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COMPETITION AND FINANCIAL STABILITY OF BANKS IN NIGERIA: EXPLORING THE RELATIONAL EFFECT OF ECONOMIC CONDITIONS

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Abstract

The study assessed the effect of economic conditions on the relationship between competition and financial stability of banks in Nigeria, the panel Autoregressive Distributed Lag (ARDL). The results of PMG model estimation indicate that long run relationship between dependent and explanatory variables is statistically positively significant at 5 percent. The finding shows suggest that economic conditions have long run significant effect on the relationship between competition and financial stability of banks in Nigeria. The result shows that convergence to long-run equilibrium is at a speed of 11 percent with the adjustment term negative and statistically significant at the 1% level. The study concludes that economic conditions moderate the relationship between competition and financial stability of banks in Nigeria/ Thus, it is recommended that should economy managers should continue optimize monetary policies that will hedge local economies from external shocks.

Keywords: Competition, Bank, Economic, Finance

1. Introduction

In the ever-evolving financial industry environment, the interaction between competition and financial stability of banks serves as fulcrum determinant of a bank's resilience and longevity (Ahamed & Mallick (2019). The macroeconomic environment that banks operate is essentially dynamic, and is influenced by varying factors such as exchange rates, inflation, interest rates and economic growth. These economic conditions affecting banks operating environment either amplify or diminish the influence of competition on banking system financial stability. Competition is often seen as incentive of banks financial innovations and efficiency. Economic conditions are believed to bring forth an additional stratum of operational complexity Beck, Jonghe and Schepens (2013). This could influence banks responsiveness to competitive pressures by other industry players, consequently affecting their financial stability. The banking industry serves as foundational cornerstone of economic stability, which is constantly navigating a delicate balance between competition and banks financial robustness (Corbae and Ross, 2019)..

Competition is largely seen as a springboard for efficiency and growth; conversely it seems to exposes banks to vulnerabilities that can endanger their financial stability. That is, competition can drive innovation, enhance customer service, and improve operational efficiency (Dutta & Saha, 2021). On the other hand, fierce competition may lead to riskier lending practices, reduced profit margins, and financial fragility (Noman, Gee & Isa, 2018). The delicate equilibrium between these opposing forces requires a detailed investigation to comprehend the intricacies of this relationship. Against this backdrop, this study focuses on analysing the effect of economic conditions on the interplay between competition and financial stability, which has largely been an underexplored dimension. Economic conditions, marked by macroeconomic indicators, policy frameworks, and global economic trends, introduce a layer of complexity to the competition-financial stability nexus. The banking sector, as a vital component of any economy, is profoundly influenced by varying economic conditions. These conditions

influence the risk environment, market dynamics, and the overall operating landscape for banks.

The Nigerian banking sector, as a crucial pillar of the nation's economic framework, is confronted with a multifaceted challenge emanating from the complex interplay between competition and financial stability. While the impact of competition on financial stability has been extensively examined, a critical gap in the literature exists concerning the moderating effect of economic conditions within the Nigerian context. This research seeks to address this gap by investigating how economic conditions influence the relationship between competition and financial stability in Nigerian banks. Nigeria economy is characterized by its reliance on oil exports and susceptibility to global economic trends. Fluctuations in oil prices, shifts in government policies, and responses to global economic shocks can collectively affect economic growth. Understanding how economic conditions moderate the competition-financial stability dynamic is imperative for formulating resilient policies and strategies that can withstand the complexities of the Nigerian economic landscape. This research aims to bridge this gap by analysing the details of the competition-financial stability relationship within the unique economic conditions of Nigeria. Therefore, the study hypothesised in null form that economic condition does not have significant effect of the relationship between competition and financial stability of banks in Nigeria.

2. Literature Review

Competition–stability view argues that competition has a potentially positive effect on the stability of financial institutions. Dutta and Saha (2021) assess effect of competition and efficiency on financial stability of banks in Bangladeshi over 2009–2017. The study used Boone indicator, Z-score and , banking efficiency index to measure competition, stability and efficiency, respectively, and analyse the influence of efficiency on financial stability at different levels of competition. The study used two-step system GMM to address the endogeneity of the estimation. The study found that a nonlinear competition–stability relationship, and though efficiency contributes to stability Schaeck and Cihák, (2014). Kasman and Carvalho (2014) noted that competition is favourable to

financial stability. Study by Noman, Gee and Isa (2018) analyses the effect of bank regulation on the relationship between competition and financial stability. The study established that competition and regulatory policies positively affect financial stability and reduce credit risk in the banking system.

Furthermore, the competition–fragility view holds that higher level of competition in financial sector reduce the market power and profitability of financial institutions. To mitigate the effect of financial losses, financial institutions are tends to invest in risky assets portfolios. These risky behaviours by banks could undermine the stability of financial institutions (Allen & Gale, 2000). Llewellyn (2007) noted that excessive competition could culminate into instability in financial sectors. Allen and Gale (2000) noted that in a competitive market, banks have incentives lessen effort of conducting due diligence on borrowing customer to record high volume of loan portfolios with the aim of earning higher profit, which could heighten the level of credit default risk and bank fragility. Beck, Jonghe and Schepens (2013) established positive relationship between competition and bank fragility in a developed and regulated financial structure. According to Anginer, Demirguc-Kunt and Zhu. (2014) banking systems tend to be more fragile in countries with weak supervision and private monitoring, and with public policies that restrict competition. In addition, they also established that variation of regulation changes the intensity of this relation. Martinez-Miera and Repullo (2010) found that the lower revenue caused by lower interest rate resulting from higher competition could make banks riskier and produce a U-shaped competition–stability relationship. Furthermore, Altunbas, Carbo, Gardener and Molyneux (2007) held that imposition of higher capital requirements regulators restrict inefficient banks from taking excessive risk and maintain stability in the industry. Corbae and Ross (2019) established that competition increases market measures of efficiency as well as banking fragility, and economies can avoid the fragility costs of competition by enhancing bank governance and tightening leverage requirements. Alber (2017) using data of 12 MENA countries investigated the relationship between banking efficiency and financial stability and found a bidirectional relationship between them.

Literatures have largely assessed the effect of either competition or market concentration financial stability of banks separately. These studies have reported varying outcomes. Also, there seems to be paucity of studies that examined the effect of economic conditions on the relationship between competition and financial stability of banks. Therefore, due to inconclusive results and paucity of studies, this study attempts to analysed the role of economic conditions on the relationship between competition and financial stability of banks.

3. Methodology

To assess the effect of economic conditions on the relationship between competition and financial stability of banks in Nigeria, the panel Autoregressive Distributed Lag (ARDL) model developed by Pesaran and Pesaran (1997) and expanded by Pesaran, Shinb and Smith (2001) was applied. Data on competition and financial stability were collected at bank-levels, while economic condition data was derived at macro level. In addition, bank-level control variables bank size and liquidity were collected from banks financial statements. Data of country-level control variable regulation was collected from Economic Freedom Index. The balanced panel data were all collected for the period 2009 to 2022. To measure financial stability *the study used Z-score* as employed by Beck, Jonghe & Schepens, 2013; Kasman and Kasman (2015). The Z-score measures the insolvency risk of a bank; a larger value indicates a lesser risk of bankruptcy and higher level of bank stability. The study used natural logarithm of the Z-score to account for skewness in the data, and three-year rolling time windows was used to compute the standard deviation of ROA to allow for time variation in the denominator of the Z-score.

. Z-score is computed as follows:

$$Z - score_{it} = \frac{ROA + \left(\frac{E}{TA}\right)}{\sigma ROA_{it}}$$

Where:

ROA: Return on Assets,

E/TA: Equity to Total Assets Ratio

σ ROA: Standard Deviation of Return on Assets.

Furthermore, competition was measured using Boone indicator as used by Boone (2001; 2008). This is calculated by estimating the elasticity of a firm

performance, in terms of its market shares, with respect to its marginal costs Schaeck and Cihák (2014), which is stated as follows:

$$\ln(\text{Market Share})_{it} = \alpha + \beta \ln(\text{Marginal Cost})_{it}$$

Where:

Coefficient β denotes the Boone indicator.

The study used market share of total loan (Boone loan) and market share of total deposits (Boone deposit), determine Boone indicator. Higher negative value of the Boone indicator signifies higher competition; thus Boone indicator is transformed to its respective positive value to facilitate interpretation. Furthermore, fluctuations of economic condition are measured by log of GDP per capita and GDP growth rate (gGDP) (Ahamed & Mallick, 2019). The study used loan to deposit as applied by Jeon and Lim (2013) to measure liquidity while banks size another control variable was measured using log of total asset as used by Kasman and Kasman (2015) and Jeon and Lim (2013). The study also used Basel III capital ratio, higher indicate better capitalization and regulatory compliance.

The panel ARDL model is appropriate for estimating long-run relationship between dependent and explanatory variables if they are stationary at level $I(0)$ or first difference $I(1)$ or combination of both. The ARDL model is more efficient for estimating small sample data, compare to the Engle–Granger and Johansen techniques that are not suitable for small sample sizes (Narayan, 2004). To determine if ARDL model is appropriate for this study, pre-estimation test for unit root test was conducted to determine if the series are stationary at $I(0)$ or $I(1)$. The panel ARDL model can only be applied for estimation if the series are of different orders of integration $I(0)$ or $I(1)$. Panel ARDL model cannot be used for estimating model with series that are stationary at second difference $I(2)$ to avoid problems of spurious regression results. The Im, Pesaran, and Shin (2003) denoted by IPS unit root test was employed to check if the series are stationary at $I(0)$ or $I(1)$. Multicollinearity test using Variance Inflation Factor (VIF) was also conducted to prevent linearity of variables used in the study as proposed by (Hair, Black, Babin, & Anderson, 2009). A model affected by multicollinearity problem is identified if variable coefficient is above threshold of 0.8 between

explanatory variables as suggested by Schindler and Cooper (2009), Gujarati (2003) and Rumsey (2007).

Co-integration test using Pedroni test was conducted to determine whether long run relationship exist between dependent variable and explanatory variables.

$$Z - Score_t = \alpha_0 + \alpha_1 Comp_t + \alpha_2 GDPp_t + \alpha_2 GDPg_t + \alpha_3 Liq_t + \alpha_2 Bsize_t + \alpha_3 Reg_t + \mu_t \quad (1)$$

The dynamic stock returns function is re-specified to include error correction term (ECT) as the result of the co integration test indicate long run co-integration

$$\begin{aligned} LnZ - Score_t = & \alpha_0 + \sum_{i=1}^p \beta_1 BooneL_{t-i} + \sum_{i=1}^p \beta_1 BooneD_{t-i} + \sum_{i=1}^p \beta_2 LnGDPp_{t-i} + \sum_{i=1}^p \beta_3 GDPg_{t-i} \\ & + \sum_{i=1}^p \beta_1 Liq_{t-i} + \sum_{i=1}^p \beta_2 LnBsize_{t-i} + \sum_{i=1}^p \beta_3 Reg_{t-i} + \delta BooneL_{t-i} + \delta BooneD_{t-i} \\ & + \delta LnGDPp_{t-i} + \delta GDPg_{t-i} + \delta Liq_{t-i} + \delta LnBsize_{t-i} + \delta Reg_{t-i} + ECT_{t-1} \\ & + \mu_t \dots \dots \dots (2) \end{aligned}$$

Where:

LnZ-Score: Financial Stability

BooneL: Boone Loan

BooneD: Boone Deposit

LnGDPp: Gross Domestic Product per capita

GDPg: Gross Domestic Product Growth

Liq: Liquidity

LnBsize: Bank Size

Reg: Regulation

α, β and δ : are coefficients of the model

μ is the white-noise error term;

t denotes the time subscript.

p, q = optimal lag orders

ε_{it} = Vector of the error term

Hausman (1978) test was conducted to ascertain the most efficient model to be employed between the Mean Group (MG) and Pooled Mean Group (PMG). The null hypothesis is, if the test statistic exceeds the

Furthermore, lag length criteria was determine to ascertain appropriate lag length to be used for estimation. To perform test for co-integration, the conditional ARDL (p, q_1, q_2) models is specified in the following logarithmic form:

between the variables of interest. The panel ARDL specification of Equation (1) is in the following form:

relevant critical value, the MG model is rejected in favour of the PMG model. Reliability and validity test of the estimation outcome is determined by conducting diagnostic and specification tests for serial correlation, heteroskedasticity and normality to enable the result be used for generalization and preventing spurious results. Post estimation diagnostic and specification tests were conducted for heteroskedasticity using the modified Wald test, normality test and the Wooldridge test for autocorrelation in panel data.

4. Results and Discussion

The result of panel data estimation using statistical tools for diagnostic and hypotheses test are presented in this section. To determine the appropriate method for analysis and the reliability of outcome derived, pre and post estimation statistical analysis were conducted. The results are presented as follows:

Table 1: Descriptive Statistics

VARIABLE	Mean	Std. Dev.	Min	Max
lnZ-score)	2.2820	0.7513	0.2103	4.0090
BooneL	-4.4870	0.0763	-4.0647	-4.1020
BooneD	-4.5940	0.4043	-5.0557	-3.4930
lnBsize	24.6750	0.5983	23.0903	26.3130

GDPg	5.2950	0.5693	4.9453	6.2870
lnGDPp	5.9360	0.1573	6.4543	6.3580
Liq	0.1660	1.6323	0.2943	20.1760
Reg	5.8000	0.7773	6.5303	5.9030

Source: Eviews 9 (2023)

The result of descriptive analysis as shown in table 1, shows that an average LnZ-score of 2.2820, while the standard deviation is 0.7513. The average BooneL is -4.4870, while the standard deviation is 0.0763. In addition, the average BooneD is -4.5940, while the standard deviation is 0.4043. The mean coefficient of

GDPg shows a value 4.6568, with a minimum value of -1.6200 and maximum value of 15.3300, while the standard deviation is 2.7274. The standard deviation of liquidity (1.6323) and regulation (0.7773) indicate high variations of liquidity and regulation in the banking sector.

Table 2: Correlation Matrix

	BooneL	BooneD	lnBsize	GDPg	lnGDPp	Liq	Reg
BooneL	1						
BooneD	0.44	1					
lnBsize	0.39	0.66	1				
GDPg	0.75	0.55	0.48	1			
lnGDPp	0.03	-0.06	0.07	0.12	1		
Liq	0.68	0.51	0.57	0.68	0.53	1	
Reg	0.33	0.63	0.58	0.32	0.28	0.55	1

Source: Eviews 9 (2023)

Table 2 shows the result of correlation matrix coefficients, which are below the acceptable threshold value of multicollinearity of 0.80 percent between explanatory variables as proposed by

Schindler and Cooper (2009) and Rumsey (2007). The correlation coefficient between BooneL and GDPg is highest at 0.75, therefore multicollinearity those not exist between the variables.

Table 3: IPS Unit Root Test

VARIABLES	IPS Statistics	Order of Integration
lnZ-score	-0.0375	I(1)
BooneL	3.6534	I(1)
BooneD	-1.0917	I(0)
lnBsize	-1.5725	I(0)
GDPg	-0.0268	I(1)
lnGDPp	3.6641	I(1)
Liq	-1.081	I(0)
Reg	-1.5618	I(0)

***, **, * Signifies rejection of the unit root hypothesis at the 1%, 5% and 10% level

Source: E-views 9 (2023)

Furthermore, the result of unit root test as illustrated in table 3 shows that variable used in study are within the acceptable stationary levels, stationary at levels and at

first difference. The IPS unit root test shows that panel ARDL model is appropriate method of analysis to establish long run relationship.

Table 4: Lag Length Criteria

lnZ-score	BooneL	BooneD	lnBsize	GDPg	lnGDPp	Liq	Reg
2	2	2	2	2	2	2	2
2	0	2	0	2	0	2	0
1	0	0	0	1	0	0	0
1	0	0	0	1	0	0	0
1	1	0	0	1	1	0	0
1	0	0	0	1	0	0	0

Source: E-views 9 (2023)

The result of lag length selection illustrated in table 4 indicates that ARDL (1, 0, 0, 0, 1, 0,0,0) is most appropriate lag length is used for estimation. Furthermore, Pedroni test for co-integration shows that

long run relationships exist between the variables estimated. Therefore, the panel ARDL model is appropriate for estimating the relationship between estimated variables.

Table 5: Pooled Mean Group (*Dependent Variable: LnZ-score*)

USFDI	Coef.	Std. Err.	P-Value
Long Run Estimates			
BooneL	-0.0146	0.0222	0.51
BooneD	0.4596	0.1611	0.004
lnBsize	0.1098	0.0840	0.019
GDPg	0.0619	0.0987	0.5165
lnGDPp	0.5361	0.2376	0.0105
Liq	0.1863	0.1605	0.0255
Reg	0.0641	0.1009	0.5187
Short Run Estimates			
BooneL	-0.0323	0.1758	0.2795
BooneD	0.0323	0.108	0.1075
lnBsize	0.0813	0.0935	0.7845
GDPg	-0.0301	0.178	0.2817
lnGDPp	0.0345	0.1102	0.1097
Liq	0.0835	0.0957	0.7867
Reg	-0.0343	0.1738	0.2775
_cons	0.6453	0.2134	0.000
Speed of Adjustment (ECT)	-0.1135	0.04467	0.005
Hausman Test	0.7482		

Source: E-views 9 (2023)

Table 5 shows the result of Hausman (1978) test of null hypothesis that the difference in the coefficients between the mean group and pooled mean group are not statistically different and that pooled mean group is more appropriate and efficient. That is, to determine whether the Mean Group (MG) or Pooled Mean Group (PMG) is more efficient for estimation.

The result of Hausman (1978) test show that the estimated coefficients between MG and PMG are not significantly different with a p-value of 0.7482. Therefore, the PMG is more efficient for estimation.

The result of PMG model estimation in table 5, indicate that long run relationship between dependent and explanatory variables is statistically positively

significant at 5 percent. The finding shows suggest that economic conditions have long run significant effect on the relationship between competition and financial stability of banks in Nigeria. The result in table 5 shows that convergence to long-run equilibrium is at a speed of 11 percent with the adjustment term negative and statistically significant at the 1% level.

5. Conclusion and Recommendations

This study examined the effect economic conditions on the relationship between competition and financial stability of banks in Nigeria, using panel ARDL model based on Pooled Mean Group (PMG). The study found that economic conditions have significant

effect on the relationship between competition and financial stability of banks in Nigeria. The study concludes that economic conditions moderate the relationship between competition and financial stability of banks in Nigeria/ Thus, it is recommended that should economy managers should continue optimize monetary policies that will hedge local economies from external shocks. Furthermore, central banks in emerging markets should evolve more proactive monetary policies that will counteract the sharp competitive measures by banks. These can be strengthen with more transparent market communications to mitigate negative effect on the financial system.

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