heterogeneity analysis, which examines how the relationship between bankruptcy court establishment and non-performing loan ratio varies across different contexts. Columns (1) and (2) reports that the coefficient of *BC* in the sample of regions with low fiscal transparency is significantly positive. On the Contrary, the coefficient of *BC* is insignificant for regions with high fiscal transparency proportion, which indicates that the relationship between bankruptcy court establishment and non-performing loan ratio is more pronounced in regions without transparency. Columns (3) and (4) show that the coefficient of *BC* is significant at the 1% level of samples with low market fragmentation index, while it is not significant for the reverse case. This suggests that bankruptcy court establishment has a more significant impact on banks' credit risk in places where markets are less fragmented. Columns (5) and (6) report that the coefficient of *BC* is only significant in the sample of banks with a high level of strategic digitization, highlighting the importance of economic and legal conditions in shaping the impact of bankruptcy courts on non-performing loans.

Table 3: Bankruptcy Court Establishment and NPL Ratio

	Fiscal Transparency		Market Fragmentation		Law rule Level	
	(1)	(2)	(1)	(2)	(1)	(2)
	Low	High	Low	High	Low	High
<i>BC</i>	-0.005*** (-2.73)	0.002 (0.88)	-0.004*** (-2.84)	-0.001 (-0.55)	-0.002 (-1.18)	-0.004*** (-2.22)
<i>SIZE</i>	-0.004 (-1.20)	-0.015*** (-3.20)	-0.014*** (-2.80)	-0.009*** (-2.24)	-0.010*** (-2.01)	-0.009*** (-2.74)
<i>LDR</i>	0.000*** (3.08)	-0.000 (-0.82)	-0.000 (-0.51)	0.000 (1.06)	0.000 (0.27)	0.000 (1.38)
<i>SD</i>	0.000 (0.40)	-0.000 (-0.76)	-0.001* (-1.90)	-0.002** (-2.17)	-0.001** (-1.79)	-0.001 (-0.88)
<i>CAR</i>	-0.001** (-2.02)	-0.001 (-1.45)	-0.000 (-1.27)	-0.001** (-2.06)	-0.001*** (-3.08)	-0.001 (-1.38)
<i>GDPG</i>	0.000 (0.82)	0.000 (0.37)	0.000 (1.16)	0.000 (0.82)	-0.000 (-0.26)	0.000** (2.17)
<i>GAP</i>	-0.027 (-0.99)	-0.054 (-0.95)	-0.018 (-0.69)	-0.030 (-0.84)	0.001 (0.02)	0.004 (0.16)
<i>CEI</i>	-0.000 (-0.99)	-0.001 (-1.47)	-0.005** (2.20)	0.001 (0.31)	0.004* (1.78)	0.005 (1.47)
<i>DEPOSIT</i>	0.009*** (3.19)	0.001 (0.40)	0.005** (2.20)	0.001 (0.31)	0.004* (1.78)	0.005 (1.47)
N	412	375	425	416	420	416
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of Banks	89	95	108	103	111	100
Adjusted R ²	0.64	0.52	0.67	0.51	0.60	0.51

Notes: This table presents the association between bankruptcy court establishment and the non-performing loan ratio of commercial banks based on cross-sectional heterogeneity using a sample of 113 municipal commercial banks in China from 2013 to 2020, using the median level of the market fragmentation, fiscal transparency, and the rule of law index. All regressions include bank and year fixed effects. The robust t-statistics clustered by the bank are reported in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

5. Robustness Checks

5.1 Variable Definitions and Sampling Criteria

We conduct two robustness checks to verify the validity of our results. Firstly, we adopted another definition which decides when the bankruptcy court was established. When the bankruptcy court is established before June of that year, it is considered that the bankruptcy court has been established in that year. Otherwise, it is considered that it has been established in the next year. The new variable is named BC2. We also use an alternative measure of bank loan performance using the natural

logarithm of the non-performing loans as the dependent variable. Columns (1) and (2) in Table 4 show that our findings are robust to alternative variable definitions. In addition, we apply two sampling criteria to address potential bias due to sample composition. First, we exclude the four systematically important banks, namely, Bank of Shanghai, Bank of Beijing, Bank of Jiangsu, and Bank of Ningbo, as there are increased regulatory scrutiny and risk management requirements for these banks. Second, we exclude four first-tier municipalities, Beijing, Shanghai, Guangzhou, and Shenzhen, from the sample due to the superior judiciary and business development levels. Columns (3) and (4) in Table 4 show that excluding these observations produces quantitatively similar results.

Table 4: Alternative Variable Definitions and Sampling Criteria

	Alternative Variable Definitions		Sampling Criteria	
	(1)	(2)	(3)	(4)
	<i>NPLR</i>	<i>NPL</i>	<i>NPLR</i>	<i>NPLR</i>
<i>BC2</i>	-0.002** (-2.14)			
<i>BC</i>		-0.122* (-1.67)	-0.002* (-1.78)	-0.002** (-2.03)
<i>SIZE</i>	-0.008** (-2.45)	0.535*** (2.84)	-0.008** (-2.45)	-0.008** (-2.43)
<i>LDR</i>	0.000 (1.62)	0.023*** (5.93)	0.000 (1.59)	0.000 (1.65)
<i>SD</i>	-0.001 (-1.44)	0.000 (1.62)	0.000 (1.62)	0.000 (1.62)
<i>CAR</i>	-0.001** (-2.58)	0.004 (0.19)	-0.001** (-2.51)	-0.001** (-2.53)
<i>GDPG</i>	0.000 (1.51)	0.032*** (3.12)	0.000 (1.49)	0.000 (1.45)
<i>GAP</i>	-0.006 (-0.21)	-1.728 (-0.96)	-0.004 (-0.13)	-0.005 (-0.16)
<i>CEI</i>	-0.001*** (-2.77)	-0.051*** (-3.37)	-0.001*** (-2.79)	-0.001*** (-2.78)
<i>DEPOSIT</i>	0.004* (1.92)	0.085 (0.60)	0.004* (1.89)	0.004* (1.90)
N	850	850	850	850
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of Banks	113	113	113	113
Adjusted R ²	0.54	0.86	0.54	0.54

Notes: This table presents the robustness checks for the association between bankruptcy court establishment and the non-performing loan ratio of commercial banks using a sample of 113 municipal commercial banks in China from 2013 to 2020. Column (3) excludes the three largest banks, and Column (4) excludes the banks in the direct-controlled municipality. All regressions include bank and year fixed effects. The robust t-statistics clustered by the bank are reported in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

5.2 Placebo Test

We utilize the placebo test to eliminate the policy effect error that may arise due to subjective changes in the signal provided by the establishment of courts. Figure 2 shows the results of the sampling test, which indicate that most of the coefficients are dispersed around 0, and the difference between the mean and the true value is significant. Moreover, the majority of the estimated coefficients are not significant, indicating that the policy effect of bankruptcy court establishment is not attributable to other unobserved factors. Therefore, the findings of our study remain robust even when the anticipation of the bankruptcy court's establishment is considered.

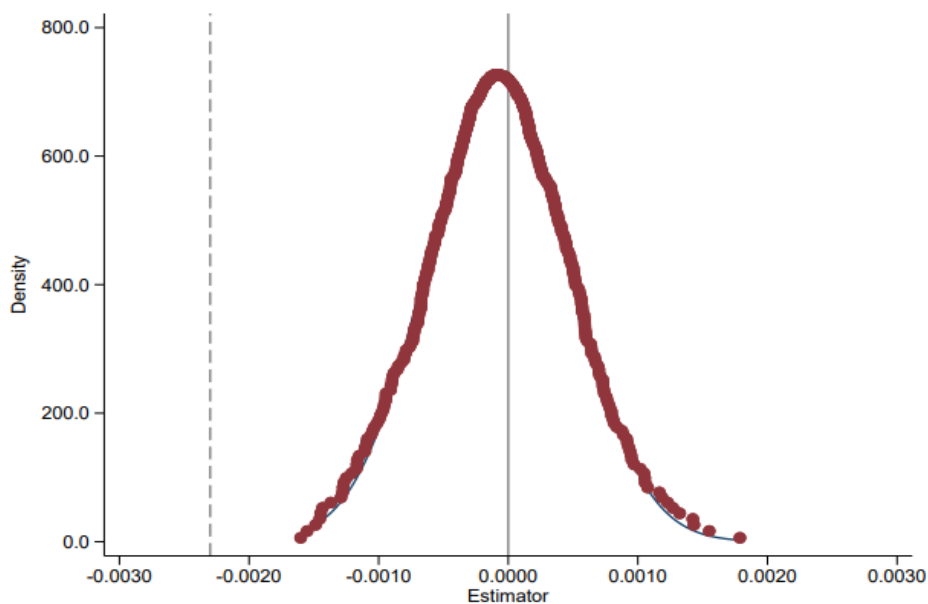


Figure 2: Placebo test

6. Plausible Channels

The provision coverage rate of banks PC is a decisive indicator of the adequacy of loan loss reserves and significantly impacts banks' risk management levels. A higher provision coverage rate indicates a greater ability for banks to withstand risks due to sufficient reserves for non-performing loans to cover associated losses. As the dependent variable of this article, the non-performing loan ratio can be decomposed. Specifically, the following formula expresses their relationship.

$$NPLR = LPR/PC \quad (2)$$

To explore the plausible channels, we employ the bank's provision coverage ratio PC and loan provision ratio LPR as two mediating variables. Columns (1) and (3) in Table 5 represent the relationship between BC and PC and LPR , while Columns (2) and (4) show the relationship between PC and LPR and $NPLR$. As shown in

Table 5, *BC* has a positive relationship with the bank's provision coverage ratio and is significant at the 5% level. Conversely, there is no significant relationship between the bank's loan provision ratio and *BC*, although all are significantly related to non-performing loan ratios. We conclude that the establishment of a bankruptcy court reduces the non-performing loan ratio of banks by increasing risk management capability because banks tend to set aside more provisions for loans that have potential losses.

Table 5: Plausible Channels

	(1)	(2)	(3)	(4)
	<i>PC</i>	<i>NPLR</i>	<i>LPR</i>	<i>NPLR</i>
<i>BC</i>	0.409*** (2.50)		0.021 (0.16)	
<i>PC</i>		-0.003*** (-10.39)		
<i>LPR</i>				0.003*** (4.21)
<i>SIZE</i>	-0.448 (-0.94)	-0.009*** (-3.06)	-0.242 (-1.20)	-0.007** (-2.24)
<i>LDR</i>	-0.019** (-2.30)	0.000 (0.75)	0.004 (0.76)	0.000 (0.48)
<i>SD</i>	0.034 (0.36)	-0.001 (-1.46)	-0.094 (1.24)	-0.000 (-0.86)
<i>CAR</i>	0.006 (0.17)	-0.001** (-2.49)	-0.017 (-0.59)	-0.001** (-2.24)
<i>GDPG</i>	-0.065*** (-3.41)	0.000 (0.46)	0.015 (1.08)	0.000 (1.42)
<i>GAP</i>	4.841 (1.19)	0.007 (0.30)	-0.025 (-0.02)	-0.006 (-0.20)
<i>CEI</i>	0.058 (1.45)	-0.000** (-2.35)	-0.052** (-1.98)	-0.000* (-1.91)
<i>DEPOSIT</i>	0.281 (0.90)	0.005*** (3.31)	0.165 (0.94)	0.003* (1.73)
N	840	836	850	850
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of Banks	112	112	113	113
Adjusted R ²	0.53	0.63	0.46	0.60

Notes: This table presents the plausible channels between bankruptcy court establishment and the non-performing loan ratio of commercial banks using a sample of 113 municipal commercial banks in China from 2013 to 2020. All regressions include bank and year fixed effects. The robust t-statistics clustered by the bank are reported in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

7. Conclusion

The results of the multi-period DID model represent that establishing bankruptcy courts is associated with reducing the non-performing loan ratio for municipal commercial banks. This relationship is particularly significant in regions where the market is less fragmented, with less fiscal transparency and a higher rule of law. Moreover, after a series of operations, including replacing the explanatory dependent variable and changing sample criteria, the empirical results remain robust. Furthermore, our study reveals that establishing bankruptcy courts can effectively improve the credit risk management capability of municipal commercial banks. Overall, our findings suggest that establishing bankruptcy courts is a viable policy option for promoting financial stability and growth in the banking sector.

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