

Bank Deposits and Demand for Credits in Nigeria: What Lessons are Available?

IKECHUKWU S. NNAMDI

Senior Lecturer, Department of Finance and Banking,
University of Port Harcourt,
Port Harcourt.

IFEANYI S. MGBATAOGU

Doctoral Student, Department of Finance and Banking,
University of Port Harcourt,
Port Harcourt.

ABSTRACT

This study examines the relationship between bank credits and deposit composition of Nigeria's deposit money banks over the period 1981 to 2013. It employs Unit root, Co-integration, Error Correction and Granger Causality techniques in evaluating the secondary data sourced from Central Bank of Nigeria. The results indicate that the time series variables are stationary as well as the prevalence of a significant long run relationship between the loans and advances disbursed by Nigerian banks and various forms of deposits. Further, the Error Correction Model (ECM) reveals an R^2 value of 65.6% which estimation is significant at 0.05 level while the Granger Causality results indicate significant uni-directional causality between bank credits and demand deposits flowing from demand deposit to loans and advances as well as a bi-directional causal relationship between fixed deposits and loans and advances. The study concludes that increase in business activities as indicated by expansion in operation of demand deposit accounts by Nigerian bank customers significantly influences the demand for business and private credits in Nigeria and consequently recommends intensified deposit and credit products development by Nigerian banks in order to meet the increasing demands for credit products by both the private and public business sectors in Nigeria.

Keywords: Loans and Advances, Demand Deposit, Savings Deposit, Fixed Deposit

1. Introduction

Financial sector plays fundamental roles in the growth of any economy. The effectiveness of these roles further depends on the level of development of the financial system. Banking occupies one of the most important positions in the financial system. This stems from the functions of the banking industry in modern economies especially as it advances trade and industry. The first formal appearance of commercial banking in Nigeria's financial sector was in 1892 with the establishment of the African Banking Corporation. It was acquired by the Elder Dempster in 1893 and later reorganized as the Bank of British West Africa (BBWA).

Deposit money banks are profit-oriented. They trade on depositors' funds and in the process, create risk assets. Term lending is one of the services deposit-money banks render to their varied individual, corporate and public sector customers. Lending operations therefore, constitute one of the significant vehicles through which banks aid increased investment activities thereby, economic growth of nations (Olokoyo, 2011).

At the same time deposit money banks are important savings mobilization and financial resource allocation institutions. In this direction, they function to create further wealth out of available financial resources bearing in mind, the principles of profitability, liquidity and solvency. Also, banks' lending decisions are further influenced by other factors such as the prevailing interest rate, level of their domestic and foreign investments, statutory bank liquidity and reserve ratios as well as loan/deposit ratios (Olokoyo, 2011).

Bank credit decisions are generally associated with significant risk. Consequently, they call for both caution and tact (Ezirim, 2005). In the light of present competitive banking environment in Nigeria, it becomes obvious that only objectively articulated bank lending policies and credit administration procedures can guarantee continued corporate survival.

Several studies including Udegbonam (1992), Cookey (1997), Uremadu (2007), Nnamdi (2007) and Cookey (2009) are more concerned with evaluating the determinants of bank credit portfolios as well as the contributions of deposit components to the funding of bank credit portfolios in Nigeria. These previous studies have therefore, largely failed to evaluate the extent to which possible long run relationships prevail in Nigeria among these banking operations variables and also, the nature and directions of possible causal interrelationships among them in order to evaluate the extent to which they promote and/or support themselves within the framework of Nigerian banking industry. The obvious need to address the above gaps therefore, constitutes the key problem of this study and further informs its objectives in the light of current data.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Framework

Levin (1996) argues that financial intermediaries play fundamental roles in national economic progress and also, that economic growth of nations significantly depends on the efficiency of operations of the financial intermediaries therein. Ajie et al (2006) define financial intermediation as the process of financial resource mobilization through financial intermediaries for subsequent lending to needy economic units. Financial intermediation theory as formalized by the studies of Goldsmith (1969) McKinnon (1973) and Shaw (1973) view financial markets as pivotal players in economic development. These studies argue that differences in national economic development highly correlate with the differences in the levels of their financial development. Robinson (1952) on the contrary argues that financial markets merely depend on domestic industry and as such, only grow to service same.

McKinnon (1973) and Shaw (1973) argue that policies leading to the repression of the financial markets reduce the incentives to save. They itemized the key elements of financial repression as; high reserve requirements on deposits, legal ceilings on bank lending and deposit rates, directed credits, restriction on foreign currency transactions as well as restriction on entry into banking activities. Within the framework of this study, bank deposits refer to the various compositions of deposit held by banks at any point in time. Oyejide and Soyode (1986) assert that generally, deposit interest rates, inflation rate, money supply among others, theoretically influence the composition of bank deposits. Tuke (1975) argues that societal income and its distribution could

also influence the level and composition of bank deposits. The study further asserts that the society's banking habit would tend to improve with enhancements in income level, educational development and also, public confidence in the banking system.

Ojo and Adewumi (1982) observe that seasonality and festivity factors significantly influence people's savings habits, while Akano (1983) observes that inflation tends to negatively affect the level of banks' deposits. At the same time, Nwankwo (1980) argues that when other investment outlets seem less appealing, people tend to patronize more of time deposit accounts as an alternative investment outlet for their surplus funds.

2.2 Review of Related Literature

Nwankwo (2002) observes that credit constitutes the largest income-earning asset in the portfolio of most banks. Consequently, it explains why banks consciously monitor and also, manage the quality of their credit portfolios at any point in time. Further, Chodechai (2004) advocates the need for careful pricing of loans by banks in the bid to recover costs and make reasonable profits. The study deems loan pricing as very necessary in order not to jeopardize the banks' chances of recovering such credits which if not properly addressed, may create room for bad debts and loan loss provisions. The study further argues that the nature and level of relationship with customers also influence banks' credit exposures.

Improved knowledge of customers' businesses tends to provide room for better credit information thereby, deepening credit relationships with the customers. Carletti et al (2006) however, observe that the need to diversify income yielding assets/investments further influences the decision of banks to lend. Nnamdi (2007) views the credit-deposit relationship from the supply side and evaluates the contributions of deposit composition and lending rates to the value of credits disbursed by Nigerian banks. The study employs step-wise regression analysis for the evaluation of secondary data collected from Central Bank of Nigeria's Statistical Bulletin over the period 1980 to 2004. The results indicate significant relationship between the study variables (savings deposit, demand deposit, fixed deposit, lending rates and the value of credits disbursed by banks). However, the stepwise regression analysis results indicate that savings deposit makes the highest contribution to the value of loans and advances disbursed by Nigerian banks while fixed deposits follows. However, lending rates and current deposits fail to significantly contribute to credits disbursed. The study however, concludes that contrary to theoretical expectations, lending rates are insignificant in explaining credit disbursements by Nigerian banks because Nigerians are basically interest insensitive and recommends less emphasis on interest rate management with respect to credit controls in Nigeria.

In the same light, Nwakanma and Mgbataogu (2013) examine the influence of interest rate reforms on financial intermediation function of commercial banks in Nigeria. The study employs dummy variables approach to Chow test for structural stability, co-integration and error correction techniques. The results reveal that although the intermediation function of the commercial banks has significantly improved as a result of the deregulation of interest rate, however, lending rates do not significantly influence demand for domestic credits in Nigeria.

Cookey (2009) identifies a number of variables that influence the allocation of credits to both the private and public sectors of the Nigerian economy. Applying Johansen's cointegration technique, the study finds that interest rate which is a very significant explanatory variable in developed economies is largely insignificant within the Nigerian framework. The study rather finds banks' deposits held by the Central Bank of Nigeria and aggregate deposit liabilities of the

operating banks as the significant explanatory variables. Consequently, the study recommends intensive deposit mobilization by the banks especially from the rural areas in order to enhance their volume of credit to the productive economic sectors.

Contrary to Cookey (2009), Diaka (1972) argues that interest rate is a very key variable that influences the decision of banks to grant and disburse loans. The study argues that banks have greater propensity to disburse more loans during periods of high lending rate regimes as it significantly contributes to their corporate profits. In the same vein, Awosika and Nwoko (1983) argue that the state of the economy is a significant determinant of bank lending exposures. Udegbumam (1992) finds that for Nigerian Merchant banks, interest rates and total deposit constitute significant influential variables while the gross domestic product exerts an insignificant influence. This is contrary to Cookey (1997), who finds GDP as a significant variable in explaining bank credit portfolios. Finally, Uremadu (2007) examines the determinants of banks' credits allocated to various sectors of Nigerian economy over the period 1997 to 2002. The study finds that the ratio of bank credits to the economy is significantly and positively determined by total demand deposit liabilities, lending rates and ratio of banks' investments to the GDP. On the other hand, bank balances with Central Bank of Nigeria tend to exert a significant influence on credits disbursed but in the negative direction.

3. MATERIALS AND METHODS

In order to ensure clarity and ease of understanding, this section is divided into subsections as presented below:

3.1 Data

The data for this study were collected as published from Central Bank of Nigeria's Statistical Bulletin covering the period 1981 – 2013 as presented in table 1 below:

Table 1: Loans and Advances, Demand Deposits, Fixed Deposits and Savings Deposits In The Nigerian Banking Industry 1981 – 2013 (#'M)

| YEAR | Total Loans and Advances TLA (#'M) | Demand Deposits DD (#'M) | Fixed Deposits FD (#'M) | Savings Deposits SD (#'M) |
|------|---------------------------------------|-----------------------------|----------------------------|------------------------------|
| 1981 | 8582.9 | 4880.9 | 3816.8 | 1979.2 |
| 1982 | 10275.3 | 5180.7 | 4517.00 | 2321.2 |
| 1983 | 11093.9 | 5855.6 | 5203.6 | 2879.3 |
| 1984 | 11503.6 | 6343.5 | 6030 | 3361.3 |
| 1985 | 12170.2 | 7046.2 | 6851 | 3699.9 |
| 1986 | 15701.6 | 6649.8 | 7217.6 | 4270.2 |
| 1987 | 17531.9 | 7998 | 9882 | 5206.7 |
| 1988 | 19561.2 | 10667.9 | 11274.5 | 7122.7 |
| 1989 | 22008 | 10188 | 7739.1 | 9237.8 |
| 1990 | 26000.1 | 15588.8 | 10175 | 13013.5 |
| 1991 | 31306.2 | 22049 | 10964.4 | 19395.3 |
| 1992 | 42736.8 | 33263.5 | 15713.1 | 26071.1 |
| 1993 | 65665.3 | 49923.6 | 23475.2 | 37054.8 |

| | | | | |
|------|------------|-----------|-----------|-----------|
| 1994 | 94183.9 | 65348.7 | 25889.5 | 49601.1 |
| 1995 | 144569.6 | 79469.4 | 29965.4 | 62135 |
| 1996 | 169437.1 | 95904 | 43999.8 | 68776.9 |
| 1997 | 385550.5 | 128163.9 | 53076.2 | 84099.5 |
| 1998 | 272895.5 | 142252.1 | 61263.2 | 101373.5 |
| 1999 | 322764.9 | 202152.1 | 110765.1 | 128365.8 |
| 2000 | 508302.2 | 345001.4 | 154406 | 164624.2 |
| 2001 | 796164.8 | 448021.4 | 235453.7 | 216509.4 |
| 2002 | 954628.8 | 503870.4 | 300140.1 | 244064.1 |
| 2003 | 1210033.1 | 577663.7 | 324676.4 | 312368.9 |
| 2004 | 1519242.7 | 728552 | 401080.6 | 359311.2 |
| 2005 | 1976711.2 | 946639.6 | 498952.4 | 401986.8 |
| 2006 | 2524297.9 | 1497903.7 | 852358 | 592514.8 |
| 2007 | 4813488.8 | 2307916.2 | 1465281.5 | 753868.8 |
| 2008 | 7799400.1 | 3650643.9 | 2293605.8 | 1091812.2 |
| 2009 | 8912143.1 | 3386526.5 | 3147266.3 | 1171917.8 |
| 2010 | 7706430.6 | 3830282 | 2858793.6 | 1589175.4 |
| 2011 | 7312726 | 4920850.2 | 2704981.1 | 1861411 |
| 2012 | 8150030.3 | 5069992 | 3317280.9 | 2017845.3 |
| 2013 | 10005000.6 | 5160000.8 | 2839000.4 | 2365000 |

Source: Central Bank of Nigeria (CBN)'s Statistical Bulletin 2012, 2013

3.2 Specification of Tools for Analysis and Tests

As stated in section 1 above, the need to evaluate the extent to which long run relationships prevail among various components of banks' deposits and credit portfolios as well as the nature and directions of prevailing causal relationships form the key objectives of this study. Consequently, the following tests are carried out to ensure that the key objectives are achieved – Stationarity (Unit root) test, Cointegration test, Error Correction estimates and Causality tests. This subsection is further subdivided as follows:

3.2.1 Test for Stationarity (Unit Root Test)

This study investigates the stationarity of the time-series variables. Non stationarity of the time series data could lead to spurious estimates. In view of the above, the Augmented Dickey-Fuller (ADF) test was employed in accordance with equation (1) below;

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \dots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_{t, \dots, 1}$$

Where;

α = constant,

β = the coefficient on a time trend

P = the lag order of the autoregressive process

Y = variable of choice

Δ = first difference operator

For the ADF test, the null hypothesis is $y = 0$ and the alternative hypothesis is $y < 0$. Rejection of the null hypothesis is an indication that the series y is stationary.

3.2.2 Cointegration Tests

Co-integration tests are carried out in order to ascertain the nature of long-run relationship which prevails among the variables of study. This is done through the Johansen's Co-integration test. The decision rule is that the 'Trace Statistic' is greater than the 'Critical Value'.

3.2.3 Error Correction Estimates

It is theoretically expected that some deviations from long run relationship could occur due to distortions in any of the variables in the short run. Consequently, an Error Correction Model (ECM) is employed to adjust for these short-run dynamics.

3.2.4 Test for Causality

The test for causality or feedback effects between the specified variables was executed through the employment of Granger Causality Technique in order to ascertain the extent to which the study variables do promote and/or support themselves in an economic or financial setting. A time series X is said to Granger-cause Y if in a series of regression equations, the inclusion of lagged values of X improves the explanations for Y and vice versa.

Granger Causality relationships are typified by equations (2) and (3) below;

$$(Y)_t = \alpha + \sum_{i=1}^m \beta_i (Y)_{t-i} + \sum_{j=1}^m \gamma_j (X)_{t-j} + U_t \dots\dots\dots(2)$$

$$(X)_t = \delta + \sum_{i=1}^m \gamma_i (X)_{t-i} + \sum_{j=1}^m \beta_j (Y)_{t-j} + \varepsilon_t \dots\dots\dots(3)$$

Where Y_t and X_t are the time series variables under test, while U_t and ε_t are serially independent random vectors with zero mean and finite covariance matrix

3.3 Model Specification

This study seeks to ascertain the nature and dimensions of relationship between deposit composition of banks and loans and advances disbursed. Total loans and advances constitutes the dependent variable, while demand deposits (DD), fixed deposits (FD) and saving deposits (SD) represent explanatory variables of the study.

The econometric form of the model is stated as:

$$TLA_t = f(DD, FD, SD) \dots\dots\dots (4)$$

Where;

TLA = Total Loans and Advances

DD = Demand Deposits

SD = Saving Deposits

FD = Fixed Deposits.

For estimation purposes, equation (4) is further restated as follows;

$$TLA_t = \alpha_0 + \beta_1 DD_t + \beta_2 FD_t + \beta_3 SD_t + \varepsilon_t \quad \text{----- (5)}$$

Where;

α_0 represents the constant term. ε_t is a white noise disturbance term and β_1, β_2 , and β_3 , are parameters to be estimated.

4.0 PRESENTATION OF EMPIRICAL RESULTS

4.1 STATIONARITY TESTS

The result of stationarity (unit root) test is shown in the table 2 below;

Table 2: Results of ADF (Unit Root) Tests:

| Variables | ADF t-statistics | Critical value | | | Order | Probability |
|-----------|------------------|----------------|-----------|-----------|-------|-------------|
| | | 1% | 5% | 10% | | |
| TLA | -8.248046 | -3.711457 | -2.981038 | -2.629906 | 1(2) | 0.0000 |
| DD | -9.947055 | -3.686914 | -2.971853 | -2.625121 | 1(2) | 0.0000 |
| FD | -3.904370 | -3.699871 | -2.976263 | -2.627420 | 1(2) | 0.0007 |
| SD | -7.782071 | -3.752946 | -2.998064 | -2.638752 | 1(2) | 0.0000 |

Source: Author's Computation using E-views7.1 software

The Unit root (ADF) results presented in table 2 above show that for all the variables TLA, DD, FD and SD, the absolute values of the ADF Test Statistics for all the study variables are relatively higher than all the associated critical values at various levels of significance (1%, 5% and 10%). Further, the variables are stationary at second difference and are consequently said to be integrated of order 2; i.e. I (2). Their associated probability values show that they are all significant at 0.05 level.

4.2 Co-integration Test Results

The results of the Johansen's Co-integration tests are presented in table 3 below;

Table 3: Results of Johansen's Co-integration Tests

Sample (adjusted): 1983 2013

Included observations: 29 after adjustments

Trend assumption: Linear deterministic trend

Series: TLA DD FD SD

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---------------------------|------------|-----------------|---------------------|---------|
| None * | 0.996812 | 260.7567 | 47.85613 | 0.0001 |
| At most 1 * | 0.887755 | 94.05814 | 29.79707 | 0.0000 |

| | | | | |
|-------------|----------|----------|----------|--------|
| At most 2 * | 0.629188 | 30.63311 | 15.49471 | 0.0001 |
| At most 3 | 0.062233 | 1.863371 | 3.841466 | 0.1722 |

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Computation Using EViews Software

The results of Johansen's maximum likelihood co-integration above do not indicate any full-rank trend. They show that there are three co integrating equations. This is strong evidence to suggest that there exists a long-run relationship among the study variables. Therefore, the null hypothesis of no co-integration is rejected. Accordingly, the results provide compelling evidence that a significant long run relationship exists between the various components of banks' deposits and disbursed loans and advances.

4.3 Presentation of Error Correction Model Estimates

The results of the Error Correction Model are shown in table 4 below;

Table 4: Results of the Error Correction Model (ECM)

Dependent Variable: D(TLA)

Method: Least Squares

Date: 07/15/15 Time: 14:09

Sample (adjusted): 1982 2013

Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| D(DD) | 0.334193 | 0.390903 | 0.854927 | 0.0037 |
| D(FD) | 2.053416 | 0.349741 | 5.871241 | 0.0000 |
| D(SD) | 0.988506 | 1.022601 | 0.966658 | 0.3420 |
| ECM(-1) | -0.797690 | 0.236341 | -3.375159 | 0.0022 |
| R-squared | 0.655947 | Mean dependent var | | 312388.1 |
| Adjusted R-squared | 0.619084 | S.D. dependent var | | 780843.0 |
| S.E. of regression | 481923.5 | Akaike info criterion | | 29.12543 |
| Sum squared resid | 6.50E+12 | Schwarz criterion | | 29.30864 |
| Log likelihood | -462.0068 | Hannan-Quinn criter. | | 29.18616 |
| Durbin-Watson stat | 1.546366 | | | |

Source: Author's computation using Eviews 7.1

The ECM results shown in table 4 above reveal that the explanatory variables jointly account for 65.6 percent of the changes in total loans and advances (TLA) in the long run after adjusting for short run distortions. The Durbin-Watson statistics (1.546) is within the acceptable range. The absolute value of the ECM is 79.76 percent. It is statistically significant at 0.05 level.

The coefficients of the study explanatory variables indicate the sensitivities of loans and advances in the long run to changes in their values respectively. Consequently, while a unit increase in each of demand and Fixed deposit induces 0.334 and 2.05 unit increase in demand for loans and advances in Nigerian banks respectively, one unit increase in savings deposit on the other hand induces an insignificant 0.988 unit change in loans and advances, which however, is insignificant at 0.05 level.

4.4 Presentation of Granger Causality Tests.

The results of Granger Causality tests are presented below in table 5;

Table 5: Results of Granger causality Tests:

Pairwise Granger Causality Tests

Date: 07/15/15 Time: 14:14

Sample: 1981 2013

Lags: 2

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|--|-----|--------------------|------------------|
| DD does not Granger Cause TLA TLA does not Granger Cause DD | 31 | 16.0803 1.94873 | 3.E-05 0.1627 |
| FD does not Granger Cause TLA TLA does not Granger Cause FD | 31 | 5.77695 24.5495 | 0.0084 1.E-06 |
| SD does not Granger Cause TLA TLA does not Granger Cause SD | 31 | 30.6393 6.40543 | 0.2535 0.0855 |
| FD does not Granger Cause DD DD does not Granger Cause FD | 31 | 2.18539 105.097 | 0.1327 3.E-13 |
| SD does not Granger Cause DD DD does not Granger Cause SD | 31 | 2.59563 2.97770 | 0.0938 0.0685 |
| SD does not Granger Cause FD FD does not Granger Cause SD | 31 | 19.7291 7.17337 | 6.E-06 0.0033 |

Source: Author's computation using Eviews 7.1

Table 5 above shows that there is a significant uni-directional relationship between demand deposit and total loans and advances with causality flowing from demand deposits to loans and advances. On the other hand, significant bi-directional causality is observed between fixed deposit and loans and advances, implying that they significantly promote and/or support themselves. Savings deposit and loans and advances are observed to exhibit no evidence of significant causality at 0.05 level.

5. DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

The results of this study confirm the prevalence of significant long run relationship between bank credits in Nigeria and deposit products. They indicate that expansions in demand deposit holdings significantly promote the demand for bank loans and advances in Nigeria. The continued expansion in business and banking related opportunities evidenced by growths in Nigerian's private and public sector businesses are mostly captured through operations of demand deposit accounts. They significantly drive rapid demand in credit products in order to meet the demands of the various growing business sectors in Nigeria.

The results further reveal that fixed deposit growth equally supports increased demand for loans and advances in Nigerian banks. This probably derives from the fact that a significant number of fixed deposit customers tend to use their fixed deposit accounts as cash-backed securities for

their credit facilities. This build up is over time, expected to constitute a significant proportion of securities tendered.

In view of the discussions above, it is concluded that demand for loans and advances in the Nigerian banking industry is largely promoted by expansions in demand and fixed deposit holdings. Consequently, it is recommended that Nigerian banks should intensify credit products development in order to support the growing needs of business operators in Nigeria as evidenced by continued expansion in demand for credit facilities. Further, they should also, engage in significant deposit products development and diversification in order to meet the credit demands of expanding business operations since the operating banks mainly lend from pooled corporate funds to sustain their credit activities and corporate performance.

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