Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.7, No.19, 2016

Determinants of Profit in the Nigerian Banking Sector

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Abstract
The broad objective of this study is to investigate the determinants of profit in the Nigerian banking sector.The study employed a panel research design, with bank specific and macroeconomic data sourced from annual reports and Central Bank of Nigeria Statistical Bulletin covering the period 2006 to 2012. The data panel were analyzed using Ordinary Least Square (OLS) statistical technique. Conventional diagnostic tests of normality, multicollinearity, heteroskedasticity, autocorrelation and misspecification were conducted. In conducting the estimation of bank specific and macro-economic characteristics and bank profit, the significant variables from fixed effect estimation of preliminary baseline regressions were extracted and regressed on PCAINDEX and TOBINS' Q and the findings are: capital adequacy, economic stability, money supply, inflation rate, lending interest rate and exchange rate were statistically significant at 5% level of significance on PCAINDEX and TOBIN'S Q respectively, although the strength of their impact was not the same. Total loans and advances were not statistically significant on PCAINDEX. The study also shows that the differences between the forecasting measures for bank specific conditions and macroeconomic conditions are not convincing enough to conclude on which model has higher forecasting ability for banks profitability. We therefore recommend that there is the need for sensible macroeconomic and bank specific characteristics management as the findings have revealed the sensitivity of banks profitability indices to both macroeconomic and bank specific factors.
Keywords: Profit, determinants, capital adequacy base and economy stability.

1.0 Introduction

The motivation for this study is the startling findings of Ernst & Young (2013). The report has sparked off interesting but controversial discourse among researchers and public commentators as to the determinants of profit in the Nigerian banking sector.

Though several studies such as Krakah and Ameyaw (2010), Alper and Anber (2011) exists, however there are scanty studies in Nigeria that simultaneously considered both bank specific and macroeconomic determinants of bank profit. Emphasis has been on bank specific determinants (Aburime, 2008; Ani, Ugwunta, Ezeudu and Ugwanyi, 2012). Others such as Aremu, Ekpo and Mustapha (2013) who considered both sets of determinants were however not adequate in terms of methodology such as inadequate sample size.

The broad objective of this study is to investigate the determinants of profit in the Nigerian banking sector using a combination of bank specific and macroeconomic variables.

The fixed effect estimation revealed that economic stability, money supply (M_2), inflation rate and lending interest rate have significant positive relationship with profit. Capital base and exchange rate exhibit negative and significant impact on profit.

This study made three major contributions: first, it provides a developing country perspective to the debate on determinants of bank profit. Instead of the usual ROA, ROE and NIM approach to measuring profitability, the study used a combination of principal component analysis (hence forth referred to PCAINDEX) and TOBIN'S Q to measure profit which may be considered novel. Secondly, the study provides evidence on the comparative analysis of the predictive capacity of bank specific characteristics and macroeconomic variables in forecasting banks profit. Finally, based line regression approach was used to eliminate non-significant variables, not many studies adopt this approach.

The paper proceeds as follows: following the introduction, section two provides an overview of extant empirical literature on the determinants of profit and hypotheses building. Section three focuses on the methods with emphasis on modelling the determinants of profit. Section four presents estimation results and discussion of findings. Conclusion and recommendation forms the basis of section five.

2.0 Review of Empirical Literature

The determinants of bank performances have attracted the interest of academic research as well as bank management, financial markets and banks supervisors (Ameur & Mhiri, 2013). While several studies such as

Molyneux and Thorton (1992), Demirguc-Kunt and Huizinga (1999) on bank performances have been conducted widely for US and European markets and, to a lesser extent for large emerging markets such as Brazil, China and others, relatively little is known about bank performances among other developing countries such as Nigeria. In Nigeria, few studies have been done such as Aburime (2008), Aremu *et al* (2013), however, there is more to be desired. To this end, this section gives review of empirical literature on the various determinants (bank-specific and macroeconomic) of profit in the Nigerian banking sector.

2.1 Bank Profit

Due to the inherent defects associated with accounting measures ROA, ROE and NIM, this study made a methodological advancement construct of PCAINDEX instead of the usual ratio of ROA, ROE and NIM. In addition, a market base index for profit (Tobin's Q) was also used to strengthen the PCAINDEX.

2.2 Capital Base and Bank Profit

Aremu *et al* (2003) found that equity to total asset ratio was negatively related to profit measures of ROA, ROE and NIM with an impact of 0.039, 4.206 and 0.210 respectively. However, it was significant at 5% and 10% level of significance on ROE and NIM. Aburime (2008) found the reserve and not share component of bank capital to be significant determinant of profit at 15% level. The result is consistent with an earlier review that bank share capital regulation in Nigeria has simply been altering the form and not the substance of banks operating in the Nigerian banking industry (Aburime & Uche, 2006). Flamini, McDonald and Schumacher (2009), using ROA as a measure of performance, found that equity to total asset was positive and highly significant, meaning that well-capitalized banks experience higher returns. Ongore and Kusa (2013) found capital base to have a significant positive relationship with profit at 5% significance level, the impact factors are 5% with ROA, 6% with NIM and 3.6% negative impact with ROE at 1% level of significance. These findings were before the moderating effect of ownership identity on the financial performance of commercial banks in Kenya. However, after the moderating role, capital base has a significant positive relationship with ROA and NIM and a negative impact on ROE, the impact factors are; 2% with ROA (at 10% level of significance), 6% with NIM (at 1% level of significance) and 38% on ROE (at 1% level of significance). Alper and Anbar (2011) found that capital base had a positive and insignificant relationship with an impact of 0.1735 (ROA) at 1%, 5% and 10% level of significance. On ROE, capital base was positively insignificant at 1%, 5% and 10% level of significance with an impact of 0.9826. Ahmad and Noor (2011) found that equity to total asset exhibit a positive significant relationship at 1% level of significance. Finally, Benthum (2012), using ROA as a measure of performance found that capital base has a strong positive and significant impact on profit. In the same vein, Krakrah and Ameyaw (2010) and Goddard, Molyneux and Wilson (2004) revealed that equity ratio which determines the capital strength of banks has a positive relationship with bank profit. Against the above backdrop, the first hypothesis for this study is thus:

Hypothesis I: Capital base has no significant impact on profit in the Nigerian banking sector.

2.3 Bank Size and Bank Profit

Aremu *et al* (2013) found that natural log of total assets (BNK_SZE) was positive and statistically insignificant in relation to ROA, ROE and NIM at 1%, 5% and 10%. In the same vein, number of branches was also statistically insignificant with a negative impact of 0.00002 (ROA as a basis), positive impact of 0.0004 (ROE as a basis) while 0.0000 (NIM as a basis). This indicates that bank size either on the basis of net worth or branch network has no impact on bank profit. This therefore supports the findings of Berger and Mester (1997), Heffernan and Fu (2008) who found no significant relationship between a bank's size and its profit thereby refuting the findings of a significant positive relationship between the two variables by Bikker and Hu (2002) and Goddard *et al* (2004). Flamini *et al* (2009) found that bank size exhibit negative and significant impact on profit. This indicates a non-linear relationship due to possible bureaucratic bottlenecks and managerial inefficiencies suffered by banks as they become too large. In this regard, our second hypothesis is thus:

Hypothesis II: Bank size has no significant impact on profit in the Nigerian banking sector.

2.4 Total loans & Advances and Bank Profit

Ani *et al* (2012) found that total loans and advances showed a significant positive relationship with profit at 5% level of significance. This suggests that with increase in inflation in the economy, the banks interest rate on all kinds of loans and advances would increase and in this way, the bank's interest earnings would show a significant increase. Assuming other variables remain constant, the higher the rate of transforming deposits into loans, the higher the profit of the bank. Thus, a positive relationship between the loans and advances of a bank with profitability is expected. This result is consistent with the findings of Athanasoglou, Delis and Staikouras (2006). Also, Abreu and Mendes (2000) found a significant and positive relationship between total loans and profit. This result is in line with the findings of Javaid, Anwar, Zaman and Ghafoor (2011), Gull, Irshad and

Zamar (2011), Goddard *et al* (2004) and Naceur (2003). Alper and Anbar (2011) found that loans have a significant negative impact of 0.1276 at 5% level of significance (using ROA as a basis); this may be due to bad credit administration. Ahmad and Noor (2011) also revealed a negative relationship (though statistically significant at 1% level of significance) with bank efficiency levels. This finding seems to suggest that banks with higher loans to asset ratio tend to exhibit lower efficiency level. Against this backdrop, our third hypothesis is thus:

Hypothesis III: Total loans and advances have no significant impact on profit in the Nigerian banking sector.

2.5 Deposits Liabilities and Bank Profit

Alper and Anbar (2011) found that deposit liability was not a significant driver of profit at 1%, 5% and 10% level of significance, though exhibited a negative relationship with an impact of 0.0179 (using ROA) as a basis. Using ROE as a performance indicator, it also exhibited a negative relationship with an impact of 0.0894 though insignificant at 1%, 5% and 10% level of significance. Furthermore, Benthum (2012) revealed deposit to total asset exhibited a positive relationship with an impact of 0.096 (pre-crisis period). However, in the crisis period, deposits to total asset showed a positive relationship with an impact of 0.962. Iyoha (2009) found that deposit liability exhibited a positive but insignificant relationship at 5% level of significance but became significant after OLS correction. In this regard, our fourth proposition is thus:

Hypothesis IV: Deposit liabilities have no significant impact on profit in the Nigerian banking sector.

2.6 Age of Bank and Bank Profit

There is little research work that dwelt on age of bank as a determinant of Profit. Those who considered it were only conceptual in nature. For instance, Anthanasoglou *et al* (2006) posited that newly established banks are not particularly profitable (if at all profitable) in their first years of operation as they place greater emphasis on increasing their market share, rather than on improving profit. Due to lack of empirical work in this area, this study expanded the frontiers of knowledge by empirically examining age of bank as one of the determinants of bank profit. Against this backdrop, our fifth hypothesis is thus:

Hypothesis V: Age of bank has no significant impact on profit in the Nigerian banking sector.

2.7 Inflation and Bank Profit

Aremu *et al* (2013) revealed that inflation exhibited an insignificant negative relationship in all three circumstances (ROA, ROE and NIM) at 1%, 5% and 10% level of significance with an impact of 0.00007, 0.0010 and 0.0002 respectively, while Flamini *et al* (2009) found a significant positive relationship and this suggests that banks' forecast future changes in inflation correctly and promptly enough to adjust interest rates and margins. Ongore and Kusa (2013) found a negative relationship with an impact of 0.05 (ROA as a basis) at 5% level of significance (prior to moderating role of ownership identity), 0.29 (ROE as a basis) at 10% level of significance and 0.04 (NIM as a basis) at 5% level of significance. Alper and Anbar (2011) showed that inflation exhibited an insignificant positive relationship with an impact of 0.1292 at 1%, 5% and 10% level of significance (ROA as a basis). Using ROE, inflation exhibited insignificant positive relationship with an impact of 1.0085 at 1%, 5% and 10% level of significance. Benthum (2012) also revealed annual rate of inflation was not a significant driver of profit (in the pre-crisis period) which contradicts previous findings. The reason is that a rise in inflation causes banks to increase lending rate to offset any cost associated with it in order to maintain the level of profit. In line with the above, our sixth hypothesis is thus:

Hypothesis VI: Inflation has no significant impact on profit in the Nigerian banking sector.

2.8 Money supply (M_2) and Bank Profit

In the aforementioned study of Aremu *et al* (2013), money supply growth rate had a significant and positive relationship with an impact of 0.0052 (ROE as a basis) at 5% level of significance. On ROA and NIM, it exhibit positive and insignificant impact of 0.0002 and 0.000 respectively. In the said study of Benthum (2012), growth of money as measured by m_1 was used as a proxy for the level of competition/growth within the banking industry in Ghana revealed an insignificant driver of banks' profit with no impact (pre-crisis period). In the crisis period, growth of money supply exhibited a significant negative relationship with an impact of 0.004. This result conforms to the findings of Harvard Business Review (2008) as cited in Benthum (2012). However, this finding runs contrary to that of Krakrah and Ameyaw (2010) who had a positive relationship between profit and market growth. In line with the above, our seventh hypothesis is thus:

Hypothesis VII: Money supply has no significant impact on profit in the Nigerian banking sector.

2.10 Interest rate and Bank Profit

In the said study of Alper and Anbar (2011), the result showed that real interest rate exhibited an insignificant

positive relationship on ROA with an impact of 0.0251 at 1%, 5% and 10% level significance. Using ROE as a basis, real interest rate had a significant positive impact of 1.8639 at 10% level of significance. It was however insignificant at 1% and 5% level of significant. In the said study of Benthum (2012), as earlier mentioned, none of the macroeconomic variables were significant drivers of profit. This result is consistent with the findings of Aburime (2008) who revealed that real interest rate exhibited a significant positive relationship with bank profit. The result is also in line with the findings of Vong and Hoi (2009) that there is a significant positive correlation between BLR and banks' profit. In line with the above, our eighth hypothesis is thus:

Hypothesis VIII: Interest rate has no significant impact on profit in the Nigerian banking sector.

2.11 Exchange Rate and Bank Profit

Otuori (2013) focused on four variables namely interest rate, inflation rate, external debt and export and import as determinants of exchange rate thus affecting profit. We shall limit our review to interest and inflation rate. On its findings, interest rate had a positive and significant effect on bank profitability with an impact of 1.427 at 5% level of significance. The implication is that higher level of interest rate leads to higher profit in commercial banks which is consistent with the findings of Bergen (2010) as cited in Otuori (2013). On the relationship between inflation rate and bank profit, the study found that inflation rate had a negative and significant effect on bank profit with an impact of 1.664 at 5% level of significance. The implication is that higher level of inflation rate results in lower bank profit. This is also consistent with Bergen (2010) equally cited in Otuori (2013) who noted that countries with higher inflation typically see depreciation in their currency in relation to the currencies of their trading partners. In line with the above, our ninth hypothesis is thus:

Hypothesis IX: Exchange rate has no significant impact on profit in the Nigerian banking sector.

2.12 Economy Stability and Bank Profit

Most of the empirical work on determinants of profit had always considered economy growth as proxy by Gross Domestic Product. Such studies include Aremu *et al* (2013), Ongore and Kusa (2013), Alper and Anber (2012), Benthum (2012), Naceur (2003), Ahmad and Noor (2011) and Flamini *et al* (2009). However, their findings have been mixed. For instance, Ahmad and Noor (2011) had a statistically significant positive relationship with profit at 1% level of significance, Bentthum (2012) had a significant negative relationship with profit with an impact of 0.004 (in the crisis era) while Ongore and Kusa (2013) had a significant negative relationship with an impact of 0.070564 (only on NIM). Aremu *et al* (2013) had an insignificant relationship with an impact of 0.000, 0.0003 and 0.0000 for ROA, ROE and NIM respectively. In Flamini *et al* (2009), the result showed an insignificant relationship with profit, Ongore and Kusa (2013) had a insignificant negative and positive relationship with an impact of 0.045980 and 0.003932 for ROA and ROE respectively. Alper and Anbar (2012) had an insignificant negative relationship with an impact of 0.0994 and 0.3381 using ROA and ROE respectively while Benthum (2012) revealed an insignificant determinant of profit in the pre-crisis period.

However, little is known of economy stability as a determinant of bank profit in the Nigerian banking sector. To expand the frontiers of knowledge, we examined economy stability as one of the macroeconomic determinants of profit in the Nigerian banking sector. Against this backdrop, our tenth hypothesis is thus:

Hypothesis X: Economic stability has no significant impact on profit in the Nigerian banking sector.

3.0 Methodology

As a result of the nature of the study, a panel research design was used in line with Demirguc-kunt and Huizinga (1999) as popularised by Naceur and Goaied (2008), Krakah and Ameyaw (2010). The models for this study are adaptation of Krakah and Ameyaw (2010) and they are presented below:

Model 1: Bank-specific Variables and Bank Profit using PCAINDEX

$PCAINDEX_{it} = \beta_0 + \beta_1 CAB_{it} + \beta_2 BS_{it} + \beta_3 SD_{it} + \beta_4 TLA_{it} + \beta_5 AG_{it} + \mu_t$ ....(i)

Where:

$PCAINDEX_{it}$= PCA of ROA, ROE and NIM of i^{th} bank at time ''t''.

$\beta_1 - \beta_5$= Unknown coefficients.

CAB_{it} = Capital adequacy base of i^{th} bank at time ''t''.

BS_{it}= Bank size (Proxy by total asset base) of i^{th} bank at time ''t''.

SD_{it} = Size of deposit liabilities of i^{th} bank at time ''t''.

TLA_{it}= Total loans and advances of i^{th} bank at time ''t''.

AG_{it} = Number of years in existence of i^{th} bank from date of incorporation at time ''t''.

μ_t= Stochastic term.

The apriori signs are: $\beta_1>0$, $\beta_2>0$, $\beta_3>0$, $\beta_4>0$, $\beta_5>0$

Model 2: Bank-specific Variables and Bank Profit using TOBIN'S Q

$TQ_{it} = \beta_0 + \beta_1 CAB_{it} + \beta_2 BS_{it} + \beta_3 SD_{it} + \beta_4 TLA_{it} + \beta_5 AG_{it} + \mu_t$ ....(ii)

Where:

TQ_{it}: Tobin's Q of i^{th} bank at time ''t''.

Model 3: Macroeconomic Variables and Bank Profit using PCAINDEX

$PCAINDEX_{it} = \beta_0 + \beta_6 INF_t + \beta_7 INT_t + \beta_8 MS_t + \beta_9 EXC\_RT_t + \beta_{10} ES_t + \mu_t$ ....(iii)

Where:

$\beta_6 - \beta_{10}$= Unknown coefficients.

INF_t= Inflation at time ''t''.

INT_t = Interest rate (Proxy for lending rate) at time ''t''.

MS_t (M_2) = Money supply at time ''t''.

EXC_RT_t = Exchange rate at time ''t''.

ES_t= Economic stability at time ''t''.

μ_t = Stochastic term.

The apriori signs are: $\beta_6<0$, $\beta_7>0$, $\beta_8>0$, $\beta_9>0$, $\beta_{10}>0$.

Model 4: Macroeconomic Variables and Bank Profit using using Tobin's Q

$TQ_{it} = \beta_0 + \beta_6 INF_t + \beta_7 INT_t + \beta_8 MS_t + \beta_9 EXC\_RT_t + \beta_{10} ES_t + \mu_t$ ....(iv)

Model 5: Combining Both Bank-specific and Macroeconomic Variables (Significant Variables) using PCAINDEX

The fifth model was established by eliminating non significant variables from the first and third models using stepwise regression approach. Therefore, the fifth model contained all significant bank specific and macroeconomic variables.

$PI_{it} = \beta_0 + \beta_4 TLA_{it} + \beta_6 INF_t + \beta_7 INT_t + \beta_8 MS_t + \beta_9 EXC\_RT_t + \beta_{10} ES_t + \mu_t$**..... .....(v)**

Model 6: Combining Both Bank-specific and Macroeconomic Variables (Significant Variables) using TOBIN'S Q

The sixth model was established by eliminating non significant variables from the second and fourth models using stepwise regression approach. Therefore, the sixth model contained all significant bank specific and macroeconomic variables.

$TQ_{it} = \beta_0 + \beta_1 CAB_{it} + \beta_6 INF_t + \beta_7 INT_t + \beta_8 MS_t + \beta_9 EXC\_RT_t + \beta_{10} ES_t + \mu_t$**..... ....(vi)**

All the sixteen (16) public quoted commercial banks on the Nigerian Stock Exchange (NSE) as at December 2012 constituted the population for the study. However, a sample size of fifteen banks (15) was scientifically determined using the Yamane (1967) approach as cited in Israel (1992).

To investigate the impact of bank and macroeconomic variables on bank performance in Nigeria, secondary data for both sets of variables extracted from the various bank annual financial statements and Central Bank of Nigeria (CBN) Statistical Bulletin for the period 2006 to 2012 were analyzed using Ordinary Least Square (OLS) statistical technique. Other test such as panel model, normality, multicollinearity, heteroskedasticity, autocorrelation and model specification tests were carried out.

The variables were operationalised as follows;

Bank profit: The dependent variable being measured by (1) Principal Component Analysis of return on asset (ROA), return on equity (ROE) and net interest margin (NIM) and (2) Tobin's Q (MVE+PS+DEBT)/TA.

Capital Base: Measured by equity to total assets.

Bank Size: Proxy by the total bank assets.

Total loans and advances: Measured by the total amount of money given to borrowers by banks in form of loans and advances.

Deposits Liabilities: Measured by the total deposits made by customers.

Age of Bank: Measured by the number of years in existence from date of incorporation

Inflation: Measured by annual inflation rate.

Money supply (M_2): Measured by the summation of demand deposit, currency in circulation and short term financial instruments.

Lending interest rate: Measured by the monetary policy rate

Exchange Rate: Measured by annual exchange rate using Naira to Dollar.

Economy Stability: Measured by the standard deviation of GDP.

4.0 Estimation Result and Discussion of Findings

4.1 Descriptive Statistics

Table 1: Descriptive Statistics

	PCAINDEX	TLA	AG	BS	CAB	ES	SD	MS	INF	INT	EXRATE	TOBINQ
Mean	-0.00043	2.85E+11	23.757	7.23E+11	1.11E+11	7.3699	5.17E+11	26550829	19.354	27.6874	139.997	0.4789
Median	0.118337	2.15E+11	21	5.48E+11	8.80E+10	5.43	3.93E+11	9411112	21.7	26	148.902	0.393
Max	0.824389	1.13E+12	51	2.46E+12	4.38E+11	16.4	1.84E+12	1.53E+08	27.2	51.48	156	4.794
Min	-9.40568	1.91E+10	1	1.07E+11	-1.36E+11	1.71	5.71E+10	3797909	12	18.64	118.567	-0.557
Std.	0.960704	2.49E+11	12.532	5.56E+11	1.03E+11	4.955	4.14E+11	48447402	5.0079	10.5977	14.2878	0.5243
Jb	34671.64	34.20634	5.4661	25.76089	23.11514	9.3973	29.3091	125.1978	6.4586	41.1598	13.3279	8466.1
Prob	0	0	0.065	0.000003	0.00001	0.0091	0	0	0.0396	0	0.00128	0
Obs	103	103	103	103	103	103	103	103	103	103	103	103

Source: Researchers Compilation (2014)

The mean values and standard deviation for each of the variables are given respectively as: PCAINDEX (-0.00043, 0.960704), TLA (2.85E+11, 2.49E+11), AG (23.757, 12.532), BS (7.23E+11, 5.56E+11), CAB (1.11E+11, 1.03E+11), ES (7.3699, 4.955), SD (5.17E+11, 4.14E+11), MS (26550829, 48447402), INF (19.354, 5.0079), INT (27.6874, 10.5977), EXRATE (139.997, 14.2878) and TOBINQ (0.4789, 0.5243) . The maximum and minimum values for each of the variables are respectively given as; PCAINDEX (0.824389, -9.40568), TLA (1.13E+12, 1.91E+10), AG(51, 1), BS (2.46E+12, 1.07E+11), CAB (4.38E+11, -1.36E+11), ES(16.4, 1.71), SD(1.84E+12, 5.71E+10), MS(1.53E+08, 3797909), INF(27.2, 12), INT(51.48, 18.64), EXRATE(156, 118.567) and TOBINQ (4.794, -0.557).

4.2 Correlation Result

Table 2 Pearson Correlation Result

	PCAINDEX	TLA	AG	BS	CAB	ES	SD	MS	INF	INT	EXRATE	TOBINQ
PCAINDEX	1	0.0823	0.1486	0.0925	0.1025	0.0769	0.0801	0.0714	-0.071	0.1211	-0.067	0.04107
TLA		1	0.238	0.625	0.4468	0.3723	0.516	0.3093	-0.42	-0.114	0.47608	-0.1934
AG			1	0.3631	0.2054	0.1075	0.3839	0.0756	-0.115	-0.015	0.1236	0.00687
BS				1	0.8752	0.2852	0.9861	0.3114	-0.346	-0.068	0.35918	-0.1503
CAB					1	0.2103	0.8252	0.2122	-0.278	-0.114	0.26752	-0.207
ES						1	0.2887	0.3777	-0.825	0.1042	0.76808	-0.0473
SD							1	0.318	-0.34	-0.061	0.37096	-0.1518
MS								1	-0.374	0.0688	0.46814	-0.0972
INF									1	0.3716	-0.7551	0.21861
INT										1	-0.1793	0.3599
EXRATE											1	-0.1687
TOBINQ												1

Source: Researchers Compilation (2014)

The correlation coefficients between profit measures (PCAINDEX and TOBIN Q) and its determinants (bank and macroeconomic variables) are respectively given as: PCAINDEX and TOBIN Q are correlated with TLA (r=0.082, -0.193), AG (r=0.149, 0.238), BS (r=0.092, r=0.625), CAB (r= 0.102, 0.447), SD (r=0.08, 0.516), MS(r=0.0714, 0.3093), INT (r=0.121, -0.114), ES(r=0.0769, 0.372), INF (r=-0.071, -0.42), and EXRATE (r=-0.067, 0.476) although the strength and relationship of the coefficients differ. We proceed to conduct the regression analysis as correlation analysis is not best suited for estimating causality between variables. However, the regression assumptions test is first conducted;

Table 3 Regression Assumptions Test

Normality test		
Variable	Jacque-bera statistics	Prob
PCAINDEX	34671.64	0.00
TLA	34.20634	0.00
AG	5.4661	0.065
BS	25.76089	0.00
CAB	23.11514	0.00
ES	9.3973	0.00
SD	29.3091	0.00
MS	125.1978	0.00
INF	6.4586	0.039
INT	41.1598	0.00
EXRATE	13.3279	0.00
TOBINQ	8466.1	0.00
Multicollinearity test		
Variable	Coefficient Variance	Centered VIF
C	4.177610	NA
TLA	1.56E-24	8.657690
AG	8.15E-05	1.428552
BS	1.97E-24	6.95959
CAB	5.64E-24	5.572440
ES	0.004117	1.18547
SD	2.67E-24	4.88034
MS	5.97E-18	1.457069
INF	0.003897	8.75124
INT	0.000305	3.826824
EXRATE	0.000169	3.758666
Heteroskedasticity Test: ARCH		
F-statistic = 0.156	Prob. F(1,96)	0.929
Obs*R-squared = 189.5	Prob. Chi-Square(1)	0.929
Breusch-Godfrey Serial Correlation LM Test:		
F-statistic = 0.12504	Prob. F(2,88)	0.82
Obs*R-squared=2.559647	Prob. Chi-Square(2)	0.79
Ramsey Reset Test		
t- statistics=1.2948	Df= 1054	0.281
f-statistics =1.676	Prob. F(1,1054)	0.203

Source: Researchers Compilation (2014)

All the variables were normality distributed (the respective Jacque-bera statistics were all zero). The variance inflation factor statistics of less than 10 (VIF<10) for each of the variables indicate absence of multicollinearity (correlation) among the independent variables. The ARCH test result indicates the presence of homoskedasticity (0.929>0.05), the constant variance assumption of the Ordinary Least Square estimator. The Breusch-Godfrey Serial Correlation LM Test result (0.79>0.05) indicates the absence of higher order correlation. Finally, Ramsey Reset test result (0.203>0.05) substantiate validity of the regression model.

4.3 Bank specific characteristics and financial performance Regression Result

The regression result examines the impact of Bank specific characteristics on profit of Nigerian banks. The purpose of this baseline regression is to identify and extract the significant variables. The Results are presented below;

Table 4: Panel Regression Result

Variable	Fixed effects	Random effects	Pooled OLS
Dependent variable	**PCA Index**		
C	0.1026 (0.6953)	0.5745* (0.000)	0.11053** (0.0794)
TLA	-4.93E-13* (0.000)	-2.44E-13 (0.719)	-2.18E-13* (0.0079)
BS	2.10E-13 (0.5670)	9.85E-13 (0.3815)	3.90E-13 (0.0762)
CAB	-2.00E-13 (0.4209)	-2.63E-12* (0.018)	-3.15E-13 (0.4038)
SD	1.21E-13 (0.3931)	-9.14E-13 (0.334)	-2.76E-13 (0.2467)
AG	-0.00652 (0.567)	0.0011 (0.816)	-0.00197 (0.3142)
R^2	0.431	0.089	0.084
ADJ R^2	0.300	0.043	0.017
F-Stat	3.307	1.919	1.253
P(f-stat)	0.00	0.098	0.288
D.W	2.25	2.37	2.26
Dependent variable	Tobin Q		
C	0.6856 (0.128)	1.05E-07 (0.219)	8.58E-08* (0.012)
TLA	2.61E-13 (0.3066)	-11.05E-13 (0.219)	-1.62E-13 (0.000)
BS	1.31E-13 (0.5823)	3.86E-07* (0.000)	1.50E-12 (0.236)
CAB	-1.72E-12* (0.001)	0.415* (0.004)	-1.96E-12 (0.037)
SD	-2.14E-13 (0.3498)	-0.233* (0.000)	-1.55E-12 (0.167)
AG	-0.00316 (0.872)	0.006* (0.000)	0.0152 (0.00)
R^2	0.412	0.089	0.23
ADJ R^2	0.277	0.043	0.17
F-Stat	3.063	1.918	5.930
P(f-stat)	0.00	0.098	0.00
D.W	2.04	2.374	1.8
Hausman test: 0.039			

Source: Researchers Compilation (2014). * Significant at 5% **significant at 10%

Given that the hausman test result (0.039<0.05), the FEM is favoured to the REM. Using the FEM, only TLA and CAB were significant on PCAINDEX and TOBIN Q respectively at 5% level of significance, thus will be of interest in conducting the final estimation.

4.4 Macro-economic characteristics and Bank financial performance Regression Result

The regression results examine the impact of Macro-economic conditions on banks profit in Nigeria (Model 3 and 4). The purpose of this baseline regression is to identify and extract the significant variables. The Results are presented below;

Table 5: Panel Regression Result

Variable	Fixed effects	Random effects	Pooled OLS
Dependent variable	**PCA Index**		
C	1.354* (0.000)	4.457* (0.000)	1.504* (0.000)
ES	-0.005* (0.004)	-0.029* (0.000)	-0.005* (0.007)
MS	7.36E-10* (0.000)	1.30E-09* (0.000)	7.25E-10* (0.000)
INF	-0.0219* (0.000)	-0.098* (0.000)	-0.022* (0.000)
INT	0.0049* (0.000)	0.024* (0.000)	0.005* (0.000)
EXRATE	-0.008* (0.000)	-0.0217* (0.000)	-0.008* (0.000)
R^2	0.331	0.085	0.212
ADJ R^2	0.183	0.039	0.172
F-Stat	5.713	1.844	5.333
P(f-stat)	0.022	0.111	0.000
D.W	2.8	2.3	2.44
Dependent variable	Tobin Q		
C	-0.380* (0.000)	0.244 (0.609)	0.233 (0.693)
ES	0.002* (0.000)	0.003 (0.461)	0.004 (0.429)
MS	1.40E-10* (0.000)	2.66E-10* (0.029)	-2.65E-10** (0.078)
INF	0.004* (0.000)	0.005 (0.534)	-0.001 (0.874)
INT	0.0141* (0.000)	0.0167* (0.000)	0.008* (0.007)
EXRATE	0.0025* (0.000)	-0.002 (0.314)	-0.003 (0.911)
AR(1)	-0.062 (0.393)		
R^2	0.626	0.137	0.106
ADJ R^2	0.518	0.093	0.06
F-Stat	5.779	3.135	2.33
P(f-stat)	0.00	0.011	0.047
D.W	1.9	2.163	1.4
Hausman test: 0.002			

Source: Researchers Compilation (2014). * Significant at 5% **significant at 10%

Given that the hausman test result (0.002<0.05), the FEM is favoured to the REM. Using the FEM, all the variables were significant on PCAINDEX and TOBIN Q respectively at 5% level of significance, thus will be of interest in conducting the final estimation.

4.5 Bank Specific characteristics, Macro-economic characteristics and Bank Profit

In conducting this estimation, we extract significant variables from fixed effects estimation of bank characteristics and bank profit (table 4) and macro-economic condition and bank profit (table 5). The result are presented and analyzed below;

Table 6: Panel Regression Result

Dependent variable	PCA Index	TOBINQ
C	1.193* (0.000)	0.8505* (0.002)
TLA	6.25E-14 (0.1786)	
CAB		-2.33E-12* (0.000)
ES	0.0013* (0.000)	0.007* (0.000)
MS	6.94E-10* (0.000)	6.03E-10* (0.000)
INF	-0.015* (0.000)	-0.003* (0.002)
INT	0.006* (0.000)	0.009* (0.000)
EXRATE	-0.007* (0.017)	-0.001* (0.000)
R^2	0.417	0.631
ADJ R^2	0.234	0.517
F-Stat	2.27	5.54
P(f-stat)	0.00	0.000
D.W	2.4	1.9

Source: Researchers Compilation (2014)

On the systematic variation (R^2) in profit measures due to its determinants as per table 6, we had 0.417 and 0.631 for PCAINDEX and TOBIN Q respectively. The ADJ R^2 revealed 0.234 and 0.517 for PCAINDEX and TOBINQ respectively. The F-stat (2.27, 5.54) and p-value (0.00, 0.00) indicates that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected at 5% level while the D.W statistics (2.4, 1.9) indicates that the presence of serial correlation in the residuals is unlikely. On the performance of each determinants on PCAINDEX and TOBIN Q respectively, the result showed: ES (0.0013, 0.007), MS (6.94E-10, 6.03E-10), INF (-0.015, -0.003), INT (0.006, 0.009) and EXRATE (-0.007, -0.001) were all significant at 5% level of significance (p-values of approximately 0.0 in all cases). TLA was insignificant (0.1786>0.05) with impact of 6.25E-14 on PCAINDEX. CAB was significant (0.000<0.05) with impact of -2.33E-12 on TOBIN Q.

Table 7: Measures of Forecasting Accuracy (Comparison of Predictability Performance)

	Bank Specific conditions	Macroeconomic Conditions	
PCAINDEX			
RMSE	0.883	0.855	
MAE	0.264	0.248	
MAPE	241.647	258.06	
Theil Inequality	0.668	0.649	
TOBIN Q			
RMSE	0.444	0.457	
MAE	0.236	0.248	
MAPE	82.592	76.906	
Theil Inequality	0.357	0.351	
Independent Sample t-test			
	T-value	D.f	Sig.
PCAINDEX	-0.46	6	0.965
TOBIN Q	0.50	6	0.961

Source: Author's Computations, 2014

Using the PCAINDEX as measure for profit, the respective values for Root Mean Square Error (RMSE), Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE) and Theil inequality (TIC) for Bank Specific conditions model (BSC) and Macroeconomic conditions model (MCM) respectively are: (0.883,0.855; 0.264, 0.248; 241.647, 258.06; 0.668, 0.649). Using the TOBIN Q as measure for profit, the respective values for RMSE, MAE, MAPE and Theil inequality for BSC and MCM respectively are: (0.444, 0.457; 0.236, 0.248; 82.592, 76.906; 0.357, 0.351). However, we find that the differences between the measures for BCM and MCM are not convincing enough to conclude on which model has higher forecasting ability for banks profit. To

ascertain our suspicion, we conduct an independent sample t –test to examine if statistically significant differences actually exist between the measures of forecasting accuracy between MCM and BCM. The result confirms our suspicion and indicates that the differences between the estimates are not statistically significant. Consequently, we conclude that none of the models is superior in forecasting bank profit and hence both macroeconomic and bank specific factors are both equally critical factors that determine bank profit and both factors must be considered exhaustively in any attempt at simulation of profit scenarios for banks in Nigeria.

4.6 Discussion of Findings

4.6.1 Total Loan & Advances and Bank Profit

The results show that TLA appears to have a positive effect (6.25E-14) though not statistically significant (p=0.1786) at 5% level. This suggests that increases in loans and advances will impact significantly on banks profit. Though the sign of the variable appears to be in tandem with Ani *et al* (2012) which examined 15 banks spanning a ten year period from 2001 to 2010 and found that total loans and advances showed a positive relationship with profit but insignificant. Also, Athanasoglo *et al* (2006), Abreu and Mendes (2000) found a positive relationship between total loans and profit. However, the variable was significant for these studies.

4.6.2 Capital Adequacy and Bank Profit

The results show that CAB appears to have a negative effect (-2.33E-12) which is also statistically significant (p=0.00) at 5% level. This suggests that increases in capital adequacy base will have a significantly negative impact on banks profit. This finding is consistent with the findings of Berger and Mester (1997). Also, the result also conforms to the findings of Aburime (2008) and Aburime and Uche (2006) which found capital size to be a significant determinant of bank profit. A good explanation for the negative sign is that banks in Nigeria especially do not efficiently utilize or manage their capital base. On the contrary, the result contradicts those of Flamini *et al* (2009) and Ongore and Kusa (2013).

4.6.3 Economy Stability and Bank Profit

The result indicates that economy stability has a positive and significant impact on bank profit using both the PCAINDEX and TOBINQ. The explanation for this expected sign is that stability in economic growth in Nigeria has a positive impact on bank profit. Most of the empirical work on determinants of profit had always considered economy growth as proxy by Gross Domestic Product. Such studies include Aremu *et al* (2013), Ongore and Kusa (2013), Alper and Anber (2012), Benthum (2012), Naceur (2003), Ahmad and Noor (2011) and Flamini *et al* (2009). However, their findings have been mixed. For instance, Ahmad and Noor (2011) had a statistically significant positive relationship with profit; Bentthum (2012) had a significant negative relationship with profit while Ongore and Kusa (2013) had a significant negative relationship. Aremu *et al* (2013) had an insignificant relationship. In Flamini *et al* (2009), the result showed an insignificant relationship with profitability, Ongore and Kusa (2013) had a insignificant negative and positive relationship.

4.6.4 Money Supply and Bank Profit

The results show that MS_2 appears to have a positive effect and significant impact on bank profit using PCA Index and Tobin's Q. This suggests that increases in money supply will impact significantly on banks profit. Increases in money supply will reduce interest rate and hence increase the demand for banks loans and advances and minimizing banks idle cash balances. The finding is in tandem with Aremu *et al* (2013) and Krakah and Ameyaw (2010) who posited that money supply growth rate had a significant positive relationship with bank performance.

4.6.5 Inflation and Bank Profit

The results indicate that inflation rate has a negative and significant impact on bank profit using both PCA Index and Tobin's Q respectively. This implies that increases in inflation rates will result in a decline in bank profit. Higher rates Inflation may dampen the capacity of banks to attract deposits especially when returns on deposits are below the rising inflation rates. Investors may seek other price-returns related assets whose value tend to rise with increases in inflation and may hurt liquidity positions of banks and then profit. Also, in cases where banks fail to anticipate inflationary increase and then make adjustment for interest rate, the value of returns on loans and advances will decline and hence bank performance. This finding is in tandem with Ongore and Kusa (2013) found a significant negative relationship at 5% level of significance. The study finding is also consistent with that of Benthum (2012. However, inconsistent with Flamini *et al* (2009) found a significant positive relationship. Aremu *et al* (2013) revealed that inflation exhibited an insignificant negative relationship in all three circumstances (ROA, ROE and NIM) while Flamini *et al* (2009) found a significant positive relationship.

4.6.6 Interest Rate and Bank Profit

The fixed effect estimation result indicates that INT exhibited a positive and significant effect on banks profit using PCA Index and Tobin's Q respectively. This finding is in line with Aburime (2008) and Vong and Hoi (2009) who revealed that interest rate exhibited a significant positive relationship with bank profit. However, it contradicts studies of Alper and Anbar (2011) and of Benthum (2012) who posited that interest rate exhibited an insignificant positive relationship with bank performance.

4.6.7 Exchange Rate and Bank Profit

Finally, the result revealed that exchange rate has a significant negative effect on bank performance using Tobin's Q and PCAINDEX. The expected positive sign is at tandem with the study of Otuori (2013).

5.0 Conclusion and Recommendation

The Performance of the banking system has serious spill-over implications not just for the financial system but the economy at large and this is due to their unique position in financial intermediation and the payment system. Thus credit and liquidity risk by banks can create significant negative externalities and systemic risk which is one of the reasons for the collapse of the financial sector. Considering the intermediation role of the banking sector in an economy, its profitability is paramount; otherwise banks' insolvencies can result in systemic economic crises. Consequently, investigating and modelling the determinants of banks profit has become key in any attempt at simulating effective scenarios from which sustained banking system performance can be evaluated and guided on a sustainable path. Deducing from existing theories, the study hypothesizes that bank specific characteristics and macroeconomic conditions are critical determinants for banks profit and are even more germane for emerging markets. In order to validate our arguments, Capital Adequacy, Total Loan and Advances, Economic, Money Supply, Inflation rate, Interest Rate and Exchange rate were regressed on PCAINDEX and TOBIN'S Q computed as profit indices. Using the fixed effects estimation after conducting the relevant preliminary diagnostic test, the study revealed that Capital Adequacy, Economic, Money Supply, Inflation rate, Interest Rate and Exchange rate had significant impacts on banks profit. However, we find that the differences between the forecasting measures for Bank specific Conditions and Macroeconomic Conditions are not convincing enough to conclude on which model has higher forecasting ability for banks profit and the independent sample t –test confirms this. Consequently, we conclude that none of the models is superior in forecasting bank profit and hence both macroeconomic and bank specific factors are both equally critical factors that determine bank profit and both factors must be considered exhaustively in any attempt at simulation of profit scenarios for banks in Nigeria.

In line with the study findings, the following recommendations are made; firstly, for financial firms in particular such as banks, capital creates liquidity for the bank due to the fact that deposits are most fragile and prone to bank runs. Moreover, greater bank capital reduces the chance of distress. Hence the Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. Banks with higher capital to asset ratio are considered relatively safer and tend to have a better margin of cushion, remaining profitable even during economically difficult times. Conversely, banks with lower capital adequacy are considered riskier relative to highly capitalized banks. Consequently, the study recommends that the CBN must keep a close eye at ensuring that capital adequacy ratios are such that can support long tern financial performance for banks.

Secondly, loans and advances are the major asset from which they generate income and hence the quality of loan portfolio determines the earnings. It is the major concern of all commercial banks to keep the amount of nonperforming loans to low level. This is so because high nonperforming loan affects the earnings of the bank. Thus, low nonperforming loans to total loans shows that the good health of the portfolio a bank and an indication of credit risk of banks. Credit risk can have rippling effect thus leading to insolvency. Consequently, the study recommends that banks should ensure that nonperforming loan ratios are within manageable proportions and this implies that internal control systems at both the Apex bank (CBN) and the deposit banks must monitor the loan performance of banks so as to reduce the potential for credit risks. Finally, there is the need for sensible macroeconomic management and coordination as the findings have revealed the sensitivity of banks profitability indices to macroeconomic factors.

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