



Determinants of banking industry profitability in Nigeria: a bank-specific and macroeconomic characteristics analysis

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ABSTRACT

A profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system. The importance of bank profitability can be appraised at the micro and macro levels of the economy. At the micro level, profit is determined by bank's management decisions and policy objectives, while the macroeconomic determinants look at variables that reflect the economic and legal environment where the credit institution operates. Bank profitability, typically measured by the return on assets (ROA) and/or the return on equity (ROE), and/or net interest margin (NIM) is usually expressed as a function of internal and external determinants. These issues engaged the minds of the authors in this paper. Industry related dataset that covers a 10year period of time was used. The regression results indicate that bank-specific characteristics and macroeconomic variables explain up to 97.4% variations in bank profitability when NIM was used as a dependent variable. Summarily, profitability was found to be associated with well-capitalised banks as capital ratio has a positive significant relationship with NIM; bank size has a negative but significant relationship with NIM; Asset composition has a positive but an insignificant relationship with NIM; Liquidity has a negative and insignificant relationship with NIM; all the macroeconomic variables apart from inflation have a negative and insignificant relationship with NIM. Therefore, the study recommends that regulatory authorities should promote policies that will bring about low inflation and stable economic output growth, whereas, bank managements should concentrate more on cost and non-performing loans reduction and asset composition diversification.

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Introduction

Literatures have shown that 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. Bank profitability, typically measured by the return on assets (ROA) and/or the return on equity (ROE), and/or net interest margin (NIM) is usually expressed as a function of internal and external determinants. Internal determinants are factors that are mainly influenced by a bank's management decisions and policy objectives. Such profitability determinants are the level of liquidity, provisioning policy, capital adequacy, expenses management, asset composition and bank size. On the other hand, the external determinants, both industry-related and macroeconomic, are variables that reflect the economic and legal environment where the credit institution operates (Athanasoglou, Delis and Staikouras, 2008). Identifying the key success factors of commercial banks profit allows designing policies that improve the profitability of the banking industry. Therefore, the determinant of bank profitability has attracted the interest of academic research as well as bank management, financial markets and bank supervisors.

Our paper contributes to literature in a number of directions. First, it applies a profitability determinant model to industry-related dataset thereby identifying the factors that influence bank profitability in Nigeria. Second, despite its status as the

economic hub of Africa, to date, little literature exists in this area of finance in Nigeria. Third, in line with previous work, it expands the narrow confines of bank-specific variables by incorporating macroeconomic factors. The model incorporates bank-specific and macroeconomic factors into the model equation and test for factors that positively influence bank profitability from 2001 to 2010, thus incorporating the recent banking reforms in Nigeria (mergers and acquisitions in the Nigerian banking sector). The pooled industry-related data estimation technique was employed, though the reported results are based on a traditional OLS regression model.

The rest of our paper is divided into four sections. Section 2 highlights the empirical review of related literature. Methodological issues are the concern of section 3. Section 4 is devoted to analysis of results and section 5 concludes.

Review of Related Literature

Profit is the cheapest source of funds as a substantial part of it can be retained for future investment. Without been profitable, a firm cannot attract outside capital to meet its set investment targets in a competitive environment. In addition, sound banks with impressive profit figures reassure a bank's shareholders and other bank claimants. Hence, the basic aim of a bank's management is to achieve profit which in turn aids the maximizing of shareholders wealth. During the last two decades, the banking sector all around the world Nigeria inclusive has

experienced major transformations in its environment, resulting in significant impacts on its performance. As such, both external and internal factors have been affecting the profitability of banks over time. Identifying the key success factors of commercial banks profit allows designing policies that may improve the profitability of the banking industry.

Therefore, the determinant of bank profitability has attracted the interest of academic research as well as of bank management, financial markets and bank supervisors. Indeed, the performance evaluation of commercial banks is especially important today because of the fierce competition and globalisation of world economies. It is becoming imperative for banks to endure the pressure arising from both internal and external factors and prove to be profitable.

Antonina (2011) examined the determinants of bank profitability in Ukraine. It relates bank specific, industry-specific and macroeconomic indicators to the overall profitability of Ukrainian banks. According to the empirical results, Ukrainian banks suffer from low quality of loans and do not manage to extract considerable profits from the growing volume of deposits. Despite low profits from the core banking activities Ukrainian banks manage to benefit from exchange rate depreciation. The study finds evidence for the difference in profitability patterns of banks with foreign capital versus exclusively domestically owned banks. The results also indicate that there is room for consolidation of Ukrainian banks in order to benefit from economies of scale.

Masood et al (2009) in this study aims to give the analysis of the determinants of banks' profitability in the Kingdom of Saudi Arabia (KSA) over the period 1999-2007. The paper investigates the co-integration and causal relationship between return on assets (ROA) and return of equity (ROE) of Saudi banks. The analysis employs Augmented Dickey Fuller (ADF) test, Johansen's co-integration test and Granger causality test. Analyzing the results over the study period, the relationships between the two variables were examined. The empirical results found strong evidence that the variables are co-integrated.

Flamini, McDonald and Schumacher (2009) used a sample of 389 banks in 41 Sub-Saharan African countries to study the determinants of bank profitability. McDonald and Schumacher (2009) find that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables, suggesting that macroeconomic policies that promote low inflation and stable output growth do boost credit expansion.

The results also indicate moderate persistence in profitability. Causation in the Granger sense from returns on assets to capital occurs with a considerable lag, implying that high returns are not immediately retained in the form of equity increases. Thus, the paper gives some support to a policy of imposing higher capital requirements in the region in order to strengthen financial stability.

Athanasoglou, Delis and Staikouras (2008) examined the profitability behavior of bank-specific, industry related and macroeconomic determinants, using an unbalanced panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. The estimation results indicate that, with the exception of liquidity, all bank-specific determinants significantly affect bank profitability in the anticipated way.

A key result is that the effect of concentration is positive, which provides evidence in support of the structure-conduct-performance hypothesis, even though some ambiguity arises

given its interrelationship with the efficient-structure hypothesis. In contrast, a positive relationship between banking reform and profitability was not identified, whilst the picture regarding the macroeconomic determinants is mixed.

Badola and Verma (2006) pointed out that banking sector reforms in India have led to the increase in resource productivity, increasing level of deposits, credits and profitability and decrease in non-performing assets. However, the profitability, which is an important criteria to measure the performance of banks in addition to productivity, financial and operational efficiency, has come under pressure because of changing environment of banking. Accordingly, Badola and Verma (2006) made an attempt to identify the key determinants of profitability of Public Sector Banks in India. The analysis is based on step-wise multivariate regression model used on temporal data from 1991-92 to 2003-04. The study shows that non-interest income, operating expenses, provision and contingencies and spread have significant relationship with net profits.

Staikouras and Woods (2006) quantified how internal determinants ("within effects" changes) and external factors ("dynamic reallocation" effects) contribute to the performance of the EU banking industry as a whole in 1994-1998. They constructed OLS and fixed effects models, and the results provide a new perspective for understanding the impact of changes in competition on the performance of the EU banking industry. The estimation results suggest that the profitability of European banks is influenced not only by factors related to their management decisions but also to changes in the external macroeconomic environment. The results are in contrast to studies that have examined the structure-performance relationship for European banking and find a positive effect of the concentration and/or market share variables on bank profitability.

Naceur and Goaied (2001) investigated the impact of banks' characteristics, financial structure and macroeconomic indicators on banks' net interest margins and profitability in the Tunisian banking industry for the 1980-2000 period. Individual bank characteristics explain a substantial part of the within-country variation in bank interest margins and net profitability. High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. However, Naceur and Goaied (2001) found size to impact negatively on profitability which implies that Tunisian banks are operating above their optimum level. On the other hand, they found that macroeconomic variables have no impact on Tunisian bank's profitability.

Using bank level data for 80 countries in the 1988-1995 periods, (Demirgüç-Kunt and Huizinga, 1998) showed that differences in interest margins and bank profitability reflect a variety of determinants: bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and several underlying legal and institutional indicators. Controlling for differences in bank activity, leverage, and the macroeconomic environment, (Demirgüç-Kunt and Huizinga, 1998) finds that a larger bank asset to GDP ratio and a lower market concentration ratio lead to lower margins and profits. Foreign banks have higher margins and profits compared to domestic banks in developing countries, while the opposite holds in developed countries. Also, there is evidence that the corporate tax burden is fully passed on to bank customers.

Methodological Framework

To test for the determinants of bank profitability in Nigeria using bank-specific and macroeconomic determinants as described above, we estimated a linear regression model relating the performance measures to a variety of factors as displayed in equation (i) following earlier studies such as (Naceur, and Goaid, 2001), thus, we have;

$$\text{Perf}_{ij,t} = f(\text{BC}_{ij,t} + \text{Mt}) \dots \dots \dots (i)$$

Where: $\text{Perf}_{ij,t}$ represents two alternative performance measures for the banking industry j during the period t ; $\text{BC}_{ij,t}$ are bank-specific variables for the Nigerian banking industry j at time t ; Mt are macro-economic variables.

In this study industry related data was considered. That is, the data comprises of performance indicators of all the banks operating in Nigeria for the sample period. The data used in this report came from the annual reports of the Central Bank of Nigeria for the sampled period and covers the period 2001 to 2010 with 80 observations.

Model Proxies

Profitability

Return on Asset (ROA): The ROA is a functional indicator of bank's profitability. It is a ratio calculated by dividing net income by total assets. ROA shows the profit earned per dollar of assets which reflects bank's management ability to utilize the bank's financial and real investment resources to generate profits (Naceur, 2003).

Net Interest Margin (NIM): This is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest-earning) assets. It is similar to the gross margin of non-financial companies. It is usually expressed as a percentage of what the financial institution earns on loans in a time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). The NIM variable is defined as the net interest income divided by total assets. NIM focused on the profit earned on interest activities (Berger, 1995; Barajas et al., 1999; and Naceur and Goaid, 2001).

Bank Specific Factors

Total Assets (TA): The total asset was used to determine the size of bank in Nigeria. Size is used to capture the fact that larger banks are better placed than smaller banks in harnessing economies of scale in transactions, hence they tend to enjoy a higher level of profit. Consequently, a positive relationship is expected between size and profits. Molyneux and Thornton (1992), Bikker and Hu (2002) and Goddard et al. (2004) find size to be positively related to profitability. In most finance literature, the size of the bank is included as an independent variable to account for size related economies and/or diseconomies of scale. However, since the dependent variable in the model (ROA) was deflated by total assets it would be appropriate to take the natural logarithm before including it in the model to be consistent with other ratios.

Total Equity (TE) to Total Assets (TA): Capital is taken as the ratio of equity capital to total assets. It's interesting to note that higher capital level breeds higher profitability since by having more capital, a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans (see, Berger, 1995). The capital ratio (TE/TA), which is measured by total equity over total asset, reveals capital adequacy and captured the general safety and soundness of the

financial institution (see, Gull, 2011). It indicates the ability of a bank to absorb losses and handle risk exposure for shareholders. Previous studies such as (Hassan and Bashir, 2004 and Bourke, 1989) have found a positive relationship between TE/TA and profitability. Therefore, TE/TA is expected to have a positive relation with performance because well capitalized banks are less risky and more profitable.

Total Loans and Advances (TL&A) to Total Assets (TA): Asset composition of loans and advances are the main source of income and are expected to have a positive impact on bank performance. All things been equal, the more deposits are transformed into loans, the higher the interest margin and profits. However, if a bank needs to increase risk to have a higher loan-to-asset ratio, then profits may decrease. In addition, as bank loans and advances are the principal source of income, we expect that non-interest bearing assets impact negatively on profits (Gul et al, 2011). Asset composition (TL&A/TA), which is explained by total loans divided by total asset, provides a measure of income source and measures the liquidity of bank assets tied to loans (Javaid et al, 2011: 3798). TL&A/TA is included in our study of profitability as an independent variable to determine the impact of loans on banks' profitability.

Total Deposits (TD) to Total Assets (TA): The ratio of deposits to total assets is another liquidity indicator but is considered as a liability. Deposits are the main source of bank funding and hence it has an impact on the profitability of the banks. Deposits to total assets ratio is included as an independent variable in our study.

Macroeconomic Factors

Inflation and interest rate: A widely used proxy for the effect of the macroeconomic environment on bank profitability is inflation. Athanasoglou, Delis, and Staikouras, (2006) point out that Revell (1979) introduced the issue, noting that the effect of inflation depends on whether banks' wages and other operating expenses increase at a faster rate than inflation. The importance of inflation on the performance of banks is primarily due to the influence of inflation on the sources and users of banks' financial resources as well as the cost of such financial resources. In particular, inflation affects banks' pricing (interest rate) behavior.

As such, the relationship between the inflation rate and profitability is ambiguous and depends on whether or not inflation is anticipated. An inflation rate fully anticipated by the bank's management implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs, thus acquire higher profits. Studies such as Bourke (1989); Molyneux and Thornton (1992) observed positive relationship between inflation and bank performance.

Gross Domestic Product (GDP): Demircuc-Kunt and Huizinga (1999) shows that rapid economic growth increase profitability in most countries. Technically speaking, GDP captures upswings and downswings manifesting in the business cycles. Consequently, movements in general economic activity level are expected to generate direct impacts on profitability of banks (Gull, Irshad, and Zaman, 2011).

Empirical Results

The basic equation we adopted indicates that:

$$\text{Profit}_{it} = f(\text{Size}_{it}, \text{Asset composition}_{it}, \text{Capital ratio}_{it}, \text{Liquidity}_{it}, \text{Inflation}_{it}, \text{Interest rate}_{it}, \text{GDP}_{it}) + \text{uit} \dots \dots \dots (ii)$$

where i refers to banking industry and t , time. Although all specifications were estimated for completeness, the discussion focuses on the most robust empirical findings.

Table 4.1 above shows the descriptive statistics for the dependent and independent variables, ROA, size (Log of Total Asset), asset composition (ratio of Total Loans & Advances to Total Asset), capital adequacy (ratio of Total Equity to Total Asset), liquidity (ratio of Total Deposit to Total Asset), inflation, interest rate, and GDP all have a positive mean value which ranges from 2.9220 to 45.6535. Besides, banks in the Nigerian banking industry include banks with very different sizes and business mixes. The highest standard deviation of 45.6535 is for asset composition. There is greater variation in the data set of ratio of total loans and advances to total assets because of the size differences of banks in the Nigerian.

The relationships among the study variables depicted in the model were tested using correlation with ROA and NIM separately with internal and macroeconomic determinants of the Bank's profitability which is presented in the following Tables. Size (TALogn) has negative relationship with profitability. This negative relationship indicates that the size of a bank have an insignificant effect on profitability. This is in consonance with the findings of Berger, et al. (1987), Boyd and Runkle (1993), Bourke (1989), Naceur (2003) and Javaid et al (2011).

Asset Composition (TLA/TA) and interest rate shows positive relationship with profitability. This suggests that with increase in inflation in the economy, the banks' interest rate on all kinds of advances would increase and in this way the bank's interest earnings would show significant increase. Assuming other variables constant, the higher the rate of transforming deposits into loans, the higher the profitability. For that, a positive relation between the loans and banks profitability are expected (see Imad, Qais and Thair 2011: 181). This result is consistent with the study of Athanasoglou et al. (2006). Also, Abreu and Mendes (2000) found a significant positive relation between asset composition and profitability.

Capital ratio which measures bank capitalisation shows positive relationship with profitability. Consistent with the previous evidence, we confirm the positive relationship in this study.

Liquidity (TD/TA) shows negative relationship with profitability. This is consistent with previous findings of Abreu et al. (2002), Wong and Fong (2006) and Alkassim (2005).

Inflation shows negative relationship with profitability and as such this result is not consistent with the findings of (Bourke, 1989; Molyneux and Thornton, 1992) who observes a positive relationship between inflation and bank performance. Interest rate shows a positive relationship with profitability while, economic growth (GDP) shows a negative relationship with profitability.

Spearman's product moment correlation coefficient is given as: $R = 0.987$, and Coefficient of determination as: $R^2 = 97.4\%$. This indicates that the variations observed in the dependent variable as a result of changes in the independent variable were succinctly captured in the model. This was further confirmed by the adjusted R^2 of 88.4%. Durbin Watson is 2.856.

Dependent Variable: NIM

Size has a negative but significant relationship with profitability. Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector. This variable controls for cost differences and product and risk diversification according to the size of the credit institution (Athanasoglou et al., 2006). The first factor could lead to a positive relationship between size and bank profitability, if there are significant economies of scale, while the second a negative relationship, if increased diversification leads to lower credit

risk, thus lower returns (see Akhavein et al. 1997; Bourke, 1989; Molyneux and Thornton, 1992; Bikker and Hu, 2002; Goddard et al., 2004).

Capital adequacy (TE/TA) shows positive and significant relationship with profitability. Previous studies such as Berger (1995); Hassan and Bashir, (2004); Bourke, (1989); and Dermerguç-Kunt and Huizingua (1999) found positive relationship between bank performance and capitalization. Consistent with the previous evidence, we confirm the positive significant relationship in the Nigerian banking industry using net interest margin or return on assets as the dependent variable.

Liquidity (TD/TA) shows negative and insignificant relationship with profitability which suggests that banks that rely on deposits for their funding are also less profitable. Interest rate and economic growth are insignificant in all regressions. Inflation shocks seem to be passed equally through the lending and deposit rates. In addition, economic growth does not reflect any aspects of banking regulations and technology advancement in the banking sector. These results confirm those of Ben-Khediri et al. (2005) that inflation and real output growth influence neither bank interest margins nor bank profitability in Tunisia.

Conclusion/Recommendations

This paper analyzed how the bank specific variables that hinges on management decisions and policy objectives, and the overall macroeconomic variables (i.e. the environment in which banks operate) affects the performance of banks in terms of two measures of profitability (ROA and NIM) over the time period from 2001 to 2010. So far, there is no econometric study to our knowledge that has examined this all important issue of the determinants of the banking profitability for the Nigerian banking market.

A balanced pooled industry dataset of commercial banks in Nigeria during the above period provided the basis for the econometric analysis. The regression results indicate that bank-specific characteristics and macroeconomic variables explain up to 58% when ROA was used as a dependent variable and 97.4% variations in bank profitability when NIM was used as a dependent variable. In other words, the NIM regression is more robust. High profitability was found to be associated with well-capitalised banks as only TE/TA has a positive significant relationship with NIM. Bank size has a negative but significant relationship with NIM, Asset composition has a positive but insignificant relationship with NIM, Liquidity has a negative and insignificant relationship with NIM, and all the macroeconomic variables apart from inflation have a negative and insignificant relationship with NIM. Inflation a macroeconomic variable has a positive but non-significant relationship with NIM. This could be as a result of banks passing the bulk of anticipated inflation on the interest rate charged on loans.

Overall, the results obtained in this study provide some interesting new insights for a better understanding of the mechanisms that determine the profitability of commercial banks in Nigeria. The findings of this study confirm some findings from previous studies from other countries on bank profitability. However, the scenario of Nigerian bank performance suggests that Nigerian banks have not managed to extract considerable profits from growing volume of profits, equity and assets while, the picture regarding profitability and macroeconomic variables for ROA and NIM is mixed. It is noteworthy that this research on determinants of bank profitability in Nigeria is ongoing as we intend to introduce more bank-specific and industry related variables, while,

deriving a sample and using a balanced panel dataset to ascertain determinants of bank profitability.

The empirical results provide a rigorous consensus that banks in Nigeria need a stable, profitable and efficient banking system in order to finance both private and public investment and expenditures. The findings suggest that Nigerian banks have not managed to extract considerable profits from growing volume of deposits, equity and assets. Further improvements could be realized if regulatory authorities should promote policies that will bring about low inflation and stable economic output growth. Banks management should concentrate more on cost and non-performing loans reduction as well as asset composition diversification.

Therefore, regulatory authorities should promote policies that will bring about low inflation and stable economic output growth, whereas, bank managements should concentrate more on cost and non-performing loans reduction and asset composition diversification.

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Table 4.1 Descriptive Statistics

	Mean	Std. Deviation	N
ROA	2.9220	1.07468	10
LOGnTA	6.7898	0.37167	10
TLA/TA	45.6535	6.69755	10
TE/TA	11.4098	4.23714	10
TD/TA	51.2454	4.09495	10
INF	12.5800	3.08141	10
INT.RATE	11.3450	2.33624	10
GDP	5.7700	1.62757	10

Source: SPSS Computed Value Results from Banks Financial Statements and Accounts

Table 4.2: Correlations Matrix with ROA as Dependent Variable

	ROA	TALOG	TLA/TA	TEQ/TA	TDEP/TA	INF	INT.	GDP
ROA	1.000							
TALOG	-.328	1.000						
TLA/TA	.153	-.361	1.000					
TE/TA	.119	.204	.072	1.000				
TD/TA	-.369	-.012	.565	-.539	1.000			
INF	-.021	-.541	.485	-.593	.610	1.000		
INT.	.118	.045	.237	-.393	.301	.347	1.000	
GDP	-.532	.457	-.061	-.221	.414	-.107	-.258	1.000

Source: SPSS Computed Value Results from Banks Financial Statements and Accounts

Table 4.3 Model regression results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.987 ^a	.974	.884	5.42354	.974	10.839	7	2	.087	2.856

Source: SPSS Computed Value Results from Banks Financial Statements and Accounts

a. Predictors: (Constant), GDP, TLA/TA, TET/A, INTEREST, LOGnTA, INF, TDT/A

b. Dependent Variable: NIM

Table 4.4 Model Coefficients

Model			Beta	T	Sig.
	B	Std. Error			
(Constant)	191.109	54.029		3.537	.071
TALOG	-22.764	10.147	-.530	-2.243	.154
TLA/TA	.203	.648	.085	.313	.784
TE/TA	2.921	1.068	.776	2.735	.112
TD/TA	-.614	1.109	-.158	-.553	.636
INF	.686	1.132	.133	.607	.606
INT.	-.092	1.294	-.014	-.071	.950
GDP	-.946	1.916	-.097	-.494	.670

Source: SPSS Computed Value Results from Banks Financial Statements and Accounts

a. Dependent Variable: NIM