Bank Competition and Economic Growth: Evidence from Nigeria

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Abstract
The relationship between financial development and economic growth has been subjected to several debates by various authors. It has been argued that a competitive and efficient financial sector is a prerequisite for economic growth and development. The objective of this study therefore is to examine the relationship between bank competition and economic growth in Nigeria for the period 1986 – 2012 using vector error correction mechanism. This study is anchored on the fact that there are conflicting empirical arguments (positive or negative relationship) on the effects of bank competition on economic growth. Also, the new reform introduced, as well as the increase in the cost of borrowing in the Nigerian banking industry motivates this study to further strengthen the examination of bank competition and its effect on economic growth in a transition economy like Nigeria. Bank competition was measured in the study using bank concentration ratio. The Johansen co-integration test was performed to test for the existence of long run relationship in the model. The result of the study showed that there that bank competition has a first-order positive effect on economic growth both in the short run (as shown by the result of Vector error correction model) and in the long run (as suggested by the co-integration test and the likelihood ratio test). This finding is consistent with the theoretical prediction that higher bank competition results, on average, in a lower cost of borrowing to firms. The study suggested that strengthening the competitiveness and efficiency of the financial sector would lead to improved economic growth. However, efficiency gains are therefore likely to be realized in the long run, only if there is evenly distribution of market share in the banking industry as opposed to the present situation where majorly three banks dominate and take the larger market share in the industry.

Keywords: VEC model, bank competition, co-integration, economic growth

INTRODUCTION
Literatures abound on the issue of competition in the banking sector in both developed and developing economies. Competition has helped in reducing the cost of borrowing and improves the quality of the services they render to the society (Cecchetti, 2011). Thus, a competitive financial market has a positive impact not only on the well being of the stakeholders, but also on the country’s economy as a whole. Healthy competition in a financial system promotes the productivity of the real sector and, hence economic growth.

Also, competition in the financial sector matters for a number of reasons. Firstly, the degree of competition in the financial sector can matter for the efficiency of the production of financial services. Secondly, it can matter for the quality of financial products and the degree of innovation in the sector (Claessens and Laeven, 2003). Specifically, competition matters as a result of the link between competition, stability and economic growth, which has long been recognized in theoretical and empirical research and most importantly in the actual conduct of prudential policy towards banks and stock market activities (Asante et al, 2011; Claessens and Laeven, 2003).

A good number of researchers have empirically found that competitive and efficient financial sector is a prerequisite for economic development and growth. In Nigeria, researchers have focused on the relationship between financial development and economic growth, bank competition and efficiency (Ajisafe and Akinlo, 2014), degree of bank competition, without looking at the relationship between bank competition and economic growth. However, this study intends to examine the effect of bank competition on economic growth in Nigeria. To this end, the rest of this paper is organized as follows. Section 2 provides empirical review of the literature; Section 3 is dedicated to the theoretical framework and methodology. Section 4 presents the results of the analysis, while the last section concludes the paper.

EMPIRICAL REVIEW
The relationship between financial development and economic growth has been well pronounced in the literature. Firstly, financial economics literature has made significant theoretical contributions on the relationship between financial sector activities and economic growth. This theoretical literature has offered conflicting forecasts on the role of financial development and economic growth. Among them are
Schumpeter (1911), Gurley and Shaw (1955), Goldsmith (1969), McKinnon (1973) and Shaw (1973), who have all argued that financial repression which characterized the Less Developed Countries (LDCs) tend to impede economic growth. It follows that rapid economic growth in LDCs can only be achieved when they anchor their financial sector on liberalization policy such as deregulating interest rate, removing selective credit control and encourage competition in the banking sector. At another angle, Lucas (1988) believes that the significance of financial development in the growth process has been over exaggerated and was of the opinion that financial development does not contribute to long-term economic growth. Stiglitz and Weiss (1981) also argued that in Less Developed Countries (LDCs), banks may refuse to give loans to new comers in form of new innovative and productive borrowers because of high risk of default associated with new borrowers.

Calderon and Liu (2003) examined the relationship between financial development and economic growth using panel data for 109 developing and industrialized countries for the years between 1960 and 1994. The result of the study showed that there is a positive relationship between financial development and economic growth for most of the countries. Also, a two-way causality is valid between the two phenomena; where financial depth has a more causality effect in the developing countries when compared to the industrialized countries.

Claessens and Laeven (2005) using an indicator of market power based on the theory of industrial organization (the H statistic of Panzar and Rosse) analyze the effect of banking competition on economic growth. Their results show that the industry’s most dependent on bank financing grow faster in the countries with stiffer banking competition, so they reject the hypothesis that market power can favour access to finance. In addition, Claessens and Laeven (2003) in their study also relate a competition measure to industrial growth for 29 banking systems using the model developed by Rajan and Zingales (1998) which assesses the relationship between financial development and growth using sectoral growth data for a large sample of countries. They found that the effect of competition on access to financing (and growth) can depend on the level of development of the financial system. Specifically, in countries with less developed financial systems, financially dependent industries grow faster when the financial system is less competitive while in more developed financial systems, more competition is associated with higher growth.

Asante et al (2011) empirically investigated the relationship between bank competition, stock market and economic growth in Ghana using time series data for the period 1992 to 2009. The short and long run relationship were established within the framework of Granger causality, Autoregressive Distributed Lag (ARDL) and Dynamic Ordinary Least Square (OLS) approach respectively. It was found that bank competition and stock market development granger cause economic growth in Ghana. Also, in the long run, banking competition is good for economic growth. However, there is a disproportionate response of economic growth to stock market development.

Soedarmono (2010) investigated the link between bank competition and economic development from a sample of Asian countries over the period 1999-2007. He stated that, in general, although banking market power has a U-shaped relationship with economic growth, but it tends to improve economic growth. However, the positive impact of banking market power on economic growth only occurs in agricultural sector, but not in industrial sector. It is also shown that higher banking market power in countries with greater economic freedom erodes overall economic growth and industrial growth. On the contrary, there is no significant relationship between banking market power and agricultural growth in countries with greater economic freedom. He, therefore, concluded that when economic freedom increases and financial service investments come into a country, any policy to boost banking competition becomes necessary. In this case, industrial sector is more important than agricultural sector.

Bayraktar and Wang (2006) perceived that banking sector openness may directly affect growth by improving the access to financial services and indirectly by improving the efficiency of financial intermediaries, both of which reduce the cost of financing, and in turn, stimulate capital accumulation and economic growth. These direct and indirect links were confirmed using a more advanced econometric technique (GMM dynamic panel estimators) which linked financial market development with investment and provided support for countries planning to open their banking sector for international competition.

Mirzaei, et al (2011) investigated the effects of market power, banking and bank-environment activities on profitability and stability (risk and returns) for a total of 1929 banks in 40 emerging and advanced economies over the sample period of 1999-2008. The model developed incorporates the traditional structure-conduct-performance (SCP) and the relative market- power (RMP) hypotheses with the view to assessing the extent to which the bank performance can be attributed to non-competitive market conditions and pricing behaviour. The key findings are as follows; (i) a greater market power
leads to higher bank performance being biased toward the RMP hypothesis in advanced economies; (ii) more concentrated banking systems in advanced economies may be more vulnerable to financial instability; (iii) Neither of the hypotheses seems to be supported for the returns in the emerging banking sector; and (iv) higher interest rate spreads increase profitability and stability for both types of economies, however, for emerging banks this seems to be one of the key elements to increase their profitability raising concerns on economies. Other interesting findings include that off balance-sheet activities appear to present banks with a trade-off between risk and returns in advanced economies, and the effects of bank age, bank ownership status and regulation on risk and returns, depend on market power.

Erol, et al. (2012) carried out an empirical assessment of the market structure and the competitiveness of the Chinese banking sector particularly in the wake of China’s accession to the WTO by employing the Panzar-Rosse II-Statistic as a non-structural model over the period 2004-2007. The empirical findings indicate that the banking sector in China was monopolistically competitive for the specified period. They also find that the Chinese banks, which operate in more monopolistic environments, are less efficient. The findings reject the state of conjectural variation short run oligopoly or natural monopoly in the industry for the period under consideration.

Casu and Girardone (2007) investigated the impact of increased consolidation on the competitive conditions of EU banking markets by employ both structural (concentration ratios) and non-structural (Panzar-Rosse statistic) concentration measures. Using bank level balance sheet data for the major EU banking markets, in a period following the introduction of the Single Banking License (1997-2003), the results seem to suggest that the degree of concentration is not necessarily related to the degree of competition. They equally found little evidence that more efficient banking systems are also more competitive. The relationship between competition and efficiency is not a straightforward one. Increased competition has forced banks to become more efficient but increased efficiency is not resulting in more competitive EU banking systems.

Bikker and Haaf (2002) investigated the relationship between competition and market structure in the banking industry for all banks in their sample and estimate a regression model where competition measure is tested against market structure (proxied by concentration indices and the log of the number of banks in the markets) and a dummy for EU/non-EU countries. Overall, they find support for the conventional view that concentration impairs competitiveness.

Weill (2004) investigated the relationship between competition and X-efficiency using stochastic frontier method. The study regressed efficiency scores on competition measure and a set of independent variables including: macro factors (GDP per capita and density of demand); an intermediation ratio (loans/deposits) and finally a dummy that corresponds to the geographical location. The author finds evidence of a negative relationship between competition and efficiency in EU banking.

Al-jarrah, et al. (2012) evaluated the competition and pricing power in the banking sector of Jordan over the period 2001-2008. The most widely known structural and non-structural measures of competition are used and their results are reconciled with the aim of obtaining more consistent estimates for the overall state of competition of the banks under study. With regard to the traditional banking activities, the results suggest that the banking sector of Jordan is not characterized by the so called "perfect competition". This result is based on the net interest margin measure. On the other hand, the more-inclusive non-structural competition measures that control for bank-specific and macro-economic variables show that the banking sector is a rather competitive sector, especially over the period 2005-2008. On this basis, they suggest that it is important for policy makers to consider the bank-specific and macroeconomic variables when assessing the overall state of banking sector competition.

Buchs and Mathisen (2005) examined the degree of bank competition and efficiency with regard to banks’ financial intermediation in Ghana. In the study they applied panel data to variables derived from a theoretical model and find support for the presence of a noncompetitive market structure in the Ghanaian banking system, possibly hampering financial intermediation. The economic costs of the noncompetitive behaviour might have been exacerbated by the persisting domestic financing needs of the government, making it captive to the banks’ behaviour and fostering inefficiency in the banking system. Also, large deficit financing through the issuance of treasury bills has not only crowded out the private sector in capturing banks investments, but has also put pressure on interest rates, thereby making access to bank lending even more difficult for the private sector thus hampering private sector development. Therefore, further private sector development appears to be very much dependent upon sound fiscal adjustment, and the possible link between fiscal policy and the efficiency of the banking system should deserve further attention. The result of the study further indicated that consolidation of the Ghanaian banking sector is expected due to scale matters.
Ajisafe and Akinlo (2013) investigated the degree of competition in the Nigerian banking sector between 1990 and 2009 using Panzar and Rosse (PR) methodology. The data for the study were obtained from the annual reports and statement of accounts of fifteen commercial banks in Nigeria which were purposively selected for the study. The data collected were analysed using dynamic panel generalised method of moment estimation technique with fixed effect. The results of the analysis showed that the Nigerian commercial banks were characterised by monopolistic competition with H-statistic significantly different from zero for all sample periods and sub-sample periods. The value of H-statistic ranged between 0.0925 and 0.1168. The study concluded that the banking industry in Nigeria exhibited monopolistic competition.

Also, Ajisafe and Akinlo (2014) examined the relationship between bank competition and efficiency in Nigeria for period of 1990-2009 using pooled least square and dynamic panel generalized method of moment estimation techniques with fixed effect for the data collected for fifteen selected banks in Nigeria. The result of the study showed that there was a positive and significant relationship between the degree of competition and efficiency of commercial banks in Nigeria.

Bashorun and Ojapinwa (2014) investigated the effect of bank consolidation in Nigeria on the structural characteristics of the banking market. They established that there is substantial increase in concentration for the post consolidation period with very high tendency to gravitate towards becoming a moderately concentrated market according to the USA merger guideline. Also, there is the emergence in 2012, of eight top dominant banks controlling more than 75% of the Nigerian banking business especially in the total assets market. The implication of this finding is that there is the need to forest all collusive and anti-competitive practices by stepping up the oversight functions of the regulatory and supervisory agencies while reviewing periodically the supervisory agencies while reviewing periodically the

Zhao and Murinde (2009) proposed a three-stage procedure for investigating the interrelationships among bank competition, risk taking and efficiency. The procedure is applied to Nigeria’s banking reforms (1993-2008). Stage I measures bank productive efficiency, using Data Envelopment Analysis, and the evolution of bank competition, using Conjectural Variations (CV) methods. Stage II uses the CV estimates to test whether regulatory reforms influence bank competition. Stage III investigates the impact of the reforms and concomitant changes in competition on bank behaviour. The evidence suggests that deregulation and prudential re-regulation influence bank risk taking and bank productive efficiency directly (direct impact) and via their impact on competition (indirect impact). Further, it is found that as competition increases, excessive risk taking decreases and efficiency increases. Overall, the evidence affirms policies that foster bank competition, at least in the Nigerian context.

Asogwa (2002) examined banking competition in Nigeria using firm level balance sheet and income statement data for the period 1997 to 2001. He adopted the conjectural variation approach for the analyses of competition. In this perspective, estimation of a simultaneous equation model, formed by a cost equation and a supply equation, the latter containing a behavioral parameter to identify and assess the market conduct of banks. The finding was that the estimated degree of competition is usually lying between the perfectly competitive and perfectly collusive values, but above the Cournot values indicating a fairly competitive pattern of behaviour. Large banks have been characterized by more competitive conduct. He concluded that region-wide and Lagos/West regional banks exhibit stronger competitive conduct.

From the literature reviewed so far, it could be observed that, there have been various works in the area of completion and efficiency in Nigeria with less focus on how competition in the banking sector will transcend into the growth of the economy. Hence this study focuses on the relationship between bank competition and economic growth in Nigeria.

MODEL SPECIFICATION AND TECHNIQUE OF ANALYSIS

Model Specification
The theoretical underpinning of the relationship between Bank Competition and Economic growth is based on the Solow growth model which is used as a baseline model of economic growth. The production function of the Solow model is of the form:

\[ Y = AK^{\alpha}L^{1-\alpha} \]  

(1)

Where \( \alpha < 1 \) and the parameter \( \alpha \) being less than one implied diminishing marginal returns to capital accumulation. Given the restriction that \( \alpha = 1 \), equation 1 becomes:

\[ Y = AK \]  

(2)

Where A is taking as given in the economy and K is capital stock which can be generated from the financial sector activities.

Incorporating banking competition variable and a macroeconomic variable in the AK model gives:

\[ Y = f(BC, BS, GCF) \]  

(3)

Rewriting equation (3) mathematically and first differencing, we have

\[ \Delta Y_t = \alpha_0 + \alpha_1 \Delta BC_t + \alpha_2 \Delta BS_t + \alpha_3 \Delta GCF_t + \mu_t \]  

(4)
Where, Y=Growth, BC=Bank competition, BS=Bank sector development, GCF=Gross capital formation and Y= Economic growth. It is expected that \( \alpha_1, \alpha_2, \) and \( \alpha_3 > 0 \).

**Technique of Analysis**

This study depends on secondary data sourced from Central bank of Nigerian Statistical Bulletin, Nigerian Deposit Insurance Corporation (NDIC) and Annual Report and Accounts of Nigerian banks. The study employed the Vector Error correction Mechanism in order to capture both the short run and the long run effect of the relationship between bank competition and economic growth. Before analysing the study, the variables were tested for stationarity using Augmented Dickey Fuller test (ADF).

**EMPIRICAL RESULT**

**Unit Root Test Result**

The result of the unit root test is as shown in table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Test Statistic Value</th>
<th>Mackinnon critical value at 5%</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROWTH(Y)</td>
<td>-9.210368</td>
<td>-2.986225</td>
<td>I(0)</td>
</tr>
<tr>
<td>BC</td>
<td>-5.953213</td>
<td>-2.991878</td>
<td>I(1)</td>
</tr>
<tr>
<td>BS</td>
<td>-3.995033</td>
<td>-2.986225</td>
<td>I(1)</td>
</tr>
<tr>
<td>GCF</td>
<td>-4.818378</td>
<td>-2.986225</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

**Source:** Author’s computation

In table 1, it was observed that three of the variables are integrated of order one, that is, stationary at first difference while the remaining one is integrated of order zero, that is, stationary at levels based on their critical values when compared with the calculated statistical value. The implication of these results is that, if the variables are integrated of order zero (stationary at levels), Ordinary Least Square (OLS) estimate would be appropriate and provide a better result. On the other hand, if the variables were not of the same order; OLS estimate would produce spurious result. Hence, there is the need to test for cointegration.

**CO-INTEGRATION TEST RESULT**

The results of the co-integration test and the first Normalized co-integrating coefficients are, presented in tables 2 and 3 respectively. After establishing the stationarity of the data, Johansen co-integration tests were used to explore any possibility of long run relationship among the variables. This involved testing from the number of co-integrating vectors. The maximum Eigen-value and the trace test from this technique were used to establish the number of co-integrating vectors.

### Table 2: Cointegration test result

**Series:** D(Y) D(BC) D(BS) D(GCF)

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigen Value</th>
<th>Trace Statistic</th>
<th>Critical Value at 0.05</th>
<th>p-values**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>0.867247</td>
<td>97.92347</td>
<td>47.85613</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 1*</td>
<td>0.595712</td>
<td>49.46103</td>
<td>29.79707</td>
<td>0.0001</td>
</tr>
<tr>
<td>At most 2*</td>
<td>0.565007</td>
<td>27.72595</td>
<td>15.49471</td>
<td>0.0005</td>
</tr>
<tr>
<td>At most 3*</td>
<td>0.275897</td>
<td>7.747716</td>
<td>3.844466</td>
<td>0.0054</td>
</tr>
</tbody>
</table>

Trace test indicates 3 co-integrating equations at 0.05
* denotes rejection of the hypothesis at 0.05 level
** Mackinnon Haug-Michelis (1999) p-values

The result of the co-integration test shows that there are at most three co-integrating equations. Comparing the trace statistic with their respective critical value at 5%, confirms the rejection of null-hypothesis of no long- run relationship. This means that all the variables in the model have a long run relationship.

The first normalized co-integrating coefficients in table 3 showed that bank competition, banking sector development and gross capital formation are significant at 5% level. Therefore, bank competition is important in the banking sector and has significant effect on economic growth in the long run. A one-unit increase in competition will lead to about 55% increase in economic growth, in the long run.

### Table 3: 1ST Normalized co-integrating coefficients (standard error in parentheses)

<table>
<thead>
<tr>
<th></th>
<th>D(Y)</th>
<th>D(BC)</th>
<th>D(BS)</th>
<th>D(GCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.E.</td>
<td>0.10211</td>
<td>0.32677</td>
<td>0.70475</td>
<td>4.043201</td>
</tr>
<tr>
<td></td>
<td>(0.10211)</td>
<td>(0.32677)</td>
<td>(0.70475)</td>
<td>(0.70475)</td>
</tr>
</tbody>
</table>

Source: Author’s computation

**Result of the Effect of Bank Competition on Economic Growth in Nigeria**

Table 4 shows the result of the relationship between bank competition and economic growth in Nigeria. According to Engle and Granger (1987), if cointegration exists between non-stationary variables, then an error correction representation exists for these variables. Given the fact that the variables of the economic growth equation are co-integrated, the next step is the estimation of the short-run dynamics within a vector error correction model (VECM) in order to capture the speed of adjustment to equilibrium in the case of any shock to any of the independent variables.

Before the estimation of the VEC, lag length was selected using the Akaike Information Criteria. The result of the VECM shows that bank competition is significant and positively related to economic growth. This means that competition in the banking sector will positively affect economic growth.

The R- square expresses the best fit of the model which is about 0.776531, it means that the independent variables in the model explains about 78% of the total variations in economic growth. The
ECM of the model indicates that about 40 per cent of the previous period disequilibrium from long-run equilibrium is corrected for within the next period. In other words, the coefficient of the error correction term which measures the speed of adjustment indicates that adjustment is relatively fast.

Table 4: The relationship between Bank competition and Economic growth in Nigeria (1986-2012): VEC Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM(-1,2)</td>
<td>-0.396822</td>
<td>0.73181</td>
<td>-0.54225</td>
</tr>
<tr>
<td>D(Y(-1,2))</td>
<td>-0.704204</td>
<td>0.64858</td>
<td>-1.08576</td>
</tr>
<tr>
<td>D(Y(-2,2))</td>
<td>-0.140593</td>
<td>0.36197</td>
<td>-0.38841</td>
</tr>
<tr>
<td>D(BCC(-1,2))</td>
<td>38.57113</td>
<td>17.2448</td>
<td>2.23668*</td>
</tr>
<tr>
<td>D(BCC(-2,2))</td>
<td>27.70695</td>
<td>16.0388</td>
<td>1.73124**</td>
</tr>
<tr>
<td>D(BS(-1,2))</td>
<td>81.86135</td>
<td>101.649</td>
<td>0.80534</td>
</tr>
<tr>
<td>D(BS(-2,2))</td>
<td>22.13723</td>
<td>97.0177</td>
<td>0.22818</td>
</tr>
<tr>
<td>D(GCF(-1,1,2))</td>
<td>-78.12116</td>
<td>106.809</td>
<td>0.73141</td>
</tr>
<tr>
<td>D(GCF(-2,2))</td>
<td>-56.59145</td>
<td>120.335</td>
<td>-0.47020</td>
</tr>
<tr>
<td>C</td>
<td>-0.476464</td>
<td>1.97086</td>
<td>-0.24175</td>
</tr>
</tbody>
</table>

R-Square 0.776531
F-statistic 5.019295 (0.0005)
*5% level of significance **10% level of significance

CONCLUSION
The study applied vector error correction mechanism to examine the effect of bank competition on economic growth in Nigeria for the period 1986 - 2012. It was discovered that a long run relationship exist between bank competition and economic growth based on the result of the co-integration test. It is evident from the result of the analysis that bank competition has a positive impact on economic growth both in the short run (as shown by the result of Vector error correction mechanism) and in the long run (as revealed by the co-integration test and the likelihood ratio test). This finding is consistent with the theoretical prediction that higher bank competition results, on average, in a lower cost of borrowing to firms. The result equally supports the opinion of Cetorelli and Gambera (2001) that higher level of competition in banking will assist in the development of lending relationships, which leads to the firms' growth and economic growth in general.

Based on these empirical findings, the study suggested that strengthening the competitiveness and efficiency of the financial sector would lead to improved economic growth. Finally, the efficiency gains are therefore likely to be realized in the long run only if there is evenly distribution of market share in the banking industry as opposed to the present situation where only three banks dominate and take the larger market share in the industry.

The limitation of this study is the use of concentration ratio as a measure of competition. This alone cannot provide a good indication of competitive behaviour which may have significant impact on the result of the analysis. Further studies in this area can explore another measure of competition which may confirm the result of this study.

REFERENCES


