

**AN ANALYSIS OF THE DETERMINANTS OF COMMERCIAL BANK'S
PROFITABILITY IN NIGERIA.**

Olorunfemi Oladele Ebenezer, Obademi Olalekan Emmanuel

Department of Finance, University of Lagos.

ABSTRACT

The study is basically an investigation into the determinants of commercial bank profitability in Nigeria. The major objective was to examine as well as evaluate the macroeconomic factors which affect bank profitability. Two banks were selected for the study on the basis of their large size. Secondary data covering the period 2000 -2011 were used and subjected to regression analysis. Basically, the ordinary least square method of analysis was adopted. Part of the findings from the above analysis shows that the coefficient of the bank size (SIZE) is 0.000890. This implies that a positive relationship exists between bank size measures in terms of total asset on banks profitability (ROA). The coefficient of bank deposit (BDEP) which is -1.280564 is not consistent with a priori expectation. A negative relationship between bank deposit rate and bank profitability is implied from the result. The t-statistic value of -0.654700 also indicates statistical insignificance. The coefficient of capital (CAP) measure in terms of owners' equity and inflation rate (INF) is strong in terms of a priori expectation. In conclusion, many factors affect bank profitability which bank operators monitor to enable them withstand any negative shock as well as contribute to the stability of the financial system. As part of the recommendations, financial sector reforms should be cautiously implemented in line with reform/ policy objectives.

Keywords: Commercial Bank Profitability, Macroeconomic Factors, Commercial Bank's.

BACKGROUND TO THE STUDY

As financial intermediaries, banks play an important role in the operation of an economy. Banks being a major providers of funds coupled with their stability role is of paramount importance to the financial system. Banks are profit-oriented with the intention of delivering value to shareholders and as such, an understanding of determinants of their profitability is essential and crucial to all stakeholders and the stability of the economy. The banking sector in any economy serves as a catalyst for economic growth and development from the perspective of the supply-leading hypothesis of the relationship between finance and economic growth. Banks are able to perform this role through their crucial functions of financial intermediation, provision of an efficient payments system and facilitating the implementation of monetary policies.

The study of profits is important not only because of the information it provides about the health of the economy on a year on year on comparative basis, but also because profit is a measure of growth and employment in any economy in the medium-term. The term profitability refers to the ability of a business organization to maintain its profit year after year.

The importance of bank profitability can be appraised at the micro and macro levels of the economy. At the micro level, profit is the essential prerequisite of a competitive banking institution and the cheapest source of funds. When firms do not make profits it becomes increasingly difficult to access external funding. Profits play a key role in persuading depositors to supply their funds which are deemed to attract some interests (benefits) on agreed terms.

STATEMENT OF THE PROBLEM

The impact of the global financial crisis which started in year 2008 and eroded the profits of banks resulting in the loss of confidence by the banking public necessitates adjustment strategies the different approaches taken to correct the negative impact of the crisis by means of different reforms introduced in the banking sector in Nigeria. These myriads of problems aforementioned resulted in dwindling profits for commercial banks and in turn crippled the credit sector thereby making it difficult for the real sector of the Nigerian economy to access bank credits for the promotion of business activities.

The Nigerian banking industry has been strained by the deteriorating quality of its credit assets as a result of the significant dip in equity market indices, global oil prices and sudden depreciation of the naira against global currencies (BGL Banking Report, 2010). The poor quality of the banks' loan assets hindered banks from extending adequate credit to the domestic economy, thereby adversely affecting economic performance. This prompted the Federal Government of Nigeria through the instrumentality of an Act of the National Assembly to

establish the Asset Management Corporation of Nigeria (AMCON) in July, 2010 to provide a lasting solution to the recurring problems of non-performing loans that constrained banks in Nigeria.

Several factors have been indicated as affecting bank profitability among which are size, interest rate, capital assets, macroeconomic variables (interest, inflation, deposit, lending rate) and the financial structure of the bank. The efficiency of a bank is judged by its ability to satisfy all stakeholders (customers, shareholders, and monetary authorities). In other words, a successful bank is one that is able to distribute its resources in such a way as to achieve a good balance between liquidity (production of depositors' cash on demand) and profitability (dividend to shareholders and ability to adjust to and the directives of monetary authorities) (CBN, 2008).

The major focus of investigation of this study is to empirically investigate which factor impacts most significantly on profitability and also the effect of inflation on bank profitability as well as the relationship between deposit and lending.

RESEARCH HYPOTHESES

The following hypothesis will be tested to prove the determinants of profitability of commercial banks.

Hypothesis One

H₀: Loans, advances and investment have no significant effect on commercial bank profitability.

H₁: Loans, advances and investment have a significant effect on commercial bank profitability.

Hypothesis Two

H₀: Deposits have no significant impact on loans and advances given by banks to customers.

H₁: Deposit have significant impact on loans and advances given out by banks to customers.

Research Questions

1. What is the trend of commercial bank profitability in Nigeria?
2. What are factors that significantly affect bank profitability in Nigeria?
3. Is there any relationship between net interest margin and bank profitability?
4. To what extent do macroeconomic factors affect banks profitability in Nigeria?
5. To what extent do bank specific variables affect bank profitability in Nigeria?

Objectives of the Study

The broad objective of this study is to examine the determinants of commercial bank profitability Nigeria (2000-2011). However, the specific objectives of the study are as follows:

1. To examine the trend of commercial banks profitability in Nigeria;
2. To evaluate factors that affect banks profitability in Nigeria;
3. To check if there is any relationship between net interest margin and bank profitability;
4. To examine the macroeconomic factors that affect banks profitability; and
5. To evaluate the effect of bank specific variables on bank profitability.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

There are several studies carried out on bank performance and profitability with different underlying theories such as structure conduct performance model and portfolio theory. Some country-specific studies on the determinants of bank interest margin and profitability have focused on a particular countries and on a panel of countries (Abreu and Mendes, 2002)

The main studies on the determinants of bank performance in emerging countries like Nigeria were also carried out.

Naceur and Goaid (2001) investigated the determinants of the Tunisian bank's performances during the period 1980-1995. They discovered that the best performing banks were those that had struggled to improve labour and capital productivity, those who have maintained a high level of deposit accounts relative to their assets and finally, those which had been able to reinforce their equity.

Guru B. K , Statunton, J and Balashanmugam, B (2002) attempt to identify the determinants of successful deposit banks in order to provide practical guides for improved profitability performance. The study is based on a sample of seventeen. Malaysian commercial banks over the period 1986-1995. The profitability determinants were divided into two main categories, namely the internal determinants (liquidity, capital adequacy and expenses management) and the external determinants (ownership, firm size and external economic conditions). The findings of this study revealed that efficient expenses management was one of the most significant in explaining high bank profitability. Among the macro-indicators, high interest ratio was associated with low bank profitability and inflation was found to have a positive effect on bank performance.

Molyneux and Thornton (1992) were the first to explore thoroughly the determinants of bank profitability in a group of countries. They use a sample of 18 European countries during the period 1986-1989. They find a significant positive association between the return on equity and the level of interest rates in each country, bank concentration and government ownership.

Abreu and Mendes (2002) investigated the determinants of bank's interest margins and profitability for some European countries. They reported that strong capitalized-banks face lower expected bankruptcy costs. This advantage translates into better profitability. Although with a negative sign in all regressions, the unemployment rate is relevant in explaining bank profitability.

In an another linked study, Demergüç-Kunt and Huizingha (2001) present evidence on the impact of financial development and structure on bank profitability using bank level data for a large number of developed and developing countries over the 1990-1997 period. Specifically, the paper reports that higher bank development is related to lower bank performance (stiffer competition explains the decrease of profitability). Stock market development on the other hand, leads to increased profits and margins for banks especially at lower levels of financial development, indicating complementarities between bank and the stock market.

Using bank level data for 80 countries in the 1988– 95 period, Demirgüç-Kunt and Huizinga (1998) analyze how bank characteristics and the overall banking environment affect both interest rate margins and bank returns. In considering both measures, the study provided a decomposition of the income effects of a number of determinants that affect depositor and borrower behavior, as opposed to that of shareholders. Results suggest that macroeconomic and regulatory conditions have a profound impact on margins and profitability. Lower market concentration ratios lead to lower margins and profits while the effect of foreign ownership varies between industrialized and developing countries.

METHODOLOGY

Theoretical Foundation of the Model

This model is underpinned by portfolio theory of profitability and the structure conduct performance that emphasizes the impact of assets and the size of the bank profitability as has been used by Frazer, Phillips and Rose (1974) and Obademi O.E (2012). The justification for using this model is that it is widely used in empirical research and it produces fairly reliable results (Bourke, 1989 and Bashir, 2000).

Model Specification

This study is an examination of the determinants of the profitability of commercial banks (2000-2010) with implications for the financial sector in Nigeria. The study employed econometric method in formulating a regression model which was analyzed through the use ordinary least square regression (OLS). The model for this study was adopted from the previous work of Guven and Onur (2007).

They used a constructed model for their work on determinants of ROA as follows:

$$ROA = \beta_0 + \beta_1INF + \beta_2BUD + \beta_3DIND + \beta_4DOBS + \beta_5DCRE + \beta_6LIQ + \beta_7DSEC + \beta_8DCAP$$

The above model was adopted for this study, although some of the variables used in the model were restructured to suit the data available and congruency of the analysis. Consequently, the operational model for this study is presented below:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8) \dots\dots\dots (1)$$

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \dots\dots\dots (2)$$

$$ROA = b_0 + b_1SIZE + b_2BDEP + b_3CAP + b_4INF + b_5INT + b_6GDP + u \dots\dots (3)$$

Where:

- ROA = Return on Assets = Profit after Tax/Total Assets to proxy profitability as dependent variable
- SIZE = Log(Total Assets) as bank specific variable
- BDEP = Bank Deposit as bank specific variable
- CAP = Capital = Equity/Total Assets as bank specific variable
- INF = Inflation Rate as macroeconomic variable
- INT = Interest Rate as macroeconomic variable
- GDP = Gross Domestic Product as macroeconomic variable
- b₀ = Intercept
- b₁-b₈ = Parameter of the Estimate
- U = Error term

A Priori Expectation

The economic a priori criteria refer to the sign and size of the parameters and the economic relationship between the variables. For the model, the a priori expression of this multiple

regression model is that $b_1 > 0$; $b_2 > 0$; $b_3 > 0$; $b_4 < 0$; $b_6 > 0$ while $b_5 < 0$. A positive sign is expected from the coefficient of the relationship between bank size, bank deposit, capital, interest rate and gross domestic product while inflation rate is expected to give negative relationship.

Estimation Technique

For the purpose of this study, ordinary least square method of analysis was employed. This is because the OLS has the characteristic of a fairly simple computational procedure. In addition, data requirements are distinct. It is therefore relatively easy to obtain the parameter estimate.

TESTS:

t - Statistics

R²; – Coefficient of Determination

R²; – (R Bar Squared or the Adjusted R²)

F – Statistics; - A test for the existence of a significant linear relationship between the independent variable taken together with the dependent variable

S.E.; - (Standard error of estimation or Standard error of regression line)

D.W. Statistics; - A test for first order autocorrelation

Sources of Data, Result and Collection Procedure

This study relied mainly on secondary data which were extracted from the annual reports and financial summaries of the two selected banks covering a twelve-year period (2000-2011). The selected banks are First Bank of Nigeria Plc and Union Bank Plc.

DATA PRESENTATION AND ANALYSIS OF RESULTS

This deals with data presentation, analysis and interpretation. The data used were obtained from annual reports of Union Bank Plc and First Bank of Nigeria Plc from 2000-2011 and Central Bank of Nigeria Statistical Bulletin

Data Presentation

Table 1

Year	FIRST BANK OF NIGERIA PLC				UNION BANK PLC			
	Profit After Tax	Total Asset	Bank Deposit	Equity	Profit After Tax	Total Asset	Bank Deposit	Equity
2000	4,221	180,553	127,230	14,519	4,441	180,553	127,230	14,519
2001	4,467	212,901	148,279	17,093	5,035	214,885	170,977	13,786
2002	3,979	266,356	168,175	17,747	4,726	275,194	204,347	30,302
2003	10,322	320,578	193,955	25,040	6,600	329,583	224,347	32,730
2004	11,096	312,490	206,643	38,621	7,750	367,798	241,587	35,985
2005	12,184	377,496	264,988	44,672	9,375	398,271	200,511	39,129
2006	16,053	540,129	390,846	60,980	10,036	517,564	252,418	95,685
2007	18,355	762,881	581,827	77,351	12,126	619,800	417,406	96,630
2008	30,473	1,165,461	661,624	339,847	24,737	907,074	649,334	111,271
2009	3,622	2,153,750	1,516,584	14,504	(71,052)	1,106,779	758,390	53,145
2010	29,177	2,354,831	1,595,952	16,316	118,016	845,23	598,922	135,894
2011	18,636	2,850,160	2,134,821	16,316	(44,010)	825,032	1,580	176,782

Sources: Annual Reports of Selected Banks, 2000-2011

The above figures were extracted from the selected banks financial summary for the period under review. The values are in thousands and cover a twelve-year period.

TABLE 2: Macro Economic Variables

Year	Interest Rate (Percent)	Inflation Rate (Percent)	Gross Domestic Product (=N= '000)
2000	13.50	6.9	329,178.70
2001	14.31	18.9	356,994.30
2002	19.00	12.9	433,203.50
2003	15.75	14.0	477,532.98
2004	15.00	15.0	527,576.04
2005	13.00	17.9	561,931.39
2006	12.25	8.2	545,821.61
2007	8.75	5.4	634,251.14
2008	9.81	11.6	672,202.55
2009	6.00	12.5	718,977.33
2010	6.25	13.7	776,332.21
2011	12.00	10.8	834,161.83

Sources: Central Bank of Nigeria Statistical Bulletin (2012)

Table 3: Data for Regression Analysis

Year	Selected Banks Average Variations				Macro-economic Variables		
	ROA	SIZE	BDEP	CAP	INT	INF	GDP
2000	0.02	5.26	127,230.00	0.08	13.50	6.90	329,178.70
2001	0.02	5.33	159,628.00	0.07	14.31	18.90	356,994.30
2002	0.02	5.43	186,261.00	0.09	19.00	12.90	433,203.50
2003	0.03	5.51	209,151.00	0.09	15.75	14.00	477,532.98
2004	0.03	5.53	224,115.00	0.11	15.00	15.00	527,576.04
2005	0.03	5.59	232,749.50	0.11	13.00	17.90	561,931.39
2006	0.02	5.72	321,632.00	0.15	12.25	8.20	545,821.61
2007	0.02	5.84	499,616.50	0.13	8.75	5.40	634,251.14

2008	0.03	6.02	655,479.00	0.22	9.81	11.60	672,202.55
2009	-0.02	6.21	1,137,487.00	0.02	6.00	12.50	718,977.33
2010	0.01	6.07	797,976.00	0.01	6.25	13.70	776,332.21
2011	0.02	5.26	127,230.00	0.08	12.00	10.80	834,161.83

Sources: Researcher’s Computation (2013)

Note:

ROA = Return on Assets = Profit after Tax/Total Assets to proxy profitability as dependent variable

SIZE = Log(Total Assets) as bank specific variable

BDEP = Bank Deposit as bank specific variable

CAP = Capital = Equity/Total Assets as bank specific variable

INF = Inflation Rate as macroeconomic variable

INT = Interest Rate as macroeconomic variable

GDP = Gross Domestic Product as macroeconomic variable

Data Analysis Results

$$ROA = b_0 + b_1SIZE + b_2BDEP + b_3CAP + b_4INF + b_5INT + b_6GDP + u$$

Dependent Variable: ROA

Method: Least Squares Panel Result

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	0.000890	0.001012	0.879460	0.3810
BDEP	-1.280564	7.74E-12	-1.654700	0.1008
CAP	0.098975	0.013147	7.528149	0.0000
INF	0.000367	0.000439	0.836317	0.4048
INT	-0.001392	0.000559	-2.489452	0.0143

GDP	8.836354	7.80E-08	1.132487	0.2598
C	0.071819	0.032638	2.200488	0.0298
R-squared	0.870983	Mean dependent var		0.023872
Adjusted R-squared	0.840934	S.D. dependent var		0.020661
S.E. of regression	0.014948	Akaike info criterion		-5.497014
Sum squared resid	0.025025	Schwarz criterion		-5.289063
Log likelihood	341.5694	F-statistic		34.28754
Durbin-Watson stat	0.98323	Prob(F-statistic)		0.000000

Note: * = Significant at 1%, ** = Significant at 5%

Empirical Analysis

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8) \dots\dots\dots (1)$$

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \dots\dots\dots (2)$$

$$ROA = b_0 + b_1SIZE + b_2BDEP + b_3CAP + b_4INF + b_5INT + b_6GDP$$

$$ROA = 0.071819 + 0.000890SIZE - 1.280564BDEP + 0.09875CAP + 0.000367INF - 0.0001392INT + 8.836354GDP$$

$$T = (2.200488)* (0.879460) ** (-1.654700)* (7.528149) ** (0.836317)* (-2.489452)* (1.132487)**$$

$$R\text{-squared} = 0.870983 (87\%)$$

$$\text{Adjusted R-squared} = 0.840934$$

$$F\text{-statistic} = 34.28754$$

$$\text{Durbin-Watson stat} = 0.98323$$

Interpretation of Results

From the above analysis, the coefficient of the bank size (SIZE) is 0.000890. This is a good performance in terms of a priori expectation as it is a positive value. The result implies that a positive relationship exists between bank size measures in terms of total asset on bank profitability (ROA). The coefficient is also found to be statistically significant as evidenced by an examination of the t-statistic value (0.879460) and the corresponding probability value (0.3810). In the long-run therefore, a one unit increase in bank size will generate about proportionate per cent increase in return on assets (ROA) which will by extension lead to increase in bank profitability.

The coefficient of bank deposit (BDEP) which is -1.280564 is not consistent with a priori expectation. A negative relationship between bank deposit rate and bank profitability is implied from the result. The t-statistic value of -0.654700 also indicates statistical insignificance.

The coefficient of capital (CAP) measure in terms of owners' equity and inflation rate (INF) is also satisfactory in terms of a priori expectation. It has a value of 0.098975 and 0.000367, which is a positive relationship between owners' equity, inflation rate and bank profitability. The t-statistic value of 7.528149, 0.836317 also indicates statistical significance.

The coefficient of the estimate for interest rate (INT) with a value of -0.001392 is these are in accordance with a priori expectation. This indicates the existence of a negative relationship between variables and bank profitability ratio such that one per cent increase in any of the variables will lead to proportionate decrease in bank profitability.

The estimate parameter value for gross domestic product (GDP) portends a positive value as the obtained values gives 8.836354. This implies that a unit increase in gross domestic product also indicates that there is better performance in the economy.

The R-Squared is 0.870983 (87%) showing that the explanatory variables explain 87% of changes in the dependent variable. It remained strong even after adjusting for the degrees of freedom to 84% (Adjusted R-Squared). This means that in the banking industry, the variables chosen are strong in explaining the determinants of bank profitability. The Durbin-Watson statistic, which is 0.98323, falls within the acceptable range which means that there is no autocorrelation.

From the analysis, the study shows that the coefficient of the bank size (SIZE) is 0.000890. This implies that a positive relationship exists between bank size measures in terms of total asset and bank profitability (ROA). The coefficient of bank deposit (BDEP) which is -1.280564 is not

consistent with a priori expectation. A negative relationship between bank deposit rate and bank profitability is implied from the result. The t-statistic value of -0.654700 also indicates statistical insignificance. The coefficient of capital (CAP) measure in terms of owners' equity and inflation rate (INF) is also strong in terms of a priori expectation. The coefficient of the estimate for interest rate (INT) value (-0.001392) is in accordance with a priori expectation. This indicates the existence of a negative relationship between variables and bank profitability ratio such that a one percent increases in any of the variables will lead to proportionate decrease in bank profitability.

The R-Squared is 0.870983 (87%) showing that the explanatory variables explain 87% of changes in the dependent variable. It remained strong even after adjusting for the degrees of freedom to 84% (Adjusted R-Squared). This means that in the banking industry, the variables chosen are strong in explaining the determinants of bank profitability.

Financial sector reforms should be adequately implemented and given proper evaluation to achieve reforms/policy objective; the banking industry still needs to shift from the application of old technology to embrace modern technology which has been designed for super efficiency. It means investment in internet facilities and improved training of bank personnel.

Government should embark on sequencing financial sector reform programs. The real sector of the economy should not be excluded from the reforms. A major responsibility lies with the Central Bank of Nigeria to find solution to the problems of bank distress, bad debt and risk management.

Regulatory policies on bank interest rates, deposits, capital base. Credit risk management and cash reserves among others should be periodically reviewed in line with the patterns of demand by investors. As much as banks drive towards higher profitability, they should maintain a balance against distress.

REFERENCES

- Abreu M. and V. Mendes. (2002). Commercial bank interest margins and profitability: Evidence from E.U countries', Porto Working paper series. Available at: <http://www.iefs.org.uk/Papers/Abreu.pdf>.
- Bashir A. (2000). Assessing the Performance of Islamic Banks: Some Evidence from the Middle East, Paper presented at the ERF 8th meeting in Jordan.

- Ben-Naceur, S. and Omran, M. (2008). The Effects of Bank Regulations, Competition and Financial Reforms on MENA Banks' Profitability, *Economic Research Forum Working Paper No. 44*.
- Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking and Finance*, 13(1), 65-79.
- CBN (2008) "Central Bank Monetary Policy and the Banking Sector Performance" Unpublished Seminar Paper
- Demerguç-Kunt, A, Huizinga, H. (2001). Financial Structure and Bank Profitability" in Financial Structure and Economic Growth: A Cross- Country Comparison of Banks, Markets, and Development, Eds. Asli
- Dermiguc Kunt, A. & Huizinga, H. (1998). Determinants of commercial bank interest margins and profitability: Some International Evidence. *World Bank Economic Review*, 13(2): 379-408.
- Frazer,D.R ,Phillips, W (1974) " Analysis of Bank Performance. *Journal of Financial and Quantitative Analysis*". Vol 9. pp 287
- Guru, B. K.; Staunton, J. & Balashanmugam, B. (2002). Determinants of Commercial Bank Profitability in Malaysia. *Working Paper. Multimedia University*.
- Hussain, H and Bhatti, G.A, (2010). Evidence on Structure Conduct Performance Hypothesis in Pakistani Commercial Banks, *International Journal of Business and Management*, Vol. 5, No. 9, pp: 174-187
- Modigliani, F. and M.H. Miller, (1958). The Cost of Capital, Corporation Finance and The Theory of Investment, *American Economic Review*, XLVIII(3), 261-297.
- Molyneux, P. and W. Forbes (1995). Market Structure and Performance in European Banking., *Applied Economics* 27(2): 155-159
- Molyneux, P., and Thorton, J. (1992). Determinants of European Bank Profitability; A Note. *Journal of Banking and Finance*, 16, pp. 1173- 78.
- Naceur, B. & Goaid (2008). The determinants of the Tunisian banking industry profitability: Panel evidence. *Paper presented at the Economic Research Forum (ERF) 10th Annual Conference, Marrakesh-Morocco, 16-18 December, 1-17*.

Naceur, S.B. and Goaid, M. (2001). The Determinants of the Tunisian Deposit Banks' Performance, *Applied Financial Economics*, 11, 317-319.