



## Competitive Conditions and Banking Stability in Pakistan: New Evidence from Market Power and Charter Value

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**Abstract:** *In this study, we invoke the theoretical notion of different competitive conditions in lending and deposit market power for the banking industry of Pakistan. We find highly monopolistic conditions in lending market whereby majority of the banks are enjoying high market power. On the other hand, the deposit market is found to be highly competitive. Subsequently, we find the effects of the lending and deposit market measures of market power on the riskiness of banks to be asymmetric. In addition, we introduce charter value as a determinant of banks' risk for the first time in the case of Pakistan and tested for whether or not greater higher valuable charters enhance the risk averse tendencies of banks to preserve charter value? Our findings suggest that the theoretical link between charter value and market power is sufficiently strong to restrain risky behavior of banks.*

**Keywords:** *Competition, Market Power, Charter Value, Bank stability.*

### Introduction

Given the context of banks' safety and soundness, the complex relationship between competition and stability and or fragility has long been debated in both scholarly and policy debates. Several theoretical and empirical studies have shed light on the said nexus, however the evidence is largely contentious and inconclusive. There are two predominant and contrasting hypotheses which view the relationship between competition and stability in banking in different ways. One is the competition-stability and the other is the competition-fragility view. The competition-stability view mainly draws from the theoretical work of [Boyd and De Nicolo \(2005\)](#) who suggested a trade off between risk and incentive mechanisms of banks. Less competitive banking markets, allow banks to exercise market power enabling them to charge higher lending rates and earn more rents as their markets become more concentrated, which in turn may become difficult for the borrowers to pay off-thus, making it riskier and adds on to the moral hazard and adverse selection problems. To supplement the higher rates, the borrowers tend to undertake risky projects, which in turn results in increased defaults. More borrowers' defaults affect banks' solvency through risk shifting mechanisms as indicated and adds on to the fragility of the entire financial system.

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However, on the other hand, the competition-fragility view, also known as the charter value hypothesis, suggests that higher level of competition erodes banks' margins and market power and therefore induce the banks to take on risky projects thus adding into fragility (Martinez-Miera & Repullo, 2010). The competition-fragility view stems from the seminal works and afterwards, several studies have indicated that higher competition results in encouraging moral hazard in banking system (Jiménez, Lopez, & Saurina, 2013; Martinez-Miera & Repullo, 2010) among others.

One of the most dominant mechanisms proposed by the literature that can add to the fragility and or stability of the system is the 'charter value', defined as a stream of economic rents that a banking organization is entitled to earn as a going concern from its continued operations (Haq, Avkiran, & Tarazi, 2019; Hussein, 2016; Pathan, Haq, & Williams, 2016). It is argued that competition reduces the banks' market power and charter value and in turn, the banks tend to behave imprudently by assuming excessive risks as a result of the reduced self-disciplining feature of charter value. Charter value is believed to curb banks' incentives for excessive risks and in order to conserve their charter value, banks are inclined to become more conservative which in turn enhance banking stability. Thus more concentrated and less competitive banking conditions are expected to be relatively more stable.

In short, both the theoretical and empirical literature is largely a mixed mass of a variety of notions with no consensus and seemingly no conclusive evidence on the fact that whether competition and stability are positively or negatively linked. However, it's worth mentioning that, the said relationship is largely and highly been investigated in several studies for advanced and developed economies, and very little attention has been paid towards developing economies in general and emerging economies in particular <sup>1</sup>. Kasman and Kasman (2015) argues that financial liberalization, deregulation and large scale restructuring across markets have changed the competitive landscape in banking, both in developed and developing countries forcing the banks to operate on low profit margins, eroding charter value and market power, resulting in consolidation and increased concentration in the banking sector. Similarly, Sarkar and Sensarma (2016) argues that since, emerging economies are rapidly undergoing drastic structural changes, it has become extremely challenging for the policy makers to maintain stability in the wake of increased competition arising from domestic as well as foreign banks. Hence it is imperative to understand the wide ramification of competition stability and or fragility nexus as any such aggravation can pose systemic risk.

To fill that gap, in this study, we investigate the competitive conditions particularly the competition and risk taking behavior of banks for Pakistan. In addition, we differentiate competition in both loan and deposit markets and apply a structural neo-organizational approach for the first time in a country specific settings by estimating separate Lerner Indices accordingly. We do so, as most of the literature on the competition stability nexus analyzes competition in the deposit market whereas taking the loan markets under consid-

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<sup>1</sup>However, some exceptions in the case of developing economies come from China. See for instance (Tan & Floros, 2013; Tan, Floros, & Anchor, 2017; Tan & Floros, 2018) among others. Though, China is categorized as a developing economy, however and still, its size and sustained growth is not comparable to that of Pakistan.

eration leads to negative competition-risk relationship. To this, [Craig and Dinger \(2013\)](#) takes that loan and deposit markets should be treated separately after taking the ([Boyd & De Nicolo, 2005](#)) premise who argued that competition-stability nexus is entirely due to focusing on deposit market only while ignoring the loan market as a portfolio problem. The same premise has been adopted by [Forssbäck and Shehzad \(2015\)](#). In addition, there are sufficient theoretical reasons to believe that competition in lending market could be inimical to financial stability as it may diminish the formation of mutually beneficial lending relationships between firms and creditors. This can be further corroborated with the recent empirical works of [Kokas, Vinogradov, and Zachariadis \(2020\)](#).

We follow the same line of literature and differentiate between loan and deposit markets by estimating Lerner indices separately for loan and deposit markets for each bank in our sample.

The construction of the Lerner index separately for loans and deposit markets for Pakistani banks in itself is a contribution as to the best of our knowledge, to date, no such attempt has been made. The only closely relevant study is that of [Mirza, Bergland, and Khatoon \(2016\)](#) who measures the degree of competition for Pakistani banking industry taking the Panzer-Rosse, Bresnahan-Lau, Hall-Roeger and the Boone's indicator for 30 listed banks over 2004 to 2012. Similarly, ([Khan & Riazuddin, 2009](#)) measures the degree of competition for Pakistani banking industry using only the Panzer-Rosse H-Statistic. Similarly, another effort was made by [Afzal and Mirza \(2010\)](#) who measures market power in terms of banks' market share. However, they still fall short to construct Lerner index as a direct measure of market power let alone distinguishing between lending and deposit markets. In short this is a major gap and is intended to be traversed in the current study.

Our findings suggest interesting insights. We provide evidence in favor of competition stability nexus in the lending market whereas the deposit market exhibits support in favor of competition fragility hypothesis. In addition, we suggest to mediate the tradeoff between competition stability and or competition fragility with regulatory framework of charter value which was found to be strongly associated with restraining risky behavior of banks.

## The Case of Pakistan

We focus on the banking sector of Pakistan for several reasons; primarily banking industry in Pakistan remains to be the major source of financing to real economy and secondarily due to the fact that substantial consolidation occurred in the past few decades as a result of deregulations and liberalization policies. These financial landscapes as noted "are more likely to affect bank market structure which can in turn alter the behavior of banks in terms of lending activities and risk taking".

Recently the banking sector of Pakistan is recognized for its rapid growth. However, historically, banks in Pakistan were mainly state owned and heavily regulated by the state itself till 1990 where five state owned banks dominated the entire banking sector in Pakistan ([Mirza et al., 2016](#)). However, Pakistan has initiated several reforms and liberalization measures in early 1990s like many other emerging economies under the macroeconomic structural adjustment program. The aim of these reforms was to achieve a relatively com-

petitive and transparent financial sector (Hussein, 2016). As a result, a relatively more deregulated and liberalized banking sector was promoted in the country. Similarly (Jain & Bhanumurthy, 2006) shows that the overall efficiency and productivity of the economy was enhanced as a result of these policy initiatives primarily aimed to make it globally competitive. From Pakistan's perspective, major nationalized banks were privatized, interest rates were deregulated. Credit ceilings were eliminated and reserve requirements were reduced to decrease the preemption of financial resources. In addition, prudential regulations were enhanced to promote the State Bank's monitoring abilities. In the aftermath of these reforms and liberalization policies, the country's credit rating was improved. Also the local currency experienced considerable appreciation and by large positively impacted the domestic economy (Aleemi & Azam, 2017).

However, a key issue in this regard is as noted by Mirza et al. (2016) that increased liberalization and deregulation led to concerns for banks to exercise market power and has raised questions about the competitive conditions in Pakistani banking system. Hence it is imperative to assess the competitive landscape of the country with respect to its stability.

## Tools and Methods

### Dependent Variables: Risk Measures

#### Credit Risk

We proxy credit risk by the ratio of nonperforming loans indicating loan portfolio risk (Beck, Demirgüç-Kunt, & Levine, 2006; Bashir, Yu, Hussain, Wang, & Ali, 2017; Jiménez et al., 2013). From a macro-prudential regulatory point of view, high level of NPL should be observed and controlled for as it has the potential to lead to banking failure. Kasman and Kasman (2015) argues that credit risk, being the major source of banking risk, is significantly related to higher levels of risky loans. Similarly a large portion of empirical literature indicates that negligence towards credit risk and poor credit quality is a leading cause of bank failures. Hence we adopt NPL as a backward-looking proxy of credit risk, which indicates the quality of existing loan portfolio of banks.

#### Default Risk

Also known as solvency risk, is widely captured in the banking literature by Z-Scores. Unlike NPLs, Z-Score indicates the overall bank risk <sup>2</sup> (Abedifar, Molyneux, & Tarazi, 2013; Bakkar, Rugemintwari, & Tarazi, 2017; Beck et al., 2006). Z-scores are calculated taking accounting based asset returns and equity's volatility as given below;

$$Z_{it} = \frac{ROA_{it} + (E/TA)_{it}}{\sigma ROA_{it}} \quad (1)$$

<sup>2</sup>However, as a subject matter and aide memoire, (Nguyen, 2020) indicates Z-Score as an alternative for systemic risk as well.

Where ROA is the accounting measure of return on assets and E/TA is the equity ratio for bank  $i$  at time  $t$ . Whereas  $\sigma(ROA)$  is the standard deviation of ROA. The scores combine profitability, leverage and volatility in returns given by its ROA, E/TA and  $\sigma(ROA)$  respectively and indicates the distance in terms of the number of standard deviation of return on assets a bank is far from solvency and the likelihood of failure (Boyd & De Nicolo, 2005). A higher Z-score implies greater stability and lower probability of insolvency and vice versa (Li, 2021).

## Explanatory Variables

### Measuring Market Power

Market power is a reflection of a firm's ability to set prices above its marginal cost. A common practice to measure market power in the banking industry is the Lerner index which is been extensively used in the banking literature and indicates the relative price difference between marginal cost scaled by the price of a firm's output and is therefore inversely related to competition (Forssbæk & Shehzad, 2015). The Lerner index has got several advantages over its peers such as the Panzer and Rosse H-Statistic and the Boone indicator that it measures market power at the bank year level (Aleemi, Uddin, & Kashif, 2019). The Boone indicator in particular is time dependent and reflects the logic behind structure efficiency hypothesis (Tan & Floros, 2018). However, in this study, we invoke the theory behind structural conduct performance (SCP) hypothesis owing to neo-organizational approach. Similarly, the H-Statistic is a non-structural measure of competition. In addition, Lerner index has a great advantage over other measures of competition and market power as it provides a direct measure of pricing power per year at bank level. Furthermore, Lerner index illustrates the behavioral departure point for imperfectly competitive markets from the benchmark of perfect competition. The index ranges from 0 to 1, with 0 means perfect competition and 1 indicating monopoly representing the conjectural variations of elasticity of the total banking output in terms of the output by Bank  $i$ . It is expressed as inverse of the price elasticity such as;

$$Lerner = \frac{(P_{it} - MC_{it})}{P_{it}} \quad (2)$$

Where  $P_{it}$  indicates output prices and  $MC_{it}$  are marginal costs. However, it's worth noting that traditionally Lerner index is estimated for a single market only or no distinction has been made between competition in deposit and in loan markets respectively. And thus traditionally the estimation took place with one output (mainly total assets) and a set of inputs (mainly fixed capital, funding and labor). Since we are looking into the market power in both loan and deposit markets, thus to distinguish between the two, and assume that a bank produces two outputs; one being the loans and the other being deposits, utilizing three inputs-fixed capital, funding and labor following (Forssbæk & Shehzad, 2015; Li, 2021). Hence we estimate the two Lerner indices as;

$$LL_{it} = \frac{(P_{Lit} - MC_{Lit})}{P_{Lit}} \quad (3)$$

$$LD_{it} = \frac{(P_{Dit} - MC_{Dit})}{P_{Dit}} \quad (4)$$

Where; LL and LD indicates Lerner indices for loans and deposits respectively. PLit and PDit indicates prices of outputs for loans and deposits. Whereas MCLit and MCDit are marginal costs for deposits and loans respectively. The marginal costs for the respective outputs are derived from the translog cost function using a system of equations by following (Forssbäck & Shehzad, 2015) as;

$$\begin{aligned} \ln TC = & \alpha + \sum_{k=1}^2 \beta_k \ln(Y_{kit}) + \sum_{h=1}^3 \beta_h \ln(W_{hit}) + \sum_{h=1}^3 \sum_{m=1}^3 \frac{1}{2} \gamma_{hm} \ln(W_{hit}) \ln(W_{mit}) + \sum_{k=1}^2 \\ & \delta_k (\ln(Y_{kit})^2 + \frac{1}{2} \theta \ln(Y_{1it}) \ln(Y_{2it}) + \sum_{h=1}^3 \sum_{k=1}^2 \vartheta_{hk} (\ln(W_{hit}) \ln(Y_{kit}) + \sum_{n=1}^2 \pi T^n + \\ & \sum_{h=1}^3 \sigma_h \ln(W_{hit}) T + \sum_{k=1}^2 \varphi_k \ln(Y_{kit}) T + \sum_{p=1}^p (X_{pit}) + u_{it} \quad (5) \end{aligned}$$

The above specification indicates total cost (TC) as a function two outputs (Yk) with three inputs of capital, labor and funding presented by (Wh), a time trend (T) representing technological and technical change. A set of bank level specific control variables are presented by the vector (Xp) which in our case is equity. We follow the stochastic frontier approach and estimate the above system as constrained linear regression with restrictions of linearity and homogeneity (Forssbäck & Shehzad, 2015). Finally, to construct the Lerner index, the marginal costs for loans and deposits are then given by;

$$MC_{Lit} = \frac{\partial TC_{it}}{\partial \ln Y_{1t}} = \left[ \beta_L + \beta_{L1} \ln Y_{1t} + \beta_{L2} \ln Y_{2t} + \sum \beta_{hL} \ln W_{hit} + \theta_{LT} \right] \frac{TC_{it}}{Y_{1t}} \quad (6)$$

$$MC_{Dit} = \frac{\partial TC_{it}}{\partial \ln Y_{2t}} = \left[ \beta_D + \beta_{D1} \ln Y_{2t} + \beta_{D2} \ln Y_{1t} + \sum \beta_{hD} \ln W_{hit} + \theta_{DT} \right] \frac{TC_{it}}{Y_{2t}} \quad (7)$$

### Charter Value

Banking has arguably evolved to be one of the most regulated industry globally to reduce morally hazardous risk seeking behavior (Pathan et al., 2016). Bank regulators, being responsible for the safety and soundness of the banking system strive to keep banks' risk taking in check. At present these regulations are aimed to increase the 'skin in the game' for the banks' stakeholders which they may potentially lose in case of failure (Boyd & De Nicolo, 2005). Bank supervisors and regulators adopt several tools like the various permutations of capital requirements to achieve this goal. Charter value is one of such tools that makes the regulators' job easier by curbing banks' incentives for excessive risk taking

and by acting as a self-disciplining source for banks' risk taking. Haq et al. (2019) argues that banks have incentives to take excessive risk due to moral hazard arising from limited liability and explicit guarantees such as deposit insurance. This is further exacerbated by the 'too big to fail' and the 'too important to save' notions. However, these incentives might be tempered in cases where banks have 'something to lose' like their charter value. Arguably charter value self-disciplines the banks' risk taking behavior by increasing the potential losses in the event of solvency. Pathan et al. (2016) calls it a form of 'skin in the game'. Thus banks tend to refrain from excessive risk taking as they have much to lose.

Our approach for the inclusion of charter value as a determinant of banks' risk taking compliments the existing literature. However, in the case of Pakistan there is no comprehensive analysis of charter value as a determinant of banks' risk. We contribute to the existing literature by estimating the effect of charter value on variety of risk measures as discussed earlier for Pakistani commercial banks. This to the best of our knowledge is the first of its kind attempt to include charter value as a determinant of banks' risk for Pakistani banking industry. We follow (Haq et al., 2019; Hussein, 2016; Pathan et al., 2016) and estimate charter value as given below:

$$CV_{it} = \frac{\text{Market Value of Equity}_{it} + \text{Book Value of Liabilities}_{it}}{\text{Book Value of Assets}_{it}} \quad (8)$$

Our choice of Charter Value instead of leverage ratios as popularly utilized in the literature is determined by the fact that increased market power is arguably a source of charter value. In addition, Keeley reports that during the 1980s the decline in banks' charter value led to increased risk taking resulting in high rate of bank failure.

### Control Variables

To control for different bank specific characteristics, we include natural log of total assets to control for size and possible heterogeneity arising from economies of scale. Similarly, heterogeneity arising from profitability is controlled for by return on assets (ROA). Whereas a macroeconomic control variable in the form of real GDP growth rate is also included to control for business cycle variations. As we believe that risk related measures of banks are pro-cyclical, thus a macroeconomic control variable is necessary and important.

### Empirical Research Design and Econometric Specifications

In order to test the various relationship between market power, riskiness of Pakistani banks and charter value, we set up a general model to specify the relationship as follows;

$$Risk_{it} = \alpha_{it} + \beta_1 MP_{it} + \beta_2 CV_{it} + \sum_{i=1}^k \beta_{3+i} (\text{Bank Specific Control})_{kit} + \sum_{j=1}^m \beta_{4+m} (\text{Macro - Level Control})_{mit} + \epsilon_{it} \quad (9)$$

Where, MP presents the measures for market power, i.e. the Lerner indices for loan and deposit markets. Similarly, CV indicates the charter value. Bank specific control include, bank size and ROA whereas macroeconomic control include business cycle proxied by real GDP growth rate as in [Kasman and Kasman \(2015\)](#). Finally, risk indicates distress indicators for credit and default risk. Whereas the  $\epsilon_{it}$  is the stochastic disturbance term that is believed to be white noise and expressed under the assumptions as;

$$\epsilon_t \sim IID(0, \sigma^2) \quad (10)$$

Equation (10) summarizes that  $\epsilon_t$  should be independently and identically distributed ([Aleemi & Azam, 2017](#); [Aleemi et al., 2019](#)).

### Estimation Methodology

We employ dynamic panel data methods to cater for several issues such as simultaneity, endogeneity and unobserved biases from bank level heterogeneity. Further, dynamic panel models are also appropriate to cope with the issues of reverse causality that may arise between dependent and explanatory variables.

To cope with these and other such potential issues such as elimination of serial correlation, several studies adopt dynamic models such as Dynamic Ordinary Least Squares (DOLS), Instrumental Variables Regression and Two-Stage Least Squares (2SLS) methods with instrumental variables. However, [Hall \(2005\)](#) has shown that these techniques are not that much robust as they do not account for heteroscedasticity. [Baum, Schaffer, and Stillman \(2003\)](#) calls it an omnipresent issue in empirical research and suggests taking advantage of the GMM's orthogonality conditions to cater for heteroscedasticity of unknown form. Thus in this study we follow ([Arellano & Bover, 1995](#)) and employ a two-step system Generalized Method of Moments (GMM) technique. In addition, [Habimana \(2017\)](#) reports that the two-step system GMM is consistent and asymptotically efficient in the presence of heteroscedasticity.

The System GMM is an extension of the standard GMM approach proposed by ([Arellano & Bover, 1995](#)). Furthermore, [Hall \(2005\)](#) argues that system GMM is more efficient than 2SLS as it accounts for heteroscedasticity and does not require distributional assumptions on the error term which in many cases could be a huge advantage. Moreover, the system GMM is shown by [Baltagi \(2008\)](#) to produce more efficient and precise estimates than the standard GMM and helps to reduce biases and precision issues by way of differencing variables.

The system GMM is first estimated in levels and then in differences by including lagged explanatory variables as instruments. The right hand side variables in a system GMM are treated as endogenous and orthogonally allows to adopt their first differenced lags as instruments. Following [Kasman and Kasman \(2015\)](#) we include a lagged explanatory variable for bank stability measures. As a relatively unstable bank is likely to exhibit distress in the following period which is an indication of the persistency in bank risk taking behavior.

Finally, to test the stability and goodness of fit of our estimated models, we apply the Hansen-J Test and AR (2) test to check for the over identifying restrictions and second



order correlation respectively. When both the Hansen-J test and the AR (2) tests are insignificant at a given level of confidence interval, show the validity that the identifying restrictions are valid and that second order correlation among first-differenced errors do not exist respectively. We expect first order serial correlation due to the presence of lagged dependent term. However, our results of AR (1) test suggest the absence of first order auto-correlation as well.

## Data and Sampling Criteria

Our sample consists of all scheduled commercial banks during the period of 2006 to 2017. The selection of the sample duration is constrained by data availability. During the sampled period many mergers and amalgamation of different banks happened. The survivorship bias is thus addressed by excluding the merged entities following (Afzal & Mirza, 2010; Aleemi et al., 2019). Specialized and Foreign banks are excluded primarily due to non-availability of data throughout the sample period and secondarily to obtain a relatively homogenous sample.

With the above criteria, we end up with an unbalanced panel. The distribution of the sample and the number of banks during each sample period is indicated in Table 1 below.

**Table 1**  
Sample distribution

Banks	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Public	4	4	4	4	4	5	5	5	5	5	5	5
Private	19	19	19	19	19	17	17	17	17	17	16	16
Islamic	4	5	5	5	5	5	5	5	5	6	6	6
Total	27	28	28	28	28	27	27	27	27	28	27	27

Data is collected from the official annual audited financial statements and from various reports by the State Bank of Pakistan including Financial Statement Analysis of Financial Sector.

## Findings

### Lerner Indices for Loans and Deposit Markets

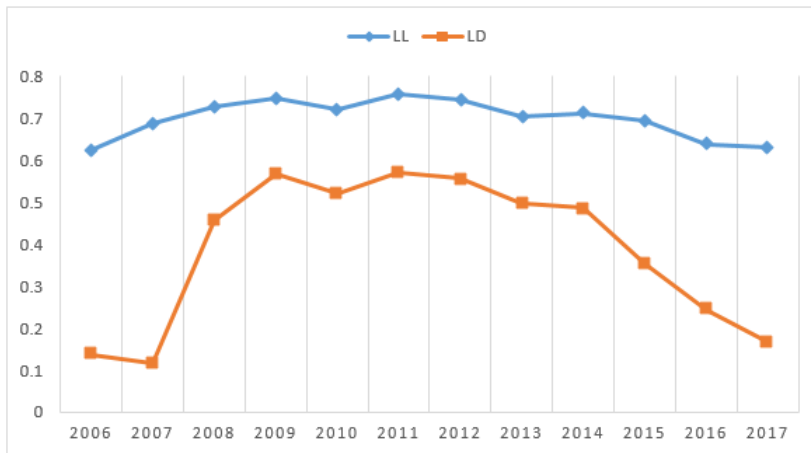
The mean annual Lerner indices are reported in Table 2 and their evolution through the sampled period is depicted in Figure 1. A great advantage of Lerner over other measures of competition and market power is that it provides a direct measure of pricing power per year at bank level. Consistent with theory, the mean Lerner indices indicate that little has changed in terms of market power in the lending market (from 0.624 to 0.630 in 2006 to 2017 respectively). On average, the loan market remained to be monopolistically competitive during the entire sampled period that could be alluded to the higher level of concentration and consolidation in the banking industry and strong monitoring and stringent policies of SBP particularly evident after the global financial crisis.

**Table 2**

Year	Lerner Loans	Lerner Deposits
2006	0.624	0.137
2007	0.688	0.115
2008	0.729	0.455
2009	0.746	0.566
2010	0.721	0.522
2011	0.757	0.57
2012	0.743	0.556
2013	0.703	0.496
2014	0.712	0.486
2015	0.694	0.353
2016	0.638	0.244
2017	0.63	0.167

The intuition of this line of reasoning is consistent with that of [Beck et al. \(2006\)](#); [Beck, De Jonghe, and Schepens \(2013\)](#). Moreover, increased consolidation can potentially lead to collusion among larger banks as corroborated by [Bos, Kolari, and van Lamoen \(2013\)](#). Together, as evident from the results, these dynamics could be perhaps responsible for the higher concentration and the formation of larger banks in the country. These larger banks are believed to have gained scope and enjoy realizing higher Lerner Margins.

**Figure 1**  
Evolution of Lerner Indices



Furthermore, our results for market power in the loan market are in line with [Bikker, Spierdijk, and Finnie \(2007\)](#); [Claessens and Laeven \(2004\)](#). In addition, the downward bias of competition levels despite multilevel deregulations and liberalization reforms, are also in line with recent empirical literature such as [Bikker et al. \(2007\)](#); [Bos et al. \(2013\)](#) among others. However, these findings are in contrast with [Hanif \(2017\)](#); [Mirza et al. \(2016\)](#) who reports perfect competition through estimation of Panzer and Rosse H-statistic for Pakistan to which our results are difficult to compare if not comparable at all. In addition, our results are expected to be different as we differentiate between competition in lending

and deposit markets which is a first in the case of Pakistan.

Focusing on the market power in deposit market which represents a relatively different and contrasting picture and exhibits a sudden and sharp upward bias from 2007 to 2012. Followed by a consistent downward trend from 2013 till 2017 decreasing almost for 0.383 points. Making a roughly an inverse U-Shaped curve. The competitive conditions in the deposit market is significantly improved over time and that the deposit market is way more competitive than its lending counterpart. The results are consistent with Hanif (2017); Mirza et al. (2016). However, the contrasting revelations pre and post 2012, can be attributed to a number of factors. The upward bias in pre 2012 period can be attributed towards increased regulatory pressures from the central bank, increased mergers and acquisition activity through 2007 and onwards and the global financial crisis among others. Similarly, the downward pressure on market power in post 2012 era can be explained through the increased competition for deposits alluded towards the subsequent downward interest rate spreads and revenue diversification. In addition, during the same period, the central bank introduced ceilings and flooring over the customers' deposit rates <sup>3</sup> compared to the lending rate which are directly tied to KIBOR and are regularly updated. This could be perhaps the main reason for such departure and contrasting behavior of the two markets.

**Table 3**  
Summary Statistics and Pairwise Correlations

Variable	Mean	Standard Deviation	Maximum	Minimum	Skewness	Kurtosis	Jarque-Bera	N
CR	12.136	9.425	51.56	0	1.393	5.18	152.85*	325
DR	2.027	3.463	28.19	-2.854	2.985	21.024	4401.49*	325
LL	0.71	0.108	0.906	0.218	-0.958	4.584	75.497*	325
LD	0.439	0.3	0.889	-0.858	-1.582	6.603	280.853*	325
CV	1.008	0.087	1.589	0.614	2.327	18.527	3208.266*	325
ROA	0.332	1.9002	6.43	-10.43	-1.744	8.807	560.438*	325
Size	19.005	1.311	21.71	15.803	-0.215	2.285	8.496**	325
Cycle	3.815	1.39	6.18	1.61	-0.287	1.762	22.746*	325
	CR	DR	LL	LD	CV	ROA	Size	Cycle
CR	1							
DR	-0.454*	1						
LL	0.033**	0.16**	1					
LD	0.218***	-0.072***	0.734***	1				
CV	-0.068*	0.139***	0.061*	-0.146***	1			
ROA	-0.474*	0.682**	0.247**	-0.055**	0.027*	1		
Size	-0.108	0.366*	0.316***	0.115***	0.184***	0.48***	1	
Cycle	-0.22**	0.168***	-0.285***	-0.320***	0.267***	0.236**	0.256***	1

### Impact of Market Power and Charter Value on Banking Stability

Table 4 reports findings estimated through two step dynamic system GMM, suggesting an overall significantly negative influence of market power in lending market on measures of banking stability. Indicating that increased competition in lending market results in decrease in riskiness of banks. This line of reasoning is consistent with the competition stability view. However, we find significantly positive effect of market power in deposit market on banks' riskiness, suggesting that increased competition in deposit market will

<sup>3</sup>BPRD Circular No. 07 of 2013. Available at: <https://www.sbp.org.pk/bprd/2013/C7.htm>

significantly result in increased riskiness of banks. This line of reasoning is consistent with competition fragility view.

To the clearly contrasting and conflicting results between lending and deposit markets, who argued that, banks having more market power results in reaping more benefits in the form of higher lending rates which enables them to behave more prudently and thus higher risks are appropriately priced. We observe this scenario in the case of less competitive lending market. However, compared to highly competitive markets, banks may behave imprudently which in turn leads to the mispricing of associated risks appropriately. We observe this scenario in the case of highly competitive deposit market. However, a closer look into these findings and their implications are discussed below separately for each model.

### **Credit Risk**

In terms of credit risk, we observe that market power in the lending market is negatively associated. Suggesting that increased competition in lending market will result in decreased non-performing loans thus enhancing banking stability. These findings are consistent with [Kasman and Kasman \(2015\)](#) who documented similar results in the case of Turkey. The results are also in line with [Soedarmono and Tarazi \(2014\)](#) who suggested that banks in less competitive lending markets will tend to have higher credit risk. On the contrary, increased competition in the deposit market is significantly found to be positively associated with credit risk. This result is contradictory to [Kasman and Kasman \(2015\)](#) and complements the charter value hypothesis. Similarly, increased profitability and enhanced economic activity are also statistically significant and negatively associated with credit risk in the case of Pakistan. The coefficient for bank size is however found to be statistically insignificant, which essentially mean that Pakistani banks do not enjoy economy of scale in terms of riskiness.

### **Default Risk**

Similarly default risk, again indicates that market power in loan market is negatively affecting default risk. This finding is in contrast with [Forssbæck and Shehzad \(2015\)](#) and suggests that increased competition in the lending market is negatively associated with default risk. Whereas market power in deposit market is positively affecting the same consistent with [Kasman and Kasman \(2015\)](#). Similarly, ROA, size and cycle are negatively associated with default risk suggesting that enhanced economic activity and larger bank size will result in lower default risk in the case of Pakistan.

Moreover, for robustness purposes, we also report bank level fixed effects for both models. Where it can be clearly observed that our results largely remain unchanged and are robust across specifications with only a few exceptions. However, we prefer and go by the results of two step system GMM for its dynamic nature and properties.

## The Restraining Effects of Charter Value

**Table 4**  
Regression Results

Dependent Variable	CR		DR	
	GMM	FE	GMM	FE
Dept-1	0.684 (0.034)*	0.554 (0.038)*	0.719 (0.032)*	0.125 (0.040)*
Constant	20.411 (10.019)***	-16.82 (2.761)**	2.713 (0.557)*	0.231 (0.648)**
LL	-1.255 (2.761)**	-2.092 (0.620)*	-4.594 (1.638)*	-1.359 (0.228)**
LD	1.915 (0.620)*	0.995 (1.638)*	0.7164 (0.176)*	0.275 (0.228)**
CV	-15.006 (6.325)**	-2.056 (0.222)*	-2.134 (1.275)***	-1.963 (0.541)*
ROA	-0.832 (0.109)*	-1.294 (0.222)*	-0.756 (0.066)*	0.583 (0.066)*
Size	-0.076 (0.109)*	-1.605 (0.222)*	-0.047 (0.066)*	0.029 (0.066)*
Cycle	-0.293 (0.109)*	-1.139 (0.222)*	-0.214 (0.055)*	-0.099 (0.041)**
F- Stat	1129.81	53.61	1392.29	61.74
(P-Value)	0.000	0.000	0.000	0.000
R2 Within		0.595		0.628
Between		0.802		0.834
Overall		0.734		0.7
AR1 Test	0.46		-0.99	
(P-Value)	0.644		0.322	
AR2 Test	-0.31		-0.67	
(P-Value)	-0.757		-0.503	
Hansen J Test	24.44		26.65	
(P-Value)	-0.909		-0.844	
No. of Groups	30		30	
No. of Instruments	43		43	

Consistent with the theory, our approach for the inclusion of charter value as a determinant of banks' risk taking compliments the existing literature. We regress charter value against risk measures to find out whether charter value disciplines risk taking maneuvers of banks? If this holds, we should have a significantly negative coefficient for charter value against risk measures, suggesting that higher valuable charters restrain risk taking incentives. Our results strongly support the theoretical notion that charter value acts as a self-restraining factor for banks' risk. We find that most of our parameters for charter value are statistically significantly negative. The results suggest that higher valuable charters do restrain banks from excessive risk taking. These findings are of crucial importance in terms of policy implication as such that it provides ample opportunities to policy makers to shift their focus from direct regulatory measures only (such as the capital requirements), towards other supervisory tools available as well. As it has been observed in the case of Pakistan, that the monitory focus of the central bank historically remained entirely on capital requirements while relatively ignoring the other tools available such as the supervisory charter under the Basel Accord. Our results pose strong confidence in the supervisory capacity of charter value and provides an interesting insight about its risk curbing abilities.

Finally, the estimated specifications exhibit strong goodness of fit as all of the esti-

mated F-statistics are highly significant. Similarly, AR2 test indicates that second order correlations among first differenced errors do not exist in our estimated models. Similarly, the Hansen J-statistics is also found to be insignificant indicating that the identifying restrictions are valid.

## Discussion

Given the unique services provided by the banks, soundness and stability concerns were always at the center of banking policy debates (Danisman & Demirel, 2019). In the banking literature, the trade-off between competition and stability has resulted in two opposing views. The one advanced is commonly known as the competition fragility view, which has drawn major support in the literature. On the other hand, a relatively new body of literature supports the competition stability view advanced by Boyd and De Nicolo (2005). Given these opposing predictions, in this study, we tested the two views for Pakistani banking industry. Specifically; first, we investigated the link between competition and financial stability separating competition in lending and deposit markets. Second, unlike previous studies, we do so by a direct measure of market power; the Lerner Index, rather than relying on other indirect measures such as concentration ratios. Third, we introduce charter value as a determinant of banks' risk for the first time in the case of Pakistan and tested for whether or not greater higher valuable charters enhance the risk averse tendencies of banks to preserve charter value? Using a relatively recent annual data set (from 2006 to most recent 2017, a period characterized by extensive and sweeping regulatory changes, consolidations and other market pressures that could potentially alter the competitive landscape and condition banks' behavior), for an unbalanced panel of 30 banks, we used dynamic panel data analysis techniques of two step system GMM. Our findings could be summarized as follows.

The Lerner indices for market power reveal and render strong support to the theoretical notion of different competitive conditions in lending and deposit market power. We find highly monopolistic conditions in lending market whereby majority of the banks are largely enjoying high market power. These dynamics could be attributed to the increased concentration and recent wave of amalgamations in the industry commensurate with the too big to fail sentiment and can have profound implications<sup>4</sup> as it can potentially lead to collusive practices among others (Bos et al., 2013). These findings are in contrast to Mirza et al. (2016) who found perfect competition in the case of Pakistan utilizing various measures of competition. However, these studies fail to differentiate between loan and deposit market. However, our findings are consistent with Bikker et al. (2007).

On the other hand, we find that the deposit market is highly competitive and near perfect competitive conditions prevail on average in the case of Pakistan. This is consistent with Mirza et al. (2016). This can have profound implications in terms of deposit costs to the banks and deposit rates for depositors. As, recently, it has been observed that with the

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<sup>4</sup>Recently the central bank of Pakistan designated three domestic banks to be systemically important. Source: <https://www.brecorder.com/2018/06/14/423154/state-bank-of-pakistan-designates-domestic-systemically-important-banks/>

introduction of Islamic banks to the banking landscape in Pakistan, deposit rates to the depositors are significantly improved given the enhanced competitive conditions in deposit market accordingly. Though banks in Pakistan were historically accused of paying lower rates to depositors while charging higher loan rates (Hussein, 2016). However, the infusion of enhanced competition seems to have significantly improved this condition. Moreover, this is a debatable issue and warrants further investigation that why the same did not resulted in enhanced competition in the lending market? What could be the underlying causes and dynamics? Did Islamic Banks failed to clearly differentiate their products? Are customers lack confidence and trust in their products and services? How about additional documentary requirements? Has anything to do with the Shariah compliance? Or there is something else at work? Subsequently, we tried to find out the effects of market power on risk measures in both lending and deposit markets. Our results strengthen the theoretical notion that the market power measures in both lending and deposit markets may be different and may differently affect the riskiness of banks measured as credit risk and distance to default. We provide strong evidence for this notion and support the competition stability view in the case of lending market whereby our findings suggest that infusing further competition will lead to enhanced stability in the lending market. These findings are consistent with Agoraki, Delis, and Pasiouras (2011); Ariss (2010); Beck et al. (2013); De Nicoló, Boyd, and Jalal (2006) among others.

On the other hand, we provide strong evidence in favor of the traditional competition fragility view in the case of deposit market whereby our findings are in line with the literature and suggest that excessive competition in the deposit market is detrimental to stability in the banking sector of Pakistan. Infusing further competition in the deposit market should be dealt with cautious approach. Moreover our findings are consistent with Kasman and Kasman (2015) among others.

Finally, we introduced charter value as a determinant of risk and find evidence in favor that higher charter value makes the banks more risk averse (Sarkar & Sensarma, 2016). This further imply that the theoretical link between charter value and banks' risk is quite strong and should be investigated in great details to obtain further insights in the case of Pakistan.

## Conclusion

Given that, competition stability nexus has been established in the lending market whereas the competition fragility nexus can be substantiated in the deposit market. This essentially implies that both markets should be looked into in different ways and essentially calls for different policy responses from the regulatory authorities. At policy level, policy makers usually take the view that infusing greater competition may break the monopoly power and may lead to higher stability. Our results however, presents conflicting challenge for the policy makers and suggest that infusing further competition in the deposit market may be detrimental while the same may be necessary to improve the conditions in highly monopolistic lending market. In addition, we suggest to mediate the trade-off between competition stability and or fragility with regulatory tools such as charter value which is

found to be strongly associated with restraining risky behavior of banks. This essentially imply that as banks will have fewer risk incentives, there will be lesser needs of supervision and control, making the regulators' job relatively easy.

Given contrasting evidence and the importance to the subject matter, further research is needed. This study has the potential to be extended in several ways such as the potential effects of competition on banking sector efficiency and performance was beyond the scope of this study and would be an interesting continuation of the same in future. As our findings from the estimated Lerner indices clearly indicated that the estimated Lerner margins could be a bit inflated which is a potential indication of loss in efficiency. The future scholar can further this endeavor to uncover the efficiency losses by constructing an efficiency adjusted Lerner index for Pakistan which is currently a major gap. Similarly adjusting for funding efficiency and explicitly testing for 'quite life hypothesis' would also be an interesting continuation of the same. Finally, as illustrated by our Lerner index, exhibiting an inverse U shape which essentially implies the possibility of non-linearities. This could be considered as a major limitation of the current study and could be addressed in future. In this way, another major limitation could be the introduction of crisis effect for the recent financial crisis of 2007/08. Similarly, incorporation of systemic risk measures would demand an in-depth study of its own.



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