

## The Determinants of Bank Profit: A Disaggregated Analysis of Commercial Bank's Profit in Nigeria

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### Abstract

*This study sought to establish if market structure, policy and regulatory variables contributed in any way to bank profitability in Nigeria using ten Nigeria banks. In order to find out how the above mentioned variables relates to bank profitability in Nigeria, we use the ordinary least square multiply regression method on secondary data pertaining to 1994 through 2003 of these ten selected banks. We found that market structure variables represented by total asset, total deposit and number of bank branches to be the major determinant of profitability of First bank, Union bank, Zenith bank and Afribank. We found policy variables represented by demand deposit to total deposit rate, time/saving deposit to total deposit ratio and loans/advances to total deposit ratio to be the determinant of profit in only cooperative development bank while regulatory variables represented by inflation rate, interest rate and exchange rate to be the determinant of profit in first bank, guaranty trust bank, cooperative development bank and chartered bank. We therefore recommend among others that monetary authorities should create an enabling environment to enable the banks to adopt policies that will enhance their performance, particularly in their lending activity and that they should continue with the policy of expansion of bank braches particularly in the rural areas and that such expansion should be approved only when it is certified that there would be greater incremental revenue to the banks than incremental expenses.*

**Keywords:** Determinants, banks, profitability, policies, branches

### 1.0 Introduction

Recent trends in financial deregulation, technological and financial innovations and globalization are certainly posing new challenges for participants in the Nigerian financial market sector. To this extent, advances in computer technology and telecommunications are expanding the frontiers of electronic banking and internet based financial services. These developments are certainly reshaping the structure of the financial institutions with regards to internal operations, interaction with customers and inter-institutional relationships. In addition, there has been proliferation of new financial services and overlapping of markets between bank and non-bank financial intermediaries. All these developments could certainly have implications on costs and revenues and hence on the profitability of Nigerian commercial banks (Foyston and Almeida, 1992).

Commercial banks constitute the core of a nation's financial system because of the retail nature of banking business via extensive branch network. Through their lending activities, they provide substantial financing to all sectors of the economy such as the households, businesses, non-business organizations and government agencies. They also facilitate the flow of goods and services from the producers to consumers by providing substantial financial assistance. They therefore, operate as an instrument or catalyst for economic growth and development (Akpan, 2004).

Commercial banks are profit making organization. They manage funds in a manner as to cover their operating costs and profit. They are able to do this through money creation and their involvement in fee earning outlets. In other words, the money deposited in banks by customers is given out as loans/advances and interest rates are charged on these loans/advances. The interests become income to the banks. As money keeps on changing hands, the process of money creation is effected through their credit creation capability (Awyawwu, 1993).

Agu (1988), opined that banks today are under great pressure to perform to meet the objectives of their shareholders, employees, depositors and the borrowing customers while somehow keeping government regulators satisfied that:

- a) The market structure variables which comprise total assets, total deposits and number of bank branches;
- b) Policy variables which include demand deposit to total deposit ratio, time and savings deposits to total deposit ratio and loans and advances to total asset ratio; and
- c) Regulatory variables which include inflation rate, interest rate and foreign exchange rate are the basic determinants of bank profits in Nigeria.

As banking organizations have grown in recent years, more and more banks been forced to turn to the money and capital markets to raise funds through the sale of stocks, bonds and short term securities. For example, some of the new generation banks like Zenith international bank, Guaranty trust bank, Oceanic bank, Diamond bank among others have all turned to the capital market for public and private placements. In many cases, the growth of local deposits has simply been inadequate to fund the growing needs of customers for loans/advances and new services. But banks entry into the open market to raise funds means that their financial statements are increasingly being scrutinized by investors and by the general public. This development has placed management under great pressure to set and meet bank performance objectives.

Though commercial banks seem to be one of the highly profitable institutions within the Nigerian economy, higher performance could however be attained in terms of their individual returns and obligation to the public. This should be so if commercial banks play a leading role in the growth and development of the Nigerian economy. Therefore, the determinants of bank profits which include the followings: market structure, policy and regulatory variables should be pursued with great intensity for an efficient and effective profitability management.

The below poor performance of commercial banking in Nigeria is as a result of the following problems:

- a) The non-existence of an appropriate and adequate financial network to determine the actual flow of funds in the economy leading to large volumes of funds lying idle or underutilized in our rural communities for investment.
- b) The repressive measures of rigid interest rate controls which restrict commercial banks from playing a more active role in the task of economic development and the refusal of commercial banks to lend on a medium and long term basis and their inability and unwillingness to undertake innovative financing.
- c) Inadequate cost control measures and the absence of monetary and fiscal policy measures that is consistent and compatible with development. This is in addition to the volatile or unstable nature of commercial banks deposits.

### **1.1 Objectives of the study**

The main objective of the study is to identify the determinants of commercial banks profits in Nigeria and disaggregate them in order to establish their contributions to different bank's profits as well as provide insight into the characteristics and practice of commercial bank activities and recommend measures of improving bank profitability.

### **1.2 Research hypotheses**

The following hypotheses are presented to be tested.

Hypothesis I

$H_0$ : There is no significant relationship between market structure variables and bank profitability in Nigeria.

Hypothesis II

$H_0$ : There is no significant relationship between policy variables and bank profitability in Nigeria.

Hypothesis III

$H_0$ : There is no significant relationship between regulatory variables and bank profitability in Nigeria.

## **2.0 Theoretical issues and literature review**

### **2.1 Theoretical framework**

Every corporation which is profit oriented operates a balance sheet in which the assets and liabilities of the corporation are stated.

Liabilities consist of the indebtedness of the corporation to the public, while assets are those items which stand to the credit of the corporation, and determine the net worth, or the credit worthiness of the enterprise (Onoh, 2002).

Commercial bank assets are classified into non-earning assets and earning assets. While the non-earning assets are basically the primary reserves which neither contribute to the broadening of bank's loanable funds nor to the profits of the bank's shareholders, the earning assets are known as secondary reserves made up of loans and advances, which constitute in normal times the largest portion of a commercial bank's earning assets (Onoh, 2002).

However, data availability and the nature of this research, dictate that the following factors be considered as determinants of commercial bank profits and profitability performance.

- i. Market structure variable: This comprise total assets, total deposit and number of bank branches;
- ii. Policy variable: This includes demand deposit to total deposit ratio, time and savings deposit to total deposit ratio and loans and advances to total assets ratio; and
- iii. Regulatory variable: This variable includes inflation rate, interest rate and exchange rate.

## **2.2 Total assets**

Total assets represent an important and generally used dimension in which the size of a bank is measured and are also a very important factor in the operational efficiency of any economic unit. There is no doubt that large banks enjoy an advantage in market power compared with small banks. This is because of the theoretical possible and often available economics of scale.

## **2.3 Total deposit**

According to Anate (1991), the major portion of liquidity need is directly related to the volume and stability of bank demand, savings and time deposits. Naturally, all deposits are not equally active and therefore do not require the same degree of liquidity. The actual requirement is related to the likelihood that any specific deposit or group of deposits will be withdrawn. Forecasts cannot be made with certainty but it should suffice to rank potential demands for funds by degrees of intensity; those that will surely occur, those that are less likely but, under certain circumstances could possibly occur.

## **2.4 Total number of bank branches**

Another measure of structure of the Nigerian banking system used in this study which particularly concerns the regulatory authorities is the number of bank offices. Economic theory implies that a banking system with numerous competing banks will perform better in terms of output and prices than a banking system dominated by a few banks. This is based on the assumption that financial service do not differ from other commodities as far as the desirability of satisfying the marginal criteria of welfare economic is concerned. Barns (1982) however, noted that because of problems of control or coordination and of fixed costs at the branch level, high costs results if a given level of assets is split up among more and more branches.

## **2.5 Demand deposits to total deposits ratio**

Total demand deposits account for the stability in commercial bank's total deposit base. This may be due to the often observed fact in Nigeria, the small servers who are the main holders of savings deposits display a more erratic deposit and withdrawal behaviour than the firms which are the principal holders of demand deposits. Therefore, the more the banks have a higher proportion of more deposits in their deposit portfolio, the lower will be the cost and thus the higher will be the profit.

The relationship between demand deposits to total deposits ratio and bank profitability seems certain. This is so because the ratio of demand deposit to total deposits may be expected to exhibit a positive relationship with bank profitability, an increase in the proportion of demand deposits to total deposits implies a high level of real output of the banking sector.

## **2.6 Time and savings deposits to total deposit ratio**

The deposit mix (the time and savings deposits to total deposits ratio) and the level of intermediation indicated by the loans- deposits ratio are considered as appropriate policy variable influencing a banking system's performance.

In a study of medium size banks, Bryan (1972), found that the most important single factor explaining profitability was the ratio of time plus savings deposits to total deposits – the deposit mix, by determining the liquidity needs of the banking system.

The relationship between the time and savings deposits to total deposits ratio and bank profitability seems uncertain. There are two sides of the argument. The first is that the ratio of time and savings deposits to total deposits may be expected to exhibit a negative relationship with bank profitability, an increase in the proportion of time and savings deposits to total deposits implies a low level of real output of the banking system. Time and savings deposits also require an explicit interest cost to attract; because they are a more costly source of bank deposits, the greater the proportion of time and savings deposits to total deposits, the greater the interest cost of funds and thus the lower the profit rate.

On the other hand, the ratio of time and savings deposits to total deposits might be expected to be positively related to bank's rate of profit. Clark (1980), argued that time and savings deposits represents a much more stable source of funds than do demand deposits.

### **2.7 Loans and advances to total assets**

The lending performance measure to be discussed here is the ratio of total loans to total assets. A priori, the greater the proportion of the banks resources placed in loans, the better the bank's performance (Brucker, 1970). The ratio of total loans to total assets measures broadly the ability and the willingness of banks to convert their idle cash deposits into productive resources. It is in this way that the banks act as effective agents of capital formation (Moulton, 1981).

### **2.8 Inflation rate**

Changes in the general price level or inflation conditions in the economy are an important environmental condition which may affect both the cost and revenue of any organization including the banking firms. The impact of inflation rates on bank profitability will depend on its effect on bank costs revenues. The effect of inflation on bank performance depends on whether the inflation is anticipated or unanticipated. If the inflation is fully anticipated and interest rates are adjusted accordingly resulting in revenues, which increases faster than costs, then it may have a positive impact on profitability. However, if the inflation is not anticipated and the bank are sluggish in adjusting their interest rates then there is a possibility that bank cost may increase faster than bank revenues and hence adversely affect bank profitability.

### **2.9 Interest rates**

Changing market conditions would also have an impact on the market interest rates, which would certainly have a direct impact on bank profitability. The difficulty however, is in determining the appropriate measure of market interest rate. Since 2002, interest rate regime has been market driven. However, the CBN will influence the level and direction of interest rate through periodic changes in its minimum rediscount rate. The current wide spread between banks' deposit and maximum lending rates reflects the uncompetitiveness and inefficiency of the interest rate structure which has serious implications for savings, investment and output growth. However, the lending rates are based on a base lending rate (BLR) which is computed for each bank by taking the cost of funds into account. Furthermore, the average annual BLR for all commercial banks in the country is reported in the central bank's annual report. Thus, the average annual base lending rate is used as a proxy for market interest rate in this study.

### **2.10 Exchange rate**

As a result of low capital accumulation in Nigeria, the domestic market cannot alone provide the financial needs of the industries in the economy. To compliment domestic sources of funds, resource to international or foreign sources has become inevitable.

In order to attract foreign portfolio investments, the Federal Government in recent times introduced a number of measures. The Nigeria investment promotion commission decree No. 16 and foreign exchange monitoring and miscellaneous provisions decree No. 17 of 1995 are considered as the major policy initiatives of the government to reduce institutional and regulatory impediments for foreign investment floors. Thus, exchange rate has direct and indirect linkages with the ultimate objectives of economic policy, which form the bedrock of monetary programme. It can also induce a budget deficit, which has financing implications in an economy where banks revenue is derived mainly from foreign exchange earnings.

### 3.0 Methodology

#### 3.1 Sources of data

The data for this study were generated from secondary sources. The bulk of the data were extracted from the publications of the central bank of Nigeria and annual reports and account of the various commercial banks used in the study. The data extracted from these documents include data on total assets, total deposits, number of bank branches, demand deposit, time and savings deposits, loans and advances, inflation, interest and exchange rates and data on bank profits.

#### 3.2 Model specification

The following models were built in line with the hypotheses of the study.

1.  $NPFT = B_0 + B_1 TA + B_2 TD + B_3 NBB + U_t$
2.  $NPFT = B_0 + B_1 DDTDR + B_2 TSDTDR + B_3 LATAR + U_t$
3.  $NPFT = B_0 + B_1 INFR + B_2 INTR + B_3 EXR + U_t$

#### Variables

$B_0, B_1, B_2, B_3$ , are regression parameters.  $U_t$  is the error term. The market structure variables used are:

NPFT = Net Profit

TA = Total Asset

TD = Total Deposit

**NBB = Number of Bank Branches**

Policy variables used are:

DDTDR = Demand deposit to total deposit rate

TSDTDR = Time/savings deposit to total deposit ratio

LATAR = Loans/Advances to total asset ratio

The regulatory/environment variables used are:

INFR = Inflation rate

INTR = Interest rate

EXR = Exchange rate

#### Limitations of study

One of the limitations of this study is the use of annual data rather than quarterly data whereas quarterly data or even monthly data are only available for some of the variables used. Others are only available in annual form. Furthermore, a major limitation of this study is the methodological constraint, given the current development in theoretical econometrics. It is therefore suggested that the use of more robust system estimation technique be attempted in future to seek the establishment of a bidirectional cause and effect relationship among the variables.

### 4.0 Empirical results and analysis

#### 4.1 Data analysis

In this section, we carry out the analysis of the estimated results. The analysis is done on bank by bank with each bank having three different forms of equation respectively under the following headings: market structure variable equation (1994 – 2003), policy variable equation (1994 - 2003) and regulatory variable equation (1994 - 2003).

##### 1. UBA Regression Equation Result

$$i) \quad NPFT = -12972435 - 0.06050TA + 0.08478TD + 65839.022NBB$$

$$\quad \quad \quad (-0.814) \quad (-0.651) \quad (0.682) \quad (0.822)$$

$$R^2 = 49\% \quad R^2(\text{adj}) = 23\% \quad F\text{-stats} = 1.907 \quad DW = 2.482$$

$$ii) \quad NPFT = 302024.98 + 29767.625DDTDR + 18768.341TSDTDR - 109892.4 LATAR$$

$$\quad \quad \quad (0.079) \quad (0.654) \quad (0.582) \quad (-1.528)$$

$$R^2=48\% \quad R^2(\text{adj}) = 22\% \quad F\text{-stats} = 1.828 \quad DW = 1.925$$

$$iii) \quad NPFT = -4731759 - 9669.2061INFR + 54052.977INTR + 211619.33EXR$$

$$\quad \quad \quad (-1.104) \quad (-0.538) \quad (0.738) \quad (1.104)$$

$$R^2 = 36\% \quad R^2(\text{adj}) = 4\% \quad F\text{-stats} = 1.128 \quad DW = 1.752$$

**2. First Bank Regression Equation Result**

- i)  $NPFT = 23936959 + 0.05134TA - 0.0003889TD - 90393.483NBB$   
 (1.462) (2.921)\*\* (-0.030) (-1.519)  
 $R^2 = 88\%$   $R^2$  (adj) = 82%  $F_{-stats} = 14.46$   $DW = 2.319$
- ii)  $NPFT = 10069646 + 150630.58DDTDR - 98494.32TSDTDR - 364326.4LATAR$   
 (0.593) (0.906) (-0.406) (-1.399)  
 $R^2 = 42\%$   $R^2$  (adj) = 13%  $F_{-stats} = 1.45$   $DW = 0.408$
- iii)  $NPFT = -19707347 - 37897.924INFR - 72892.677INTR + 1126681.8EXR$   
 (-2.014)\*\* (-0.925) (-0.436) (2.576)\*\*  
 $R^2 = 57\%$   $R^2$  (adj) = 35%  $F_{-stats} = 2.646$   $DW = 2.121$

**3. Union Bank Regression Equation Result**

- i)  $NPFT = -36014873 + 0.009888TA - 0.01424TD + 141725.50NBB$   
 (2.057) 0.626 (-0.451) (2.033)\*\*  
 $R^2 = 97\%$   $R^2$  (adj) = 95%  $F_{-stats} = 57.213$   $DW = 1.662$
- ii)  $NPFT = -46656124 + 640695.79DDTDR + 532502.34TSDTDR - 231832.6LATAR$   
 (-2.189)\*\* (3.024)\*\* (2.033)\*\* (-1.471)  
 $R^2 = 64\%$   $R^2$  (adj) = 47%  $F_{-stats} = 3.612$   $DW = 1.230$
- iii)  $NPFT = -1426602 - 152.742INFR - 10086.130INTR + 772783.91EXR$   
 (-1.913)\*\* (-0.002) (-0.377) (2.383)\*\*  
 $R^2 = 56\%$   $R^2$  (adj) = 34%  $F_{-stats} = 2.519$   $DW = 1.221$

**4. Guaranty Trust Bank Regression Equation Result**

- i)  $NPFT = 135939.73 + 0.02151TA + 0.03164TD - 9478.484NBB$   
 (0.999) (0.886) (1.036) (-0.347)  
 $R^2 = 98\%$   $R^2$  (adj) = 97%  $F_{-stats} = 97.280$   $DW = 2.517$
- ii)  $NPFT = -4307756 + 88725.101DDTDR - 5565.737TSDTDR + 18543.245LATAR$   
 (-0.841) (1.632) (-0.066) (0.471)  
 $R^2 = 43\%$   $R^2$  (adj) = 15%  $F_{-stats} = 1.510$   $DW = 0.813$
- iii)  $NPFT = -8196692 - 10051.759INFR - 31241.8291INTR + 454811.34EXR$   
 (-4.355)\* (-1.273) (-0.972) (5.409)\*  
 $R^2 = 84\%$   $R^2$  (adj) = 76%  $F_{-stats} = 10.707$   $DW = 2.290$

**5. Cooperative Development Bank Regression Equation Result**

- i)  $NPFT = -41811.983 + 0.101TA - 0.118TD + 3958.245NBB$   
 (-0.461) (3.080)\*\* (-2.856)\*\* (0.447)  
 $R^2 = 86\%$   $R^2$  (adj) = 79%  $F_{-stats} = 12.050$   $DW = 2.955$
- ii)  $NPFT = 10098825 - 98501.561DDTDR - 10142TSDTDR + 242.6061LATAR$   
 (2.937)\*\* (-2.822)\*\* (-2.985)\*\* (0.162)  
 $R^2 = 86\%$   $R^2$  (adj) = 79%  $F_{-stats} = 12.105$   $DW = 2.298$
- iii)  $NPFT = -730398.5 + 1301.437INFR - 1587.533INTR + 38172.755EXR$   
 (-5.037)\* (0.525) (-2.612)\*\* (5.890)\*  
 $R^2 = 90\%$   $R^2$  (adj) = 85%  $F_{-stats} = 17.726$   $DW = 1.707$

**6. Diamond Bank Regression Equation Result**

$$\text{i) NPFT} = -52213.575 - 0.03794\text{TA} + 0.004587\text{TD} + 40721.513\text{NBB}$$

$$\begin{matrix} (-0.158) & (-0.815) & (0.070) & (1.619) \\ R^2 = 73\% & R^2(\text{adj}) = 60\% & F_{\text{-stats}} = 5.364 & \text{DW} = 1.908 \end{matrix}$$

$$\text{ii) NPFT} = 34828670 - 296505.1\text{DDTDR} - 380626.4\text{TSDTDR} - 40900.473\text{LATAR}$$

$$\begin{matrix} (1.619) & (-1.411) & (-1.742) & (-4.585) \\ R^2 = 90\% & R^2(\text{adj}) = 85\% & F_{\text{-stats}} = 17.493 & \text{DW} = 1.405 \end{matrix}$$

$$\text{iii) NPFT} = 2172424.3 + 303.349\text{INFR} + 31092.552\text{INTR} - 128796.3\text{EXR}$$

$$\begin{matrix} (1.320) & (0.044) & (1.106) & (-1.751) \\ R^2 = 37\% & R^2(\text{adj}) = 52\% & F_{\text{-stats}} = 1.164 & \text{DW} = 0.871 \end{matrix}$$

**7. Inland Bank Regression Equation Result**

$$\text{i) NPFT} = 34519.345 - 0.02192\text{TA} + 0.06518\text{TD} - 1737.104\text{NBB}$$

$$\begin{matrix} (0.184) & (-0.3458) & (0.597) & (-0.123) \\ R^2 = 66\% & R^2(\text{adj}) = 49\% & F_{\text{-stats}} = 3.889 & \text{DW} = 2.596 \end{matrix}$$

$$\text{ii) NPFT} = -3402537 + 32993.456\text{DDTDR} + 36542.147\text{TSDTDR} + 4832.052\text{LATAR}$$

$$\begin{matrix} (-1.512) & (1.465) & (1.713) & (0.460) \\ R^2 = 42\% & R^2(\text{adj}) = 13\% & F_{\text{-stats}} = 4.437 & \text{DW} = 1.592 \end{matrix}$$

$$\text{iii) NPFT} = -1007660 - 3358.066\text{INFR} - 8447.904\text{INTR} + 64556.512\text{EXR}$$

$$\begin{matrix} (-2.364)^{**} & (-1.880)^{***} & (-1.160) & (3.380)^* \\ R^2 = 72\% & R^2(\text{adj}) = 58\% & F_{\text{-stats}} = 5.078 & \text{DW} = 1.347 \end{matrix}$$

**8. Zenith Bank Regression Equation Result**

$$\text{i) NPFT} = 66672.363 + 0.03455\text{TA} - 0.009810\text{TD} + 18012.5\text{NBB}$$

$$\begin{matrix} (-0.814) & (3.979)^* & (-0.655) & (2.551)^{**} \\ R^2 = 99.8\% & R^2(\text{adj}) = 99.8\% & F_{\text{-stats}} = 1327.867 & \text{DW} = 1.760 \end{matrix}$$

$$\text{ii) NPFT} = -164.2032 + 29.25904\text{DDTDR} + 13.06150\text{TSDTDR} + 0.930152\text{LATAR}$$

$$\begin{matrix} (-2.0046)^{**} & (1.972)^{**} & (2.414)^{**} & (0.8933) \\ R^2 = 62\% & R^2(\text{adj}) = 44\% & F_{\text{-stats}} = 3.318 & \text{DW} = 0.682 \end{matrix}$$

$$\text{iii) NPFT} = -12534634 - 20531.522\text{INFR} - 58180.541\text{INTR} + 704816.97\text{EXR}$$

$$\begin{matrix} (-4.182)^* & (-1.634) & (-1.136) & (5.262)^* \\ R^2 = 84\% & R^2(\text{adj}) = 76\% & F_{\text{-stats}} = 10.457 & \text{DW} = 1.191 \end{matrix}$$

**9. Chartered Bank Regression Equation Result**

$$\text{i) NPFT} = 196679.06 + 8.126\text{TA} - 2.105\text{TD} - 36343.549\text{NBB}$$

$$\begin{matrix} (-0.900) & (1.833) & (-0.274) & (-1.605) \\ R^2 = 97\% & R^2(\text{adj}) = 95\% & F_{\text{-stats}} = 57.910 & \text{DW} = 2.86 \end{matrix}$$

$$\text{ii) NPFT} = 47009563 - 487605.1\text{DDTDR} - 470882.9\text{TSDTDR} + 39549.314\text{LATAR}$$

$$\begin{matrix} (0.683) & (-0.721) & (-0.674) & (1.726) \\ R^2 = 63\% & R^2(\text{adj}) = 44\% & F_{\text{-stats}} = 3.387 & \text{DW} = 1.415 \end{matrix}$$

$$\text{iii) NPFT} = -5056756 - 21561.568\text{INFR} - 6696.2731\text{INTR} + 276808.67\text{EXR}$$

$$\begin{matrix} (-7.020)^* & (-1.752) & (-2.218)^{***} & (8.598)^* \\ R^2 = 93\% & R^2(\text{adj}) = 90\% & F_{\text{-stats}} = 27.135 & \text{DW} = 2.155 \end{matrix}$$

**10. Afribank Regression Equation Result**

$$\begin{aligned} \text{i) } NPFT &= 2364787.8 + 0.149TA - 0.156TD - 23161.557NBB \\ (0.350) & \quad (2.148)^{***} \quad (-1.740) \quad (-0.434) \\ R^2 &= 63\% \quad R^2(\text{adj}) = 44\% \quad F_{\text{-stats}} = 3.371 \quad DW = 2.275 \end{aligned}$$

$$\begin{aligned} \text{ii) } NPFT &= -5125870 + 532688.88DDTDR + 518219.82TSDTDR + 15904.551LATAR \\ (-1.028) & \quad (1.041) \quad (1.020) \quad (0.550) \\ R^2 &= 18\% \quad R^2(\text{adj}) = 24\% \quad F_{\text{-stats}} = 0.428 \quad DW = 1.637 \end{aligned}$$

$$\begin{aligned} \text{iii) } NPFT &= -3722321 - 4537.406INFR - 62980.47INTR + 259591.80EXR \\ (-2.634)^{**} & \quad (-0.766) \quad (-2.608)^{**} \quad (4.109)^* \\ R^2 &= 76\% \quad R^2(\text{adj}) = 64\% \quad F_{\text{-stats}} = 6.386 \quad DW = 2.694 \end{aligned}$$

The numbers in bracket represents t-value, while the number directly beneath represents the parameter estimates. \* indicates that the estimated coefficient is statistically significant at 1% level of significance, \*\* indicate that the estimated coefficient is statistically significant at 5% level of significance while \*\*\* indicate that the estimated coefficient is statistically significant at 10% level of significance.

**4.2 Test of hypotheses**

The researcher earlier identified three hypotheses which will be tested at 5% level of significance for all the ten banks used in this study.

**Hypothesis I**

$H_0$ : There is no significant relationship between market structure variables and bank profitability in Nigeria.

$H_1$ : There is a significant relationship between market structure variables and bank profitability in Nigeria.

The tabulated  $f_{\text{-statistical}}$  i.e.  $f_{\text{-stats}}$  (3, 6) is 4.73.

The decision rule for the test of hypothesis for all the banks is

Accept  $H_0$  if calculated  $f_{\text{-ratio}}$  (3,6)  $\leq 4.73$

Reject  $H_0$  if calculated  $f_{\text{-ratio}}$  (3, 6)  $> 4.73$

Therefore:

$1.91 \leq 4.73$  so we reject  $H_1$  and accept  $H_0$ . There is no significant relationship between market structure variables and bank profitability in United Bank for Africa (UBA).

$14.46 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is a significant relationship between market structure variables and bank profitability in First Bank of Nigeria (FBN).

$57.213 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is a significant relationship between market structure variables and bank profitability in Union Bank of Nigeria (UBN).

$97.280 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is a significant relationship between market structure variables and bank profitability in Guaranty Trust Bank (GTB).

$12.050 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is a significant relationship between market structure variables and bank profitability in Cooperative Development Bank (CDB).

$5.364 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is a significant relationship between market structure variables and bank profitability in Diamond Bank.

$3.889 \leq 4.73$  so we reject  $H_1$  and accept  $H_0$ . There is no significant relationship between market structure variables and bank profitability in Inland Bank.

$1327.867 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is significant relationship between market structure variables and bank profitability in Zenith Bank.

$57.910 > 4.73$  so we reject  $H_0$  and accept  $H_1$ . There is significant relationship between market structure variables and bank profitability in Chartered Bank.

$3.371 \leq 4.73$  so we reject  $H_1$  and accept  $H_0$ . There is significant relationship between market structure variables and bank profitability in Afribank.



## Hypothesis II

H<sub>0</sub>: There is no significant relationship between policy variables and bank profitability in Nigeria.

H<sub>1</sub>: There is a significant relationship between policy variables and bank profitability in Nigeria.

Using the same test for hypothesis as stated earlier, therefore:

$1.83 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in United Bank for Africa (UBA).

$1.45 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in First Bank of Nigeria (FBN).

$3.612 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Union Bank of Nigeria (UBN).

$1.510 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Guaranty Trust Bank (GTB).

$4.639 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Cooperative Development Bank (CDB).

$17.493 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between policy variables and bank profitability in Diamond Bank.

$1.437 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Inland Bank.

$3.318 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Zenith Bank.

$3.387 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Chartered Bank.

$0.428 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between policy variables and bank profitability in Afribank.

## Hypothesis III

H<sub>0</sub>: There is no significant relationship between regulatory variables and bank profitability in Nigeria.

H<sub>1</sub>: There is a significant relationship between regulatory variables and bank profitability in Nigeria.

Using the same test for hypothesis as stated earlier, therefore:

$1.13 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between regulatory variables and bank profitability in United Bank for Africa (UBA).

$2.646 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between regulatory variables and bank profitability in First Bank of Nigeria (FBN).

$2.519 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between regulatory variables and bank profitability in Union Bank of Nigeria (UBN).

$10.707 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in B Guaranty Trust Bank (GTB).

$17.726 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in Cooperative Development Bank (CDB).

$1.164 \leq 4.73$  so we reject H<sub>1</sub> and accept H<sub>0</sub>. There is no significant relationship between regulatory variables and bank profitability Diamond Bank.

$5.078 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in Inland Bank.

$10.457 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in Zenith Bank.

$27.135 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in Chartered Bank.

$6.386 > 4.73$  so we reject H<sub>0</sub> and accept H<sub>1</sub>. There is a significant relationship between regulatory variables and bank profitability in Afribank.

### 4.3 Discussion of findings

The results presented in this study revealed the following findings:

- i) The profits of United Bank for Africa (UBA) were found not to be determined by market structure, policy and regulatory variables. The three variables considered in the study were found to be statistically insignificant. This was so because UBA as a big bank has diversified its investment portfolio to a large extent and also, it operates more of corporate banking than retail banking.
- ii) Market structure variable (total asset) and regulatory variable (exchange rate) was found to be the determinant of profit in First Bank of Nigeria and they are both found to be positively related to profitability in First Bank.
- iii) The determinant of profit in Union Bank of Nigeria was found to be market structure variable: Number of Bank branches (NBB), policy variables: Demand deposit to total deposit rate (DDTDR) and time/savings deposit to total deposit ratio (TSDTDR); and regulatory variable: Exchange rate (EXR). EXR was found to be significant and positively related to profitability of Union Bank of Nigeria. However, these policy variables cannot be used because the DW is bad and indicate spurious regression.
- iv) In Guaranty Trust Bank result, only the regulatory variable exchange rate (EXR) was found to be significant and is positively related to its profitability.
- v) Market structure variables which include total asset (TA) and total deposit (TD); and policy variables which include demand deposit to total deposit rate (DDTDR) and time/savings deposit to total deposit ratio (TSDTDR); and regulatory variables interest rate (INTR) and exchange rates (EXR) were found to be the determinants of cooperative development bank (CDB) profitability. However, the result for the market structure variables cannot be used because its DW result indicates spurious regression.
- vi) The result for Diamond Bank shows that only the policy variable loans/advances to total assets ratio (LATAR) was found to be significant and the only determinant of profitability in the bank. However, this policy variable cannot be used because its DW result of 1.405 which is bad, since this indicates that negative auto correlation exists.
- vii) For Inland Bank, only the regulatory variables inflation rate (INFR) and exchange rate (EXR) were found to be determinant of Inland Bank profitability. Other variables were found to be insignificant. However, these regulatory variable cannot be used since the DW (1.347) is bad and it indicate negative auto correlation exist.
- viii) For Zenith bank, the result shows that the determinant of their profits is all the three variables: market structure variables (total assets and number of bank branches), policy variable (demand deposit to total deposit rate and time/savings deposit to total deposit ratio) and regulatory variable (exchange rate). However only the market structure variable can be used since the DW result for both the policy and regulatory variables are bad. Both of them indicate the existence of negative auto correlation.
- ix) In the result for Chartered bank, only the regulatory variables: interest rate (INTR) and exchange rate (EXR) were found to be determinants of its profit. Other variables were found to be insignificant. The result indicates a good DW result.
- x) The result for Afribank show that both market structure variable and regulatory variables are the major determinant of profit in Afribank. The policy variables were found to be insignificant. Specially, total asset, interest rate and exchange rate were found to be the determinant of its profitability for the period under review. However, the regulatory variable DW result indicates the existence of positive auto correlation and this means the regression is spurious, so that cannot be used.

**Table 1: Summary of findings result**

VARIABLES BANKS (NPFT)	MARKET STRUCTURE VARIABLES			POLICY VARIABLES			REGULATORY VARIABLES		
	TA	TD	NBB	DDTDR	TSDDTDR	LATAR	INFR	INTR	EXPR
1) UBA	X	X	X	x	x	x	x	x	x
2)First Bank	√	x	x	x	x	x	x	x	√
3)Union Bank	x	x	√	√x	√x	x	x	x	√x
4)GTB	x	x	x	x	x	x	x	x	√
5)Cooperative Development Bank	√x	√x	x	√	√	x	x	√	√
6)Diamond Bank	x	x	x	x	x	√x	x	x	x
7) Inland Bank	x	x	x	x	x	x	√x	x	√x
8) Zenith Bank	√	x	√	√x	√x	x	x	x	√x
9) Chartered Bank	x	x	x	x	x	x	x	√	√
10) Afribank	√	X	x	x	x	x	x	√x	√x

**NB:** √ - means significant with the bank profit at either 1%, 5% or 10% level of significance with good DW (No spurious regression).

X – means insignificant with the bank profit at either 1%,5% or 10% of significance.

√x – significant with Bad DW, so not to be used in conclusion (spurious regression).

### 5.0 Concluding remarks

Empirical analysis of the determinants of bank profit: A disaggregated analysis of commercial banks profit in Nigeria was the focus of this study. Our investigation critically analyzed the net profits of various banks against three variables namely: market structure, policy and regulatory variables and the following result were obtained.

Market structure variables represented by the banks total assets, total deposit and number of bank branches, were found to have significant relationship with profits of the following banks. Hence, these variables proved to be the determinants of profit for these banks: First Bank of Nigeria (FBN), Union Bank of Nigeria (UBN), Zenith Bank and Afribank. The result also proved that the variables had no significant relationship with the profit of United Bank for Africa (UBA), Guaranty Trust Bank (GTB), Cooperative Development Bank (CDB), Diamond Bank, Inland Bank and Chartered Bank.

Policy variables represented by demand deposit to total deposit ratio, time/savings deposit to total deposit ratio and loans/advances to total asset ratio were found to have a significant relationship with the profits of the following banks. Hence, these variables are considered to be the determinant of profit for only Cooperative Development Bank (CDB). However policy variable had no significant relationship with the remaining nine banks: United Bank for Africa (UBA), First Bank of Nigeria (FBN), Union Bank of Nigeria (UBN), Guaranty Trust Bank (GTB), Diamond Bank, Zenith Bank, Inland Bank, Chartered Bank and Afribank.

Regulatory variables represented by inflation rate, interest rate and exchange rate were found to have significant relationship with the profits of the following underlisted banks. Hence, regulatory variables are considered as determinants of profits for: First Bank of Nigeria (FBN), Guaranty Trust Bank (GTB), Cooperative Development Bank (CDB) and Chartered Bank. However, these variables according to our result had no significant relationship with the following six banks: United Bank for Africa (UBA), Union Bank of Nigeria (UBN), Diamond Bank, Inland Bank, Zenith Bank and Afribank.

Based on our findings in this study, we to recommend the followings:

- i. Monetary authorities should create an encouraging environment to enable the banks to adopt policies that will enhance their performances, particularly in their lending activity.
- ii. Monetary authorities should to a great extent release their firm control on interest rates structure. Since interest rates are at least as significant in determining where savings will be directed as in determining how much will be saved.

- iii. The regulatory authorities should continue with the policy of expansion of bank branches particularly in the rural areas. However, this expansion should be approved only when it is certified that there would be greater incremental revenue to the banking system than incremental expenses.
- iv. The CBN and the government can broaden the Credit Guarantee Scheme (CGS) to meet the greater needs of the banks as well as bank customers.
- v. The banks themselves can ensure a minimum risk of loan losses by producing technical and managerial assistance facilities of various kinds to their customers instead of shying away from innovative ventures.
- vi. The CBN and other regulatory authorities should make a law to prevent banks from hoarding every bit of information at their disposal, as all the necessary information needed for this research were deemed classified and as such were not made available to the researcher.

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