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BANK MARKET POWER AND RISK DURING CRISES

Research

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Gamze Öztürk Danışman, Kadir Has Üniversitesi, İktisadi İdari ve Sosyal Bilimler Fakültesi, Uluslararası Ticaret ve Finansman Anabilim Dalında Doktor Öğretim Üyesi olarak görev yapmaktadır. Temel çalışma alanları; bankacılık, banka istikrarı, bankacılıkta sürdürülebilirlik ve kurumsal finans üzerinedir.

BANK MARKET POWER AND RISK DURING CRISES

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Abstract:

Purpose: This paper investigates the influence of bank market power on risk during the Global Financial Crisis 2007/2009 (GFC).

Methodology: We use a sample of 6,090 private and listed US banks for 2007-2016 and perform our estimations using panel data techniques, together with bank-fixed effects.

Findings: The findings suggest that the crisis increases banks' default risk for banks with lower market power. Meanwhile, higher market power helps banks to remain stable during turbulent times and have lower default risk. Banks with more market power achieve this stability mainly because of lower leverage risk and lower portfolio risk. They managed to maintain a portfolio with higher and more stable earnings during the crisis. This paper supports the view that market power in banking is very vital, and competition is more harmful to stability during crisis periods.

Originality: This paper provides important implications for the banking industry during crises times. Policymaking in banking may specifically focus on improving bank market power but not maximizing competition between banks during crises.

Keywords: Bank risk, 2007-2009 global financial crisis, Lerner index, Market power

JEL Codes: G01, G20, G21

KRİZ ZAMANLARINDA BANKA PİYASA GÜCÜ VE RİSKİ

Özet:

Amaç: Bu makale, Küresel Finansal Kriz 2007/2009 (GFC) döneminde banka piyasa gücünün risk üzerindeki etkisini araştırmaktadır.

Metodoloji: 2007-2016 yılları için 6090 özel ve borsada işlem gören ABD bankasından oluşan bir örneklem kullanılmaktadır ve ampirik analiz banka sabit etkileri içeren panel veri teknikleri kullanarak gerçekleştirilmektedir.

Bulgular: Bulgular, krizin piyasa gücü düşük bankaların temerrüt riskini artırdığını göstermektedir. Ancak, yüksek piyasa gücüne sahip bankalar kriz sırasında istikrarlı kalır ve temerrüt riskleri daha düşüktür. Daha fazla piyasa gücüne sahip bankalar, kriz sırasında, esas olarak daha düşük kaldıraç riski ve ve daha düşük portföy riski yoluyla istikrarı sağlamaktadırlar. Bu bankalar kriz sırasında daha yüksek ve daha istikrarlı kazançlara sahip bir portföy sürdürmeyi başarmışlardır. Bu çalışma, bankacılıkta piyasa gücünün çok hayati olduğu ve kriz dönemlerinde rekabetin istikrar için daha zararlı olduğu görüşünü desteklemektedir.

Özgünlük: Bu makale, kriz zamanlarında bankacılık sektörü için önemli çıkarımlar sunmaktadır. Bankacılıkta politika yapıcılar, kriz zamanları sırasında bankalar arasındaki rekabeti maksimize etmeye değil, banka pazar gücünü geliştirmeye odaklanabilir.

Anahtar Kelimeler: Banka riski, 2007-2009 küresel finansal krizi, Lerner endeksi, Piyasa gücü

JEL Sınıflandırması: G01, G20, G21

INTRODUCTION

Due to its importance in the financial sector, the banking industry is prone to stiff regulations, supervision, and government intervention. It is broadly recognized that banking crises hurt economic growth. Any instability in the banking sector may spill over to the whole economy and eventually lead to recessions (Matutes & Vives, 2000; Allen & Gale, 2000; Carletti, 2008). The Global Financial Crisis 2007/2009 (GFC) overrode concerns regarding the risk-taking incentives of banks because many banks faced problems with decreased equity levels and too much reliance on short-term funding (Beltratti & Stulz, 2012; Barth, Caprio, & Levine, 2013). This paper focuses on how bank market power shapes bank risk during GFC.

The liberalization and deregulation process has heightened competition in banking. The traditional viewpoint states that higher competition (less market power) improves the efficiency of banking activities and borrowers' welfare. These can be accomplished by the fall in the margin of interest rates, improvements in funding, and investment prospects (Petersen and Rajan, 1995; Boyd & De Nicolò, 2005). However, starting with the influential work of Keeley (1990), another line of the literature contends that a rise in competition, i.e., the decrease in market power, results in a sharp decrease in profits. This might raise banks' risk-taking incentives, increasing the probability of bank failures (Suarez, 1994; Bolt & Tieman, 2004). The decrease in profits due to competition makes banks diversify from traditional banking activities into various activities (Vives, 2016). They expand into riskier lines of activities, which result in an increase in their probability of failures.

Other studies also argue that a definite level of bank market power is necessary to obtain efficient bank-firm relationships (Boot and Thakor, 2000; Claessens & Laeven, 2004). Since banks with higher market power have been documented to have better screening and monitoring capacity, stronger bank-firm relationships improve access to credit (Delis et al., 2017), induce higher profitability for borrowing firms, and protect against loan defaults, improving bank stability and performance.

Financial crisis times such as GFC bring an intense increase in information asymmetry (Flannery et al., 2013). During such times, banks experience an overall drop in funding, and they become more unwilling to lend due to the potential loan defaults, leading to a general decline in overall lending and profitability, and a rise in risk (Ivashina and Scharfstein, 2010; Cubillas and Suárez, 2018). At the same time, during crises, banks could behave irresponsibly, and moral hazard problems might increase (Brownbridge and Kirkpatrick, 1999; Hellman et al., 2000). This is because of the huge decline in capital levels and a rise in maturity mismatch, eroding the charter value and promoting risky behavior. Meanwhile, market power helps banks to enrich their access to finance and brings a greater capability to hedge themselves against loan defaults. Consequently, they are expected to face fewer moral hazard problems and better maintain their stability (Gambacorta & Marques-Ibanez, 2011; Fungáčová et al., 2014).

Previous empirical studies on market power and bank behavior generally focus on normal times and do not distinguish between normal and crisis times. Our study extends this literature and contributes to the very limited number of studies focusing on market power and bank behavior during crises (Soedarmono et al., 2013; Cubillas and Suarez, 2018). Soedarmono et al. (2013) find that, during crisis periods, market power in banking brings stability and contributes to reducing moral hazard in the banking industry. Cubillas and Suarez (2018) find that higher bank market power during the global financial crises encouraged a lesser decline in funds that are obtainable to lend, and market power reduces the adverse consequences on credit supply. In view of these literatures, we expect that *higher bank market power decreases bank risk during crises.* This is supporting the view that market power helps for better borrower screening and also monitoring abilities that let banks engage with good-quality firms during crisis times, thereby improving bank performance and decreasing loan defaults and bank risk (Petersen and Rajan; 1995; Cubillas and Suarez, 2018). Moreover, such banks with more market power have improved capabilities to hedge themselves against loan defaults. They face fewer moral hazard problems and better maintain their stability (Fungáčová et al., 2014).

We employ a sample of 6,090 private and listed US commercial banks for 2007-2016. We perform our empirical analysis using panel data estimation methods alongside bank fixed effects. Our findings indicate that the GFC negatively and significantly influences bank stability when banks' market power is lower. Meanwhile, higher market powered-banks have significantly less risk of default during the crisis. Decomposing the Z-score reveals that such banks have managed this mainly by having lower leverage and portfolio risks during turbulent times.

The paper is structured in five sections. Section 2 presents a summary of the related literature. Section 3 introduces Data and Methodology, Section 4 exhibits the results, and we conclude in Section 5.

LITERATURE

Banks perform unique maturity transformations in their balance sheets which make them more vulnerable to uncertainty (Matutes & Vives, 2000; Carletti, 2008). Since the characteristics of a bank's assets differ from its liabilities, banks take various risks through asset transformation (Bhattacharya & Thakor 1993). Excessive risk-taking on the asset side might induce instability. Though agency problems are apparent in all firms with leverage (Jensen & Meckling, 1976), banks face this problem more because their assets are opaque, and they are more exposed to resource misallocation. Moreover, bank debt is allocated amongst small depositors, inhibiting their active monitoring. Banks rely on limited liability and can participate in risky activities without easily being spotted (Matutes & Vives, 2000; Carletti, 2008).

The liberalization and deregulation developments in the last decades have heightened bank competition, decreasing individual banks' market power. While whether the competitive environment impacts bank

stability is ambiguous, most literature establishes the competition-fragility view, stating that competition boosts banks' incentives for risky behavior when their market power diminishes. The franchise value is the main argument and asserts that competition between banks induces lower market power and deteriorates stability by reducing the franchise/charter values (Suarez, 1994; Bolt & Tieman, 2004). Relationship banking constitutes another case in the competition-fragility view. Banks are likely to capture fewer informational rents in a competitive environment, lowering their screening quality on the borrowers, and they presume more significant risks (Boot & Greenbaum, 1993; Marquez, 2002).

Fewer studies support the "competition-stability" view, declaring that competition (a decrease in market power) reduces the propensity of excessive risk-taking, bringing a steady banking system. Boyd & De Nicolò (2005) found that when banking industries get concentrated and banks gain market power, they might be riskier. This is because, as competition declines, lower deposit rates are offered and higher loan rates are in place, increasing the likelihood of loan defaults and bringing instability.

Empirical studies investigating the association between market power and risk have similarly achieved mixed findings. Several studies confirm the competition-fragility hypothesis (Demsetz et al., 1996; Bofondi & Gobbi, 2004; Levy Yeyati & Micco, 2007). Nevertheless, supporting evidence for the competition-stability perspective are found by some other studies (Boyd et al., 2006; Schaeck et al., 2009).

An increase in information asymmetry characterizes financial crisis times, and banks experience an overall drop in funding. They are reluctant to lend due to the potential loan defaults, leading to a drop in profitability and a rise in their risk (Ivashina and Scharfstein, 2010; Cubillas and Suárez, 2018). Meanwhile, banks with high market power have better funding, and they can better protect themselves against loan defaults, leading them to maintain their stability in crisis (Gambacorta and Marques-Ibanez, 2011; Fungáčová et al., 2014). Given these considerations, we hypothesize that *higher bank market power decreases bank risk during crises.* This is in accordance with the understanding that market power brings improvements in screening functions and the ability to monitor borrowers which can help banks for better profitability and stability during crisis times (Petersen and Rajan; 1995; Boot and Thakor, 2000; Cubillas and Suarez, 2018).

DATA AND METHODOLOGY

Methodology

In this paper, to address how market power affects bank risk during crisis times, we use using Equation 1 below in our empirical analysis.

$$Bank\ Risk_{ijt} = \alpha + \beta_1 * Market\ power_{ijt-1} + \beta_2 * Crisis_{ijt-1} + \beta_3 * Market\ power_{ijt-1} * Crisis_{ijt-1} + \beta_4 * X_{ijt-1} + \beta_5 * Y_{jt-1} + \varepsilon_{ijt-1} \quad (1)$$

We use a dummy variable Crisis, taking a value of 1 for 2007-2009 to consider GFC, 0 otherwise; its interaction with Market power is incorporated in the regression. The bank, country, and time are denoted by i, j, and t, respectively; X_{ijt-1} shows the bank controls, and Y_{ijt-1} includes country controls. The econometric model is estimated by panel data techniques and we incorporate bank fixed effects which is validated by the Hausman tests. Bank fixed effects control for bank heterogeneity. Robust standard errors are used when clustering. The first lags of the independent variables are applied to alleviate any potential reverse causality issues.

Data

Fitch Connect Database is the source of bank-level data in the empirical analysis. Country-level data is gathered from World Bank World Economic indicators. Following the literature, we conduct the subsequent filtration (Berger et al., 2009; Beck et al., 2013). Firstly, we include only consolidated data with loans and deposit data available. Secondly, we only include banks with data on total assets available for at least five consecutive years. All bank-level variables are winsorized at the 1% of their distribution. Our final sample comprises 6,090 private and publicly listed US commercial banks for 2007-2016.

Variables

Table 1 briefly illustrates the variables utilized in the empirical analysis and their descriptive statistics. We investigate how bank market power affects bank risk during crises. Bank risk in Equation 1 corresponds to our bank risk measures, and bank default risk (Default risk) is the primary outcome variable, which is proxied by the negative of the natural log of the Z-score. Z-score is a frequently used bank default risk measure in previous studies (Laeven & Levine, 2009; Beck et al., 2013). It is computed as the sum of return on assets (ROA) and capitalization (EQTA) divided by the standard deviation of ROA (SD (ROA)). Three-year rolled windows are used to compute SD (ROA). The negative value of the natural log of the Z-score is utilized to compute Default risk so that higher values specify higher risk. Table 1 indicates that Default risk has a minimum of -6.81 and a maximum of -0.82, with a mean value of -4.05.

For deeper insights, the Z-score is disintegrated into two parts (Lepetit et al., 2008; Barry et al., 2011), and they are used as dependent variables. The first part is Leverage Risk, and the second part is Portfolio Risk, whose definitions are as shown in Table 1.

As a proxy for bank market power, the Lerner index is employed, intensively utilized in banking studies (Berger et al., 2009; Beck et al., 2013). The index is computed at the bank level and describes the degree

to which banks are capable of attributing their marginal price above their marginal costs. Thereby it demonstrates current and future profits. We calculate the Lerner index in the following way:

$$\text{Lerner}_{\text{it}} = \frac{\text{P}_{\text{it}} - \text{MC}_{\text{it}}}{\text{P}_{\text{it}}} \quad (2)$$

where i and t represent bank and year, more market power is incorporated by higher index values. P_{it} specifies bank activities' price, and we use the share of total operating income in total assets as a proxy as in Berger et al. (2009). We undertake the subsequent cost function to extract marginal costs (MC_{it}).

$$ln\, C_{it} = \alpha_0 + \alpha_1 lnQ_{it} + \alpha_2 (lnQ_{it})^2 + \sum_{j=1}^{3} \beta_j \ln w_{it}^j + \sum_{j=1}^{3} \sum_{k=1}^{3} \beta_{jk}\, lnw_{it}^j lnw_{it}^k + \sum_{j=1}^{3} \gamma_j lnw_{it}^j\, lnQ_{it} + \varepsilon_{it} \quad (3)$$

C_{it} shows total operating costs, and Q_{it} embodies total assets. The three input prices are as follows: fixed asset price (w_1), labor price (w_2) and borrowed fund price (w_3). We use the share of other operational expenses in total assets for w_1, the share of staff expenses in total assets for w_2 and the ratio of interest expenses to the sum of total funding for w_3, respectively.

Equation 3 is estimated using year fixed effects and standard errors are clustered at banks. We impose the following limitations on the regressions, indicating homogeneous input prices of degree one:

$\sum_{j=1}^{3} \beta_j = 1$, $\sum_{j=1}^{3} \gamma_j = 0$ and for k=1,2,3: $\sum_{j=1}^{3} \beta_{jk} = 0$.

Marginal costs are extracted for each bank and year in the following way:

$$MC_{it} = \frac{\partial C_{it}}{\partial Q_{it}} = \frac{C_{it}}{Q_{it}} (\widehat{\alpha_1} + 2\widehat{\alpha_2} lnQ_{it} + \sum_{j=1}^{2} \widehat{\gamma_j}\, ln \frac{w_{it}^j}{w_{it}^3}) \quad (4)$$

We see in Table 1 that Market power proxied has a minimum value of -0.04 and a maximum of 0.56, with an average of 0.22.

Figure 1 demonstrates the time-series behavior of Default risk and Market power between 2007-2016. We calculate the yearly averages of the two variables to generate the series. It shows a strong market power decline during the crisis between 2007 and 2010. During the same period, default risk tends to increase. There seems to be a clear negative correlation between default risk and market power during both normal and turbulent times.

Following the previous literature, we control for various bank characteristics (Laeven & Levine, 2009; Houston et al., 2010). We consider commonly accepted determinants of bank risk. They contain the natural log of total assets (SIZE), the share of deposits to total assets (Deposits to assets), and total loans to total assets (Loans to assets). Moreover, we include the ratio of noninterest income to total income as a proxy for income diversification (Noninterest income share) and loan loss provisions in interest income (Loan loss provisions share) as a proxy for credit risks. The country controls are the growth of real GDP per capita (GDP pc growth) and inflation (Inflation).

Table 2 demonstrates the pairwise correlation coefficients. They appear low and represent no serious multicollinearity problems.

RESULTS

Table 3 demonstrates our baseline regression findings on how market power affects bank risk during GFC. For this purpose, we include a binary variable, Crisis, equates 1 for the years between 2007 and 2009 and 0 otherwise. In our regressions, we include the interaction of Crisis with Market power, proxied by the Lerner index. We execute our estimations applying panel data techniques alongside bank fixed effects. One-period lagged explanatory variables are utilised in our regressions to account for reverse causality. Column 1 presents our findings when Default risk is our dependent variable with only bank controls included in the estimation. Next, Column 2 incorporates the findings when Default risk is still the dependent variable, and we incorporate both bank and country controls. In Columns 3 and 4, we decompose Z-score and undertake Leverage and Portfolio risk as outcome variables. Columns 3& 4 contain both bank and country controls.

Table 1. Definition of the variables and descriptive statistics

Name of variables	Description	Obs.	Mean	Min	Max	Median	Standard dev.
Panel A: Dependent variables							
Default Risk	(-1)*Ln [(ROA+ EQTA)/ SD(ROA)]. ROA shows return on assets, EQTA for Equity to Total Assets, and SD (ROA) is the standard deviation of ROA.	42059	-4.05	-6.81	-0.82	-4.14	1.20
Leverage Risk	(-1)*Ln [EQTA/ SD (ROA)]	42145	-3.99	-6.74	-1.04	-4.06	1.17
Portfolio Risk	(-1)*Ln [ROA/ SD(ROA)]	37798	-1.48	-4.28	2.60	-1.63	1.31
Panel B: Bank Controls							
Market power	Lerner index= (Price-Marginal cost)/Price	53117	0.22	-0.04	0.56	0.23	0.15
Size	Ln(total assets)	54097	5.44	1.00	14.68	5.21	1.54
Deposits to assets	Deposits/total assets	54093	0.86	0.49	0.98	0.87	0.09
Loans to assets	Loans/total assets	54091	0.62	0.15	0.90	0.65	0.16
Noninterest income share	Noninterest income/total income	54094	0.17	-0.11	0.76	0.15	0.13
Loan loss provisions share	Loan loss provisions/interest income	54032	0.09	0.00	0.42	0.05	0.11
Crisis	An indicator variable, equaling 1 for GFC, and 0 for the other years.	54810	0.33	0.00	1.00	0.00	0.47
Panel C: Country Controls							
GDP pc growth	Annual growth of GDP per capita	54810	0.47	-3.62	1.79	0.93	1.68
Inflation	Inflation rate	54810	1.82	-0.36	3.84	1.64	1.28

Note: This table illustrates the variables employed in the empirical analysis, their brief descriptions, and the summary statistics. Panel A displays the outcome variables; Panels B and C specify bank and country controls.

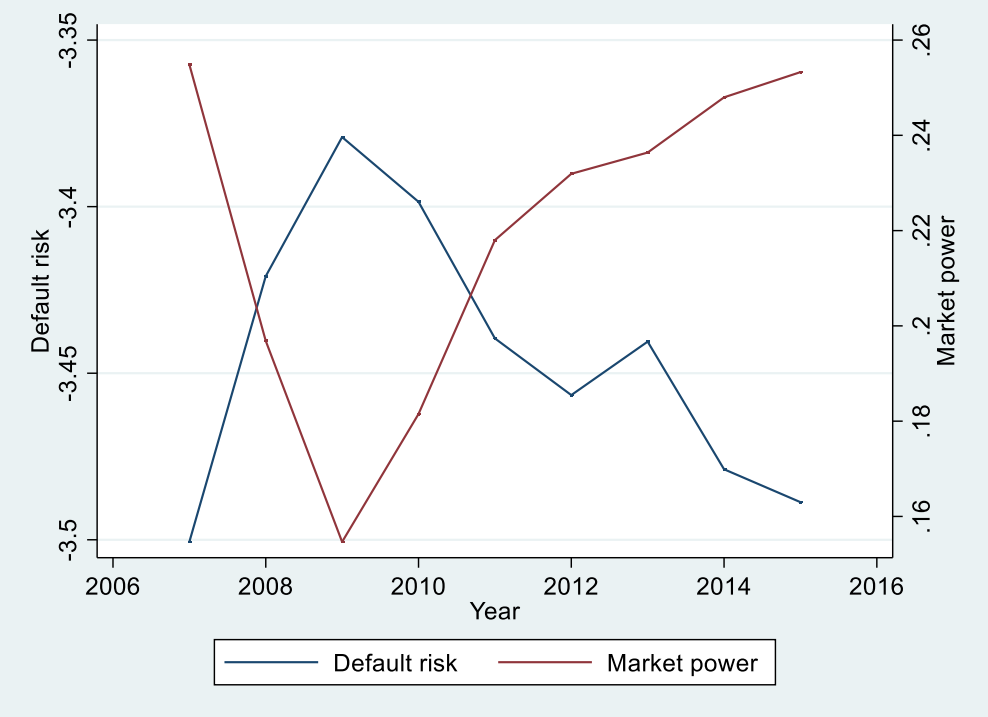

Figure 1. The behavior of ESG and loan growth through time

Note: This figure shows how *Default risk* and *Market power* behave between 2007-2016. We calculate the yearly averages of the two variables to generate the series.

Table 2. Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Crisis	1								
(2) Market power	-0.1106*	1							
(3) Size	-0.0581*	0.1039*	1						
(4) Deposits to assets	-0.3454*	0.0544*	-0.2828*	1					
(5) Loans to assets	0.1190*	-0.0515*	0.1275*	-0.1065*	1				
(6) Noninterest income share	-0.0423*	0.0534*	0.3222*	-0.1577*	-0.1461*	1			
(7) Loan loss provisions share	0.1587*	-0.5619*	0.1919*	-0.1617*	0.1959*	0.0470*	1		
(8) GDP pc growth	-0.7623*	0.1790*	0.0310*	0.2136*	-0.0702*	0.0262*	-0.2707*	1	
(9) Inflation	0.1592*	0.0337*	-0.0369*	-0.1224*	0.0119*	-0.0311*	-0.0169*	0.1904*	1

** significance at 0.05*

In Columns 1 and 2, we observe that the Crisis term *(□□)* coefficient is significantly positive at the 1% level. This shows that the crisis increases bank default risk for banks with lower market power. Meanwhile, the interaction term's coefficient, Market power*Crisis (□□□□□ is negatively significant, and the sum of the coefficients of Crisis *(□□)* and *(□□)* is significantly negative at the 1% level. This shows that market power is beneficial to reverse the impact of the crisis, i.e., banks with higher market power persisted stable during turbulent times. In Columns 3 and 4, we see that the findings continue to hold, and higher market powered-banks have both lower leverage and portfolio risk during the crisis. The decrease in portfolio risk seems to be higher in magnitude than leverage risk, i.e., higher market powered-banks seem to have managed to maintain a portfolio with higher and more stable earnings.

Overall, these findings are consistent with our hypothesis and consistent with the studies that state that high market power helps banks to have better funding and a greater capability to protect themselves against loan defaults (Fungáčová et al., 2014). Our findings are also in agreement with the studies that document that screening and monitoring abilities improve when banks have higher market power which then boosts their performance and decreases loan defaults and bank risk during uncertain times (Petersen and Rajan; 1995; Boot and Thakor, 2000; Cubillas and Suarez, 2018). The hedging capabilities of banks improve when they have higher market power. They face fewer moral hazard problems and non-performing loans, and they better maintain their stability (Fungáčová et al., 2014).

Regarding the impact of bank-specific variables, they are generally observed to be significant in line with expectations. We see that higher loan and deposit shares induce less risk on banks. This supports the literature that reveals that traditional activities like deposits and lending are more secure because switching and information costs make it hard to cancel these relationships (Lepetit et al., 2008; Köhler, 2015). We perceive in Table 3 that income diversification through non-interest income (such as activities that require commission and fee, trading, etc.) is associated with lower portfolio risk. Larger banks have lower default, leverage, and portfolio risks. Higher loan loss provisions, indicating a higher credit risk, are associated with more risk as would be expected. With regard to the country control variables, real GDP per capita growth is negatively linked with risk-taking, and inflation is positively related to bank risk.

Table 3. Effect of Market Power on Bank risk during crisis-Baseline Estimations

	(1) Default Risk	**(2) Default Risk**	**(3) Leverage Risk**	**(4) Portfolio Risk**
Market power	-1.270***	-1.136***	-0.766***	-5.085***
	(0.05)	(0.05)	(0.05)	(0.07)
Crisis *(β1)*	0.355***	0.252***	0.214***	0.594***
	(0.02)	(0.03)	(0.03)	(0.03)
Market power*Crisis *(β2)*	-0.501***	-0.585***	-0.458***	-1.887***
	(0.07)	(0.07)	(0.07)	(0.10)
Size	-0.360***	-0.313***	-0.343***	-0.352***
	(0.02)	(0.02)	(0.02)	(0.03)
Deposits to assets	-0.984***	-0.598***	-0.603***	-0.915***
	(0.09)	(0.09)	(0.09)	(0.11)
Loans to assets	-0.086	-0.251***	-0.239***	-0.824***
	(0.07)	(0.07)	(0.07)	(0.08)
Noninterest income share	-0.107*	-0.086	-0.044	-0.391***
	(0.06)	(0.06)	(0.06)	(0.08)
Loan loss provisions share	2.402***	2.228***	2.136***	2.457***
	(0.04)	(0.05)	(0.05)	(0.06)
GDP pc growth		-0.059***	-0.060***	-0.035***
		(0.00)	(0.00)	(0.00)
Inflation		0.032***	0.035***	0.011
		(0.01)	(0.01)	(0.01)
Constant	-1.191***	-1.721***	-1.580***	2.810***
	(0.14)	(0.14)	(0.14)	(0.18)
β1+β2	-0.146***	-0.333***	-0.244***	-1.293***
Bank FE	YES	YES	YES	YES
R2	0.2023	0.2107	0.1872	0.3669
Number of observations	41441	41441	41483	37384
Number of banks	6062	6062	6062	6013

*Note: The table shows our baseline regression findings on how market power affects bank risk during crisis times. We incorporate an indicator variable, Crisis, which equals 1 for 2007-2009 and 0 otherwise. We include the interaction of Crisis and Market power, proxied by the Lerner index. We use a sample of 6090 US commercial banks for 2007 - 2016. We perform our estimations using panel data techniques, together with bank fixed effects. To diminish the reverse causality, lagged independent variables are used. Column 1 shows the results when Default risk is our dependent variable when bank controls are included in the estimation. Column 2 exhibits the results when Default risk is our dependent variable with both bank and country controls included in the estimation. In Columns 3 and 4, we decompose Z-score and use Leverage risk and Portfolio risk as outcome variables. Robust standard errors in parentheses. * p<0.10, ** p<0.05,*** p<0.010*

Table 4. Effect of Market Power on Bank risk during crisis-Robustness Estimations

	(1) CRISIS=1	**(2) CRISIS=0**	**(3) CRISIS=1**	**(4) CRISIS=0**	**(5) CRISIS=1**	**(6) CRISIS=0**
Dependent variable	***Default risk***	***Default risk***	***Leverage risk***	***Leverage risk***	***Portfolio risk***	***Portfolio risk***
Market power	-1.019***	-0.765***	-0.566***	-0.403***	-6.048***	-4.623***
	(0.11)	(0.07)	(0.11)	(0.07)	(0.16)	(0.08)
Size	0.162**	-0.444***	0.174***	-0.479***	-0.109	-0.463***
	(0.07)	(0.03)	(0.07)	(0.03)	(0.10)	(0.04)
Deposits to assets	0.032	-1.021***	0.115	-1.014***	0.403	-1.314***
	(0.22)	(0.13)	(0.21)	(0.13)	(0.31)	(0.14)
Loans to assets	0.853***	-0.548***	0.865***	-0.549***	0.721***	-0.832***
	(0.18)	(0.10)	(0.18)	(0.10)	(0.28)	(0.11)
Noninterest income share	-0.098	0.115	-0.147	0.145*	-0.052	0.018
	(0.11)	(0.09)	(0.11)	(0.09)	(0.16)	(0.10)
Loan loss provisions share	0.271***	2.321***	0.313***	2.249***	-0.077	2.479***
	(0.09)	(0.06)	(0.09)	(0.06)	(0.15)	(0.07)
GDP pc growth	0.035***	0.121***	0.036***	0.119***	0.053***	0.109***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Inflation	0.000	0.102***	0.000	0.104***	0.000	0.074***
	(.)	(0.01)	(.)	(0.01)	(.)	(0.01)
Constant	-4.882***	-0.956***	-5.054***	-0.781***	0.111	3.309***
	(0.38)	(0.21)	(0.37)	(0.21)	(0.61)	(0.25)
Bank FE	YES	YES	YES	YES	YES	YES
R2	0.1707	0.128	0.1064	0.116	0.323	0.253
Number of observations	11669	29772	11684	29799	9565	27819
Number of banks	5971	6054	5974	6054	5283	5991

*Note: The table shows our robustness findings on how market power affects banks' risk during crisis times. We use a sample of 6090 US commercial banks for the period between 2007 and 2016. We perform our estimations using panel data techniques and bank fixed effects. To lessen the impact of reverse causality, we undertake one-period lagged explanatory variables. Columns 1 and 2 display the findings when we use Default risk as our dependent variable and for the subsamples when we take Crisis=1 (for the years 2007-2009) and Crisis=0 (for the years 2010-2016), respectively. Columns 3 and 4 display the findings when we use Leverage risk as our dependent variable and for the subsamples when we take Crisis=1 (for the years 2007-2009) and Crisis=0 (for the years 2010-2016), respectively. Columns 5 and 6 display the findings when we use Portfolio risk as our dependent variable and for the subsamples when we use Crisis=1 (for the years 2007-2009) and Crisis=0 (for the years 2010-2016), respectively. Robust standard errors in parentheses. * p<0.10, ** p<0.05,*** p<0.010*

Table 4 presents our robustness checks on how market power affects bank risk during crises. Instead of using interaction terms, we use split samples. We continue to perform our estimations employing panel data estimation techniques with bank fixed effects and use one-period lagged independent variables. Columns 1 and 2 present our findings when Default risk is taken as the dependent variable, and we present the results for the subsamples when we take Crisis=1 (for the years 2007-2009) and Crisis=0 (for the years 2010-2016), respectively. We observe that the coefficient of the Market power is significantly negative at the 1% level, but it is higher in magnitude during the crisis. Therefore, we see that Market power decreases bank risk more during the crisis period, in line with baseline findings. Columns 3 and 4 display the findings when Leverage risk is considered as the dependent variable and for the subsamples Crisis=1 and Crisis=0, respectively. Columns 5 and 6 display the findings when we use Portfolio risk as our dependent variable and for the subsamples Crisis=1 and Crisis=0, respectively. The coefficient of the Market power term is higher and more negative when Crisis=1, i.e., in Columns 3 and 5 vs. Columns 4 and 6. We confirm that market power is more powerful in decreasing bank portfolio risk during the crisis, in line with baseline findings.

CONCLUSION

This paper examines how bank market power affects bank risk during the global financial crisis period (2007-2009). A sample of 6,090 private and listed US commercial banks is used. We perform our regressions using panel data techniques and include bank fixed effects. Our findings indicate that higher market-powered banks stayed stable during GFC.

Our findings support the arguments that banks with high market power have a greater capability to hedge themselves against non-performing loans (Fungáčová et al., 2014). They have better screening and monitoring abilities that help them boost their performance and decrease loan defaults and bank risk during crisis times (Petersen and Rajan; 1995; Caminal and Matutes, 2002; Cubillas and Suarez, 2018). They experience fewer problems related to moral hazards and better maintain their stability (Gambacorta and Marques-Ibanez, 2011).

This paper shows that market power in banking is very crucial, and competition is more detrimental to stability during crisis periods. We find that bank market power is a path through which turbulent periods might impact bank risk-taking. This suggests that market power decreases banks' risk-taking incentives during the crisis. In contrast to other industries, policymaking in banking may focus on improving market power but not maximizing competition between banks, especially during crises.

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