Post- Consolidation and Banks' Profitability in Nigeria (2004-2017): Investigating the Nexus.

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Abstract
The study examined the relationship between post-consolidation and banks' profitability in Nigeria for the period (2004-2017). Time series data were used and were sourced from the Central Bank of Nigeria Statistical Bulletin. The study used Return on Assets of Banks' as proxy for banks' Profitability and employed as the dependent variable; whereas, Aggregate Current Account Balance, Aggregate Savings Account Balance and Aggregate Fixed Deposit Account balance were also adopted as explanatory variables to measure the post-consolidation. Hypotheses were formulated and tested using Vector Error Correction Model (VECM). The study revealed that the variables are stationary at levels. There is also a long-run equilibrium relationship between post-consolidation and banks' profitability in Nigeria. The result confirmed that about 62% short-run adjustment speed from long-run disequilibrium. The coefficient of determination indicates that about 37% of the variations in banks' profitability is explained by changes in the post-consolidation variables. The study recommended that bank management should strengthen their supervising units of credit administration in order to avoid the problem of non-performing loans. For Nigeria banks to be a major player in domestic and international market, banks capital should be above minimum regulatory requirements at all times. Shareholders' funds and total assets of banks should be periodically evaluated and aggregate marketing should be vigorously intensified by the banks.
Keywords: Post-consolidation, banks' profitability, Nigeria, investigating the nexus.

Introduction

The search for ways of bettering the standard of living of citizens has opened the corridors for alternative view points on paradigms of economic growth and development (Andabai, 2016). Bank consolidation has been identified as one of those strategies whose implementation can quicken the pace of growth and development in the banking system. Soludo (2004) stresses that the consolidation agenda of the Nigeria banking industry has identified the building blocks for an effective and efficient financial system that will meet international best practice. Hence, the various initiatives that are required to realize this vision constitute the building blocks (Odutu, 2005). Kama (2006) stressed that the realization of the goals of the reform program would significantly contribute to the growth and development of the nation banking system and the global market. The agenda became imperative as a result of the continuing deterioration in the financial health of the banks and increasing incidence of banking failure since deregulation. Udoma (2004) stressed that following the continued presence of illiquid and unhealthy banks in Nigeria, the Central Bank of Nigeria (CBN) in 2004 raised the minimum capital base of banks from 2 billion naira to 25 billion naira with the maximum implementation period of December 31, 2005.

Other reasons for the new policy thrust include the need to reposition the banks to meet the demands of economic development in Nigeria to ensure the emergence of international banks, to content with global trends and restore a high level of public confidence in the banking system (Andabai, 2011). Ajayi (2005) views that the aim and object of the reform is to enable banks to become stronger players, and in a manner that to ensure longevity, hence higher returns to their shareholders and promote greater impact on the Nigerian economy. Thus, the overriding objective of bank consolidation is to enhance economic growth and development and also improve the wealth of shareholders which is measured in terms of the share value of bank (Kama, 2004).

Theoretical Framework

The theoretical framework underlying this study is the "Big Push" theory by Rosentein-Rodian (1961). The theory states that "Big Push" or large comprehensive programme is needed in the form of high minimum amount of investment to achieve economic growth and development in any modern economy. Economic growth and development are also determined by an effective capital formation through the banking system. Kama (2006) observed that the reform was designed to ensure a diversified, strong and reliable banking sector in order to ensure the safety of depositor's money and the development the economy. Kolo (2007) observed that the aim of the reform was to help banks to promote greater impact on the Nigerian economy. Ogubunka (2005) views that the ultimate beneficiaries of this exercise are the ordinary men and women; who deposit their money with banks

and have a stronger financial system to finance their businesses. The economy will also benefit from internationally connected and competitive banks that will also mobilize international capital for development of the country (Soludu, 2004).

Nanna (2004) stressed that bank consolidation is the merger or acquisition of two or more banks in order to make them bigger, stronger, more commercially viable and competitive both regionally and globally. Bellow (2004) also viewed consolidation as the process of reducing the number of banks and other deposit taking institutions with a simultaneous increase in size, concentration and efficiency of the remaining entities in the sector. From the foregoing, bank consolidation thus is the process or policy initiative designed to make banks more firms and secured to service as available and efficient intermediary between the surplus units and deficit units of the economy. Capital restructuring is the permanent long-term debt, common stock, preferred stock and retained earnings and the main thrust or pivot on which the consolidation program revolves is the N25 billion minimum capitalization for banks.

The first principle states that managers should treat all banks equally and fairly. That is no bank should be favoured or victimized and the second principle hold that capitalization rules shall not only be clear and objective but that the agenda should also be practice. The third principle is intended to assist and encourage banks implement the programme. From the above, Umoh, (2004) is of the opinion that the objective of capital restructuring through consolidation can only be achieved successfully if the agenda of the pragramme is clear and precise; participants are not favoured or victimized, and at the same time if incentive are provided in order to encourage banks to implement the programme. This he said will reduce systematic risk, and as well as improve operational efficiency. Akingbola (2007) observed that the current bank consolidation exercise had reduced the number of operators in the Nigerian banking sector from 89 to 24. Thus, banks now have the capacity to compete more aggressively in the industry as a result of increased capital base. Kama (2006) observed increase liquidity in the Nigeria banking sector which resulted to low interest rate due to the consolidation programme. Aggregate capitalization of banks leads to the increase market capitalization from 24 percent to 38 percent. The resulting liquidity in the system also induced a significant fall in interest rates. Banks now have greater potential to finance larger transactions.

Methodology

The study adopted *ex-post-facto* research design. Secondary data were used and were collected from Central Bank of Nigeria Statistical Bulletin, for the period (2004-2017). The study used annual data, because quarterly data may not be accessed for some of the variables. Return on Assets of Banks' as proxy for banks' Profitability and employed as the dependent variable; whereas, Aggregate Current Account Balance, Aggregate Savings Account Balance and Aggregate Fixed Deposit Account balance were also adopted as explanatory variables to measure the post-consolidation as indicated in a**ppendix 1.**

Model Specification

Time series econometrics techniques were used for the analysis; hence, the study based on the following null hypotheses: (i) there is no positive significant long-run equilibrium relationship between post-consolidation and banks' profitability in Nigeria; (ii) to ascertain whether unit roots exist among the variables; (iii) there is no causality between post-consolidation and banks' profitability in Nigeria. The study also adopted Juselius (1990) and Johnsen's (1991) multivariate co-integration procedure; and the co-integration test was based on Vector Error Correction Model (VECM):

$$\Delta Y_t = \quad \delta_o + \Sigma\delta_i + \Box\Delta Y_{t-1} + \quad \beta Y_{t-p} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

Where, Δ is the first difference operator, Y_t represents (ACA_t, ASA_t, AFD_t), δo represents the intercept, and μ represents the vector of white noise process. The matrix β consists of r (r ≤ 1) co-integrating vectors. Matrix contains the error parameters and the Johansen and Juselius co-integration procedure yields two statistics (i.e. maximum eigenvalue and the trace statistics). The study estimates the following VECM to determine the long and short-run dynamics between the era of post-consolidation and banks profitability in Nigeria.

a   b
$$\Delta ROA_t = \quad + {}_{i=1}\Sigma \quad {}_iACA_{t-1} + \Sigma \quad {}_i ASA_{t-1} + \Sigma \quad {}_iAFD_{t-1} + \quad R_{t-1}\dots\dots\dots\dots\dots..(2)$$

Where Δ stands for difference operator; banks profitability and post-consolidation represent (ROA_t, ACA_t, ASA_t, AFD_t), the error correction term assesses the deviations of the variables from the long-run equilibrium relationship. This model is adopted from the work of Andabai (2016) and is stated as: ROA = f(INTR, LR, CRR) Where:

ROA=Return on Asset as a proxy for the profitability of commercial banks.
 INTR = Interest Rate
LR = Liquidity Ratio
CRR= Cash Reserve requirement
The above variables were adjusted to align with the current study. The modified model is stated as: ROA= $f(ACA_t, ASA_t, AFD_t)$……………………………………………..(4)
The equation becomes
LnROA= δ_o + Lnδ_1ACA + Lnδ_2ASA$_t$ + Lnδ_3AFD$_t$ + μ_t..(5)
Where: ROA= Return on Assets of Banks
        ACA= Aggregate Current Account
        ASA= Aggregate Savings Account
        AFD= Aggregate Fixed Deposit
δ_0 = intercept and δ_1, δ_2, and δ_3 are the coefficients of the regression equation. μ is the stochastic or error term, while Ln is the natural log of the variables. Log transformation is necessary to reduce the problem of heteroskedasticity; because, it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2004).

Estimation Technique

Estimating the VECM proceeds in the following manner, a pre-test for stationary, lag-length, and test for co-integration and this is to ensure that the variables are stationary and that shocks are only temporary and will dissipate and revert to their long-run mean. The test for stationarity or unit roots employed for this study was the Augmented Dickey-Fuller (ADF) test which was performed on the variables at levels and first differences. Co-integration requires that all the variables be integrated of the same order and to test for unit roots, we used the ADF to test the null hypothesis of H o: y□=0 in

$$\Delta yt = \beta_o + \beta_{2t} + \delta y_{t-1} + \sum_{t=1}^{b} \alpha, \Delta y_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots ..(4)$$

To examine whether a unit root exist the ADF test assumes the asymptotic normality of the idiosyncratic error term, ε_t, in (4). The choice of lag-length may be decided using Sims likelihood ratio test and the appropriate lag length is important as too many lags reduce the power of the test due to the estimate of additional parameters and a loss of degrees of freedom. In contrast, too few lags may not capture the dynamics of the actual error correction process, resulting in poor estimates of growth and its standard errors.

Discussion of Results

Table 1: Unit root test result.

Variables	Lag	Adfsta@ stationary	Coefficient		Order of integration	Remark
			Level	1st diff		
LROA	2	-5.6833	-3.0206	-30299	1(1)	Stationary
LACA	1	-3.9826	-3.0404	-	1(1)	Stationary
LASA	2	-48705	-3.299	-	1(1)	Stationary
LAFD	1	-5.9102	-3.0299	-	1(1)	Stationary

Source: E-view Econometrics 8.0
* (**) indicate statistical significance at the 1 percent and 5 percent level, respectively. The critical values at the 1 percent and 5 percent significance levels are -3.6496 and -2.9558 respectively and the critical values of ADF are from Mackinnon.

The results of the unit root test for stationary are presented in **table 1**; and, the return on asset of banks' (ROA) (ACA), (ASA) and (AFD) are is integrated of order one, this means the variables   were differenced once before it could attain stationary. Hence, the hypotheses of non-stationary were therefore rejected for the entire variables. The optimum lag length, which is a guide for model selection is reported in column two of the table and was selected in the basis of the Schwarz criterion (SC). This provides a basis for the test for co-integrating relationships among the stationary series of the same order.

Test for Co-integration

Having found that all the variables are integrated, the next step is to perform Johansen co-integration procedure to ascertain whether aggregate current account balance, aggregate savings account balance and aggregate fixed deposit account balance are co-integrated. The results of the test are presented in **table 2** and the null hypothesis of no co-integration among the variables (that is, r=0) is tested against the alternative hypothesis of co integration among the variables (that is r=1). The null hypothesis of no co-integration is rejected at the 5 percent significance level. However, the null hypothesis that rd"1 could not be rejected against the alternative r=2, suggesting the presence of a unique co-integrating relationship among variables. Thus, a long run relationship exists among the variables as indicated by the Eigen values that are greater than the critical values both at 1 percent and 5 percent level of significance in table **2**.

Table 2: Co-integration Test Results

H_0	H_A	Eigen value	Trace (stat)	Critical value (0.5)	Prob.
R=0	r=1	0.959295	152.5567	76.28	0.0000
R≤1	r=2	0.820452	91.7298	54.0790	0.0000
R< 2	r=3	0.75742	59.1009	35.1926	0.0000
R<3	r=4	0.680531	32.1886	20.2618	0.0007

Source: E-view Econometrics 8.0.

Note: Trace test indicates 4 co-integrating equation(s) at the 0.05 level

* Denote rejection of the hypothesis at the 0.05 level ** MacKinnon-Haug-Michelis (1999) P-value.

Vector Error Correction Model

The ECM is an estimation technique which draws on developments in the co-integration theory; the purpose is to overcome the problems of spurious correlation often associated with non-stationary time series data (Ibenta, 2012). The existence of long-run co-integrating equilibrium provides for short-run fluctuations. In order to straighten out or absolve these fluctuations, an attempt was made to apply the Error Correction Model (ECM). The error correction coefficient contains information about whether the past values affect the current values of the variable under study. A significant coefficient implies that past equilibrium errors play a role in determining the current outcomes and the information obtained from the ECM is related to the speed of adjustment of the system towards long-run equilibrium and the short-run dynamics are captured through the individual coefficients of the difference terms.

TABLE 3:   Vector Error Correction Estimates

Variables	Coefficient	Std. Error	t-Statistic	Prob.
(ECM(-1)	-0.62153	1.71362	-0.23621	-0.010008
DLnROA	0.223221	-120833	-011242	0.002548
LnACA	0.163724	0.03070	-0.51262	0.008540
LnRASA	-0.017041	-0.04251	0.034403	0.18297
LnAFB	0.064423	-0.38810	0.068511	0.000245
Constant	113.9150	809.4828	174.9542	0.000335

R-squared	0.371894	Mean dependent var	206.9160	
Adjusted R-squared	0.252176	S.D. dependent var	67.22186	
S.E. of regression	35.87555	Akaike info criterion	20.20726	
R – correlation	0.761546	Schwarz criterion	20.43390	
Log likelihood	-122.1856	F – statistic	5.626034	
Durbin-Watson stat	1.891375	Prob (F-statistic)	0.173048	

Source: Author's computation with the use of E-view 8.0

The error-correction coefficient is statistically significant and has a negative sign, which confirms a necessary condition for the variables to be co-integrated. This also implies that the speed at which aggregate current account balance, aggregate savings account balance and aggregate fixed deposit account balance, adjust from short-run disequilibrium to changes in banks' profitability in order to attain long-run equilibrium is 62% within one year. The coefficient of determination indicates that about 37% of the variations in banks' profitability are explained by changes in the post-consolidation variables (ACA, ASA, AFD) in the industry. This implies that insignificant portion of banks' profitability trends in the industry is explained by the changes of post-consolidation variables. The F-statistics of 5.62634 which is statistically insignificant (F-probability = 0.173048)

at 5% rejects the relationship between banks' profitability and post-consolidation in Nigeria; and, that is the influence of the explanatory variables on the dependent variable is statistically insignificant and this is also confirmed by the F-probability. Finally, the value of Durbin–Watson (DW) signifies the absence of autocorrelation.

Table 4: Result of Pairwise Granger-Causality Test (2004-2017) with 2-period Lag length

Null Hypothesis:	Obs	F-Statistic	Probability	Decision
ACA does not Granger Cause ROA	12	0.97650	0.54309	No causality
ROA does not Granger Cause ACA		0.67526	0.95647	No causality
ASA does not Granger Cause ROA	12	0.97594	0.36529	No causality
ROA does not Granger Cause ASA		0.87591	0.50474	No causality
AFD does not Granger Cause ROA	12	0.87600	0.54533	No causality
ROA does not Granger Cause AFD		0.675478	0.67362	No causality
ASA does not Granger Cause ACA	12	5.32640	0.00176	Causality
ACA does not Granger Cause ASA		4.68547	0.00052	Causality
AFD does not Granger Cause ACA	12	0.65770	0.78174	No causality
ACA does not Granger Cause AFD		0.78658	0.96943	No causality
AFD does not Granger Cause ACA	12	0.64568	0.76634	No causality
ACA does not Granger Cause AFD		0.97868	0.98088	No causality

Source: Author's computation with the use of E-view 8.0
Note: The decision rule of a causality test states that if the probability value of the estimate is higher than the 5% (0.05) level of significance, we accept the null hypothesis, and vice versa.

To determine the direction of causality between the variables, the Engle and Granger (1987) causality test was performed on the variables as indicated in **table 4.** The Granger causality investigated the predictive content of one variable beyond that inherent in the explanatory variables itself. The results of the Granger causality test indicate that return on asset of banks (ROA) has no causality with ACA (aggregate current account), AFD (aggregate fixed deposit) and ASA (aggregate savings account). This implies that there is no causality between post-consolidation variables and bank profitability in Nigerian. However, the results show that aggregate savings account has bi-directional causality with aggregate current account.

Conclusion and Recommendations

The fundamental objective of consolidation is the repositioning of an existing status of banks to attain an effective and efficient best practice that will enhance growth and development of the economy. Hence, the study therefore reveals that unit roots do not exist among the variables. There is also long-run equilibrium relationship between economic growth and multinational corporations and the result confirms that about 62% short-run adjustment speed from long-run disequilibrium. The coefficient of determination indicates that about 37% of the variations in economic growth are explained by changes in multinational corporation's variables. The study therefore recommends that bank management should strengthen their supervising units in credit administration to avoid the issue of non-performing loans. In Nigeria, banks are to be the major players in domestic and international market and banks capital should be above minimum regulatory requirements at all times. Shareholders' funds and total assets of banks should be periodically evaluated and aggressive marketing should be vigorously intensified by the banks.

Contribution to Knowledge

The study modified the vector error correction model and expanded the existing contemporary literature; the updated data for the study will enable researchers and scholars to use it for further studies. Thus, from the results this study has also contributed to knowledge by discovering that post-consolidation has no direct causality with bank profitability but aggregate current account and aggregate savings account granger causes each other.

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Appendix 1: Post-Consolidation and Banks' Profitability in Nigeria (2004-2017)

Year	Aggregate Current Account Balances (N' Billion)	Aggregate Savings Account Balances (N' Billion)	Aggregate FIXED Deposit Account Balances (N' Billion)	Return on Asset of Banks (%)
2004	412.387	472.398	6,701.2	2.00
2005	431.867	662.565	10,185.1	2.58
2006	451.808	764.954	11,631.9	0.49
2007	495.541	1,359.3	15,559.9	2.65
2008	527.634	2,112.5	24,738.7	5.92
2009	561.956	2,900.1	22,876.7	4.29
2010	595.817	5,120.9	27,647.5	-9.28
2011	634.376	13,1817	48,773.3	3.91
2012	672.242	9,563.08	50,424.7	-0.04
2013	719.635	7,030.8	23,091.5	2.62
2014	776.353	9,918.2	24,775.6	2.81
2015	834.365	10,275.3	23,393.6	2.23
2016	888.963	14,800.9	23,432.6	2.81
2017	950.132	19,077.4	36,207.1	2.23

Source: Central Bank of Nigeria Statistical Bulletin, 2017