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## **Bank Consolidation Programme and Lending Performance in Nigerian Banking System: An Empirical Analysis with Panel Data**

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### **ABSTRACT**

The study aims to assess the response of flows of credit from the banking sector to reforms and consolidation programme in the Nigeria banking sector. This is intended to serves as a linchpin to appraise the relevance and effectiveness of the spate of reforms and consolidation of the nation's banking sub-sector. The study utilized cross-sectional data sourced from the 89 pre-consolidation banks and the 25 post consolidation banks in Nigeria and the Engle-Granger approach to error-correction estimating techniques on the empirical model of bank credit performance. The results from panel data analysis generally confirmed that consolidation-induced changes in banks structure in terms of size and capitalization positively influence bank lending performance in the Nigerian banking industry. For policy, the need to strengthen the overall financial system within which the banking sector operates becomes fundamental if the potentials of the bank consolidation exercise will be fully realized.

**Key words:** Bank consolidation, bank lending, banking industry, Nigeria

### **INTRODUCTION**

The role of the banking industry is crucial in the pattern and pace of economic growth and development, as it is well articulated and established in the literature (Demirguc-Kunt and Huizinga, 1997). Banks occupy a position in the financial system that supplies the credits need of the economy. As Alashi (1991) indicates, evidence (both theoretical and empirical) abound that suggests a positive correlation between real economic growth and banks assets-especially credits. Substantial body of empirical literature agreed that for sustainable growth, the banking sector has to be effective and efficient to respond favorably to the needs of the productive sectors of the economy. Thus, the objectives of battery of regulatory reforms in the banking sector is to foster and enhance the process and the extent to which banks function in providing credits that is essential to promote activities in the real sector of the economy.

The 2004 banks restructuring and consolidation exercises were predicated on convincing evidences that suggested that the Nigerian financial sector actually saw a financial dis-intermediation. In his July 6, 2004, address to the Bankers' Committee, Professor Charles Soludo, the CBN governor (2004-2009) characterized the weaknesses of the pre-consolidation Nigerian banks to include low capital base; insolvency and illiquidity and smallness of size that leads to high overhead costs. Consequently, banks could not effectively support the real sector of the economy with credit to the domestic economy at 24% of GDP, compared to African average of 87 and 272% for developed countries.

Rather than performing its crucial financial intermediary roles, overwhelming proportion, especially and particularly the new generation banks were not interested in intermediating funds from depositors to borrowers but rather made quick profits from interest arbitrage and other rent seeking activities. Thus, the need to engender a banking system that can nurture and support the growth and development of the real sector, widely recognized as an economy's growth engine, stands out prominent as justification for the reform package.

Consequent on the foregoing, major thrusts of the reforms and consolidation programme in the banking sector had been crucially targeted to alter those factors that theoretical constructs postulated to alter supply of loans from the banking system. Such factors as identified in the literature include: the bank's size, the liquidity level of the banking firm and the level of bank capitalization (Hubbard, 2000). Small banks may find it more difficult to raise external funds in times of monetary tightening. As a consequence, they may be forced to reduce their lending relatively more than large banks (Kashyap and Stein, 1995, 2000).

More liquid banks can draw down on their liquid assets to shield their loan portfolios, they are less likely to cut back on lending in the face of monetary tightening. Also, the response of small bank lending could be particularly sensitive to holdings of liquid assets (Kashyap and Stein, 2000; Ashcraft, 2001). In some circumstances (for example, if it is close to the minimum capital requirement), a bank may have to reduce its supply of loans, given that raising equity can be costly. Moreover, even well-capitalized banks may adjust their loan portfolios in anticipation of having difficulty meeting regulatory capital requirements in the future (Van den Heuvel, 2001).

The foregoing suggests that the alteration of the structure of the banking system in terms of the size, liquidity and capitalization position of the typical post-consolidation banking firm portends proportionate and significant alterations in the lending capabilities of the banking system. Consequently, an empirical investigation of this nature is of utmost relevance for academic and policy purposes. In addition, while there exists a growing body of theoretical and empirical studies that attempt to appraise the effects of bank reforms and consolidation programme on various measures of organizational performance in the banking sector (Hesse, 2007) its effects on bank lending activities is yet to witness the same level of academic enquiry within the Nigerian banking empirics. This is apparently a serious omission and the present study stands to fill this gap. In the light of the foregoing, the general objective of this research effort is to assess the response of flows of credit from the banking sector to reforms and consolidation programme in the Nigeria banking sector. This is intended to serve as a linchpin to appraise the relevance and effectiveness of the spate of reforms and consolidation of the nation's banking sub-sector and it would also provide directions to guide and shape subsequent policy actions towards making the banking sector adequately responsive to the development financing needs of the national economy.

## **ELEMENTS OF THE 2004 BANK CONSOLIDATION PROGRAMME IN NIGERIA**

Reforms have been a regular feature of the Nigerian banking system. They are usually introduced either in response to the challenges posed by factors and developments such as systemic crisis, deregulation, globalization and technological innovation or as proactive measures both to strengthen the banking system and prevent systemic crisis, as is the case in the current reforms. The reforms, widely referred to as consolidation of the banking system, are part of the broad on-going national economic reforms.

As at the end of 2004, there were 89 universal banks operating in Nigeria, comprising institutions of various sizes and degrees of soundness. Structurally, the sector is highly

concentrated, as the ten largest banks in the system account for about 50 per cent of the industry's total assets/liabilities (Soludo, 2004). Many of the banks in the system are small in size and unable to compete with the bigger ones. Some of the small banks, apart from being closely held, are plagued by high incidence of non-performing loans; capital deficiencies; weak management and poor corporate governance. Also, when compared with the banking sectors in emerging economies, the nation's banking sector according to Soludo (2004), could be described as fragile, poorly developed and extremely small.

A critical look at the nation's banking system no doubt, indicates that the sector faces enormous challenges that call for an urgent attention. That consideration informed the implementation of a banking sector reform undertaken by the CBN. The reform policies basically, complement banking liberalisation earlier-on undertaken in the system and include a broad range of measures aimed at improving the regulatory and supervisory environment as well as restructuring and developing the banking sector entities. The reforms agenda according to Soludo (2004).

It is a pre-emptive and proactive measure to prevent an imminent systemic crisis and collapse of the banking industry and permanently stop the boom and burst cycles which have characterized the history of our banking industry. More fundamentally, the reforms are aimed at ensuring a sound, responsive, competitive and transparent banking system appropriately suited to the demands of the Nigerian economy and the challenges of globalization.

Specifically, the objectives of the banking reform, which is part of the general agenda of the Government overall economic reform programme (the National Economic Empowerment and Development Strategy (NEEDS)), include:

- Creation of a sound banking system that depositors can trust
- Creation of banks that are investor-friendly and that can finance capital-intensive projects
- Enhancement of transparency, professionalism, good corporate governance and accountability and
- Driving down the cost structure of banks

The main thrust of the reform package, which is anchored on a thirteen-point agenda, is to consolidate and recapitalize banks by increasing their shareholders' funds to a minimum of N25 billion (about US\$190 million) with effect from December 31st, 2005. Other highlights include: the adoption of risk-focused and rule-based regulatory framework; the adoption of zero tolerance in the regulatory framework, especially in the area of data/information rendition/reporting; enforcement of dormant laws, especially those relating to the vicarious liabilities of banks' board members in cases of bank failure; revision and updating of relevant laws and drafting of new ones relating to the effective operations of the banking system etc.

The reforms had in turn prompted a regulatory induced restructuring in the form of consolidation that engendered the alignment and realignment of banks and banking groups which translated into the merger of some banks and the acquisition of others. Particularly, the 2004 Banking sector reforms prompted regulation induced restructuring and engendered the alignment and realignment of banks and banking groups into the merger of some and the acquisition of others to ensure a sound, responsive, competitive and transparent banking system suited to the demands of the Nigerian economy and the challenges of globalization. These developments, no doubt, have affected the functioning of the banking system as well as its responsiveness to policy impulses from the regulatory authorities. It thus becomes necessary to gauge empirically the direction and the quantum of the effects of such policy changes on bank lending activities.

## **MATERIALS AND METHODS**

**Data and data sources:** Data will be sourced from the list of the 89 pre-consolidation banks and the 25 post consolidation banks in Nigeria. The CBN's reforms to consolidate the banking sector by drastically increasing the minimum capital requirements from N2 billion to N25 billion led to a remarkable reduction in the number of banks from 89 to 25, mainly by mergers and acquisitions, by the beginning of 2006. For the purpose of overcoming inherent problems of isolating individual banks' variables after the 2005 banks consolidation exercises, the data series will be harmonized over the two periods by aggregating bank data in the pre-consolidation periods using the component members of consolidated banks. This will provide a cross-sectional data for 25 banks that bridge the pre and post consolidation dichotomy in the Nigerian banking industry data.

Thus, the study will take complete census of pre and post consolidation commercial banks in Nigeria. This is considered sufficient to produce robust and generalisable results. Yearly data will be extracted from the consolidated income statements and balance sheets of individual banks. The fact that different banks close their financial year in different months has been disregarded for the sake of simplicity. Bank observations that are missing or misreported or that constitute clear outliers were excluded from the sample. Thus, the final sample was an unbalanced panel data. In all, the sample period and sample size selected seem adequate and comprehensive enough for the kind of analysis intended in this study. Other time series data on macroeconomic variables that entered the model will be sought from various publications and online data sources of the Central Bank of Nigeria.

**Econometric modeling:** The study aims at determining the direction and magnitudes of the effects of consolidation induced changes in the banking industry, specifically, bank size and capitalization, as well as other conditioning variables, on bank lending performance in Nigeria. To achieve this, quantitative analysis involving the use of panel data in a pooled regression, where time-series and cross-sectional observations will be combined and estimated to generate the coefficients of each relevant explanatory variables.

The reforms and consolidation exercises in the Nigerian banking sub sector has significantly alter the balance sheet strength of individual banking firms. Mergers and acquisitions occasioned by the reforms have seen the 89 weak and marginal pre-consolidation banks evolved into 25 stronger banks in terms of size and capitalization ratings. The aim of this study is thus to give an estimation of the impact of consolidation induced changes in banks structure in terms of size and capitalization on loan supply by banks. A bank's loan reaction function is assumed to depend linearly on the bank-characterizing variables, which could be size, liquidity or capitalization. In the literature, bank size is the most commonly used indicator of a bank's ability to generate outside financing: The idea is that small banks have more difficulties in raising funds because they face higher information costs and therefore a higher external finance premium, than large banks. Hence, they are less able to offset contractionary monetary policy measures and have to reduce their loan supply more strongly than large banks in this case.

Another indicator that has been used in the literature is a bank's capitalization. The idea is based on the argument that a higher capitalization makes a bank less prone to moral hazard and asymmetric information problems vis-à-vis its suppliers of funds. Therefore, the external finance premium of a well-capitalized bank should be smaller than that of a poorly capitalized one. This implies that less capitalized banks should be forced to restrict their lending more strongly in reaction to a restrictive monetary policy measure than well-capitalized banks.

Another variable that is relevant in explaining bank credit supply is the rate on bank loans (LDR). The lending rate denotes the profitability of banks' lending activities. This variable is expected to have a positive effect on the supply of business credit. The inclusion of two determinative proxies represents the state of the overall economic environment. First is the inflation rate (INF), which is expected to have a negative effect on the credit supply of banks. As high inflation is likely to be associated with greater uncertainty, banks are expected to be more cautious in lending in a high inflation environment. The second variable is the economy's total output (GDP), which is expected to have a positive sign.

The general strategy of the subsequent empirical analysis is to test for a response of bank loans to indicators of bank's balance sheet strength and other conditioning variables. Thus, based on the above theoretical underpinnings, the estimating credit supply equation is expressed as follows:

$$L_{it} = \alpha + \beta_1 \text{Size}_{it} + \beta_2 \text{CAP}_{it} + \beta_3 \text{LDR}_{it} + \beta_4 \text{GDP}_{it} + \beta_5 \text{INF}_{it} + \eta_i + \lambda_t + \varepsilon_{it}$$

where, measures bank credit supply, measured as the growth rate of gross loans and advances of bank *i* in year *t*; Size measures bank Size, measured by the growth rate of total assets of bank *i* in year *t*; CAP measures bank capitalization measured by shareholders' fund of bank *i* in year *t*. LDR is the rate of bank loans, it is measured by prime lending rate on loans. GDP is the growth rate of real GDP, INF the inflation rate computed as the growth rate of the consumer price index.  $\eta_i$  is (unobservable heterogeneity) measures the particular characteristics of each bank. The parameters  $\lambda_t$  are time dummy variables that change over time but are equal for all the banks in each of the periods considered.  $\beta_1, \dots, \beta_6$  are parameter estimates of the coefficients to be estimated.

## RESULTS AND DISCUSSION

In what follows, results from panel least square estimation of the effects of consolidation induced changes in banks structure in terms of size and capitalization and other bank credit supply conditioning variables, on loan supply by Nigerian banks are presented.

**Time series properties of the variables used:** Before estimating the equations, an examination of the properties of the underlying data was effected. It is necessary to establish the time series properties of the variables used in the estimation in order to ensure the reliability of parameter estimates, i.e., to avoid spurious regression. The development of panel unit root testing is reputed to allow a more general conclusion to emerge in panel analysis. In particular panel unit root tests overcome the heterogeneity biases that are common characteristics of panel data analysis. Consequently for this study, we utilize the panel unit root tests of Levin, Lin and Chu which assumes common unit root process. Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square which also assumes individual unit root process to allow for heterogeneity across cross-sectional units. The results of these tests as indicated in Table 1 showed that all the variables exhibits stationarity at first difference.

The methodology for dealing with I (1) variables is to investigate the cointegration relationship between them. For this purpose, the Pedroni panel cointegration test was employed. Except for panel variance statistics, all other test statistics developed by Pedroni rejects the null of no cointegration at 5% significance level, as indicated in Table 2. Since there is a cointegration relationship between the variables, the Engle and Granger two-step method can be used. According to Engle and Granger (1987), if the variables are cointegrated, the stable long-run relationship can be estimated by standard least-squares techniques.

Table 1: Unit roots test results

Variables	D	LLC	p-value	IPS	p-value	ADF	p-value	PP	p-value
Banklend	0	4.62	1.00	5.86	1.00	64.95	0.89	56.30	0.98
	1	-17.78	0.00	-16.63	0.00	422.83	0.00	741.15	0.00
Size	0	-3.99	0.00	1.41	0.92	65.06	0.89	103.88	0.04
	1	-13.63	0.00	-12.98	0.00	317.96	0.00	366.56	0.00
CAP	0	-1.27	0.10	0.31	0.62	99.26	0.07	100.53	0.06
	1	-19.57	0.00	-16.88	0.00	425.28	0.00	916.37	0.00
LDR	0	-3.24	0.00	-3.24	0.00	131.64	0.00	104.03	0.04
	1	-18.18	0.00	-17.11	0.00	415.81	0.00	552.62	0.00
GDP	0	-0.94	0.17	1.27	0.90	106.24	0.03	92.13	0.17
	1	-8.54	0.00	-9.66	0.00	272.93	0.00	331.37	0.00
INF	0	-5.78	0.00	-7.51	0.00	211.36	0.00	222.57	0.00
	1	-20.57	0.00	-20.58	0.00	531.80	0.00	1753.47	0.00

Table 2: Pedroni cointegration test results

Pedroni residual cointegration test				
Series: Bank, lend, Size, CAP, LDR, GDP, INF				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
Lag selection: fixed at 1				
Newey-West bandwidth selection with Bartlett kernel				
Alternative hypothesis: common AR coeffs. (within-dimension)				
	Statistic	Prob.	Weighted	
			-----	
			Statistic	Prob.
Panel v-Statistic	-2.202074	0.0353	-3.306564	0.0017
Panel rho-Statistic	2.799177	0.0079	2.993428	0.0045
Panel PP-Statistic	-4.222111	0.0001	-5.249561	0.0000
Panel ADF-Statistic	-3.532066	0.0008	-4.903417	0.0000
Alternative hypothesis: individual AR coeffs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	4.686099	0.0000		
Group PP-Statistic	-5.991867	0.0000		
Group ADF-Statistic	-4.923666	0.0000		

**Panel data estimation: Results and analysis:** Estimating models from panel data requires us first to determine whether there is a correlation between the unobservable heterogeneity  $\eta_i$  of each firm and the explanatory variables of the model. If there is a correlation (fixed effects), we would obtain the consistent estimation by means of the within-group estimator. Otherwise (random effects) a more efficient estimator can be achieved by estimating the equation by Generalized Least Squares (GLS). The normal strategy to determine whether the effects are fixed or random is to use the Hausman (1978) test under the null hypothesis  $E(\eta_i/x_{it}) = 0$ . If the null hypothesis is rejected, the effects are considered to be fixed and the model is then estimated by OLS. If the null hypothesis is accepted, we would have random effects and the model is then estimated by GLS. In this way we achieve a more efficient estimator of  $\beta$ .

The generally accepted way of choosing between a fixed and a random effect model is running a Hausman-test. The Hausman-test tests the null hypothesis if the coefficients of the random

Table 3: Results of estimated bank lending model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	94.52512	26.72920	3.536400	0.0030
Size	0.847005	0.445643	1.958921	0.0842
CAP	0.323847	0.169090	1.915234	0.0747
LDR	1.292778	0.403130	3.206848	0.0059
GDP	0.325199	0.166083	1.958056	0.0691
INF	-1.368205	3.663023	-0.37351	0.7140
ECM(-1)	-1.041750	0.374562	-2.78125	0.0042
<i>Summary Statistics</i>				
<i>Adj. R-Square</i>	0.821897			
<i>Durbin-Watson Statistic</i>	1.966975			
<i>F-Statistic</i>	582.4735			
<i>Prob(F-statistic)</i>	0.0000			
<i>Cross sections included</i>	25			
<i>Observations</i>	186			

effects model are the same as the ones of fixed effects model. If they are therefore, have an insignificant p-value, then it is safe and better to use random effects models. The Hausman-test conducted for the models in this study, shows a significant value (at the one percent level) and therefore suggests the use of fixed effects. Thus in this context, to estimate the coefficients, a panel data analysis with fixed effect model was conducted.

Table 3 presents the results obtained from panel least squares in error correction form since Pedroni (1995) tests support the existence of cointegration.

Table 3 presents the estimation results of the effects of consolidation induced changes in the structure of the banking system, particularly in terms of size and capitalization on the bank lending performance in the industry. The behavior of the individual policy variables as inferred from their coefficient estimates are disc used.

The estimation result indicate that the coefficient of bank size is positive and significant at  $\alpha = 1\%$ , indicating that bank lending capability is enhanced by consolidation induced increases in bank asset base by 84% point by a unit increases in banks asset level. This result is consistent with the claims of the monetary authorities that the large consolidated banks have increased access to credit lines from foreign banks than hitherto. It is further consistent with the conjectures that small banks may find it more difficult to raise external funds in times of monetary tightening; and thus, suffer disproportionately. As a consequence, they may be forced to reduce their lending relatively more than large banks (Kashyap and Stein, 1995, 2000).

Similarly, the empirical results in Table 3 revealed that bank capitalization is a significant determinant of credit supply to the economy. The bank capital variable is rightly signed and statistically significant at 5% level. Thus, this result strongly supports the hypothesis that the CBN's recapitalization of the banking industry enhanced bank credit supply to the real sector of the economy. This result further corroborates the noticeable increases in credit flows from the banking system in the periods following bank consolidation in Nigeria.

The regression results strongly support the fact that lending rate is the most significant determinant of the willingness of banks to extend loans and credit facilities to the real sector. Lending rate variation had a positive and significant effect on measure of bank lending performance.



The estimated coefficient of the inflation rate is in accordance with expectation but turns out to be statistically insignificant. This suggests that it has limited power in explaining loan supply flows from the Nigerian banking system. The negative correlation of the inflation variable with credit flows still confirms that high inflation rate is likely to be associated with greater uncertainty and banks are therefore expected to be more cautious in giving out credits in a highly inflationary environment.

The variable GDP is the second variable representing the effect of the state of overall economic environment on bank credit flows. As expected, economic fluctuations exhibited a positive correlation with bank loan supply. This suggests that banks respond to business cycles, expanding credit during booms and contracting it during recessions. The relationship is also statistically significant.

Overall, the regression models have good statistical fit with the t values significant for most variables. The adjusted  $R^2$  and R were sufficiently high indicating that the independent variables explained sufficient quantity of the variations in the dependent variables. Durbin Watson Statistic (DW) also reveals the absence of serious auto correlation for all the equations. These test results show the reliability of our estimated equations in modeling the problem under investigation. The coefficient on the error correction term is negative and significant as expected. The results indicate that the error correction terms corrects between 27.8% of the errors after disequilibrium in the long run.

## **SUMMARY AND POLICY IMPLICATIONS**

The results from panel data analysis generally confirmed the central hypothesis of this study that consolidation-induced changes in banks structure in terms of size and capitalization positively influence bank lending performance in the Nigerian banking industry. The two bank consolidation variables of the model, viz., banks size (size) and bank capitalization (cap) exercised a significantly positive influence on bank lending variable. Lending rate variation had a positive and significant effect on measure of bank lending performance. The estimated coefficient of the inflation rate is in accordance with expectation but turns out to be statistically insignificant. As expected, economic fluctuations exhibited a positive and significant correlation with bank loan supply. This suggests that banks respond to business cycles, expanding credit during booms and contracting it during recessions.

The study concluded that the new consolidation policy in the Nigerian banking sector has been a major breakthrough in the history of banking regulation in Nigeria. The hitherto weak banking system characterized by oligopolistic structure was transformed into strong banking institutions that can compete at the regional and global level, with sufficient evidence of significant improvements in its financing of critical real sector activities through enhanced flows of investible funds.

For policy, the need to strengthen the overall financial system within which the banking sector operates becomes fundamental if the potentials of the bank consolidation exercise will be fully realized. Inflationary pressures and fiscal indiscipline has been the perennial problems of the financial sector. When inflation is high, there tends to be insufficient savings, because inflation erodes the value of financial savings. Savings therefore moves out of countries with high inflationary expectations into those with low inflationary expectations. To attract and retain financial savings in the economy, therefore, government has to give top priority to need to drastically reduce the rate of inflation to global average. This is in addition to immediate reform of

the lax fiscal situation and a stronger mandate to the central bank to treat the attainment of a pre-specified rate of inflation (an explicit 'inflation target') as its main focus.

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