

The Analysis of Variables Influencing Bank Profitability in Africa: Evidence from Selected African Countries

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This paper investigates the factors that influence bank profitability in Africa by analysing the evidence from selected African countries. Various interrelations were performed using dynamic panel data modelling on 33 selected banks operating across 9 countries in Africa over the period 2009 to 2019. The study utilised an unbalanced panel of commercial banks in the selected countries with return on equity as a proxy for profitability. The outcome of the study shows evidence of significant impacts of both bank and macroeconomic-specific factors. Of the bank-specific variables, net interest margin, loan loss and cost to income ratios have a statistically significant negative relationship with profitability. There is however, a positive and statistically significant relationship between profitability and macroeconomic-specific variables. Overall, the results of the study show that various factors impact profitability at different levels as regulatory and supervisory regimes, including the pace of technological developments and implementation thereof that differs among various countries and banks.

Key words: *profitability, bank-specific factors, macro-specific factors, return on equity*

INTRODUCTION

Profitability among banks is influenced by factors in both the macro and micro economic environments in the form of banking regulations, policies and supervisory frameworks imposed by various regulators, supervisors, governments, and policymakers in countries across the world. The imposition of regulations, policies and supervision is an attempt by countries to protect their economies and individual depositors to banks (Caruana, 2015). It is encouraging that some theoretical work on quantifying the profitability of banks is starting to



emerge. This study reviews such literature to determine the evidence of the variables that impact the profitability of banks.

Nanda and Panda (2018) highlighted that the level of bank profitability is influenced by the intensity of its income generation activities, such as lending and trading of forex. In performing their various functions, banks are expected to ensure prudent management of assets and guarantee the safety of depositors' funds. They are expected to adhere to strictly safe and sound banking practices, maintain adequate internal control measures to prevent incidences of frauds, forgeries and other financial malpractices to ensure stability and engender public confidence in the system. Proper management of banks is therefore a prerequisite for economic prosperity in any country as the vehicle for the implementation of the monetary policy. The contributions of banks to the development of the economy depend on the quantity and quality of their services and the efficiency with which these services are provided; hence, the concern of the regulatory authorities for intensive banking regulation and supervision (Alashi, 2002). Banks cannot fulfil this significant role without being profitable and well capitalised as the profitability of the sector would withstand negative shocks and therefore contribute to the stability of the financial system. In this instance, profitability of all the stakeholders in the economy is important and is dependent on microeconomic and macroeconomic factors. In Africa, where many countries show weak financial systems, the banking sector tends to be key to the growth of the economy. The paucity of data about profitability of banks in Africa necessitates the importance of highlighting the factors that influence bank profitability.

While the regulations and supervision of banks are noble, their impacts on the profitability of banks seem not to be well- understood. The Economist (2017), in a special report titled; "International banking", looked at the decade after the 2008 to 2009 global financial crisis and how world banks were performing. The work by the Economist (2017) found that bankers are of the view that what has changed in the industry over the past decade and on top of the list will be regulation. The Economist further contends that a light touch has been replaced by close oversight, including stress tests which bankers saw as the biggest change in the banking landscape. However, the report further argues that although many banks worldwide are in better shape than they were, the gains are not evenly spread. This appears to be particularly true in Europe where the banks' recovery has been distinctly patchy (Economist, 2017).

PURPOSE OF THE STUDY

The purpose of this study is to investigate the factors that influence the profitability of banks in chosen African countries for the period 2009 to 2019 with the view to provide information to policymakers, the banking industry, researchers and various Stakeholders in the continuum.

LITERATURE REVIEW

Abdullah, Parvez and Ayreen (2014) studied the factors that impact on the profitability of banks in Bangladesh by exploring the determinants of profitability of 26 banks listed in the Dhaka Stock Exchange (DSE). They categorised the determinants into three themes that are connected to the profitability of banks: those that are directly specific to the banks, the industry in general and the macroeconomic variables. They used return on assets (ROA) and net interest margin (NIM) as a proxy for profitability for reasons ranging from the assumptions that ROA explores the profits derived from the invested assets whereas NIM is seen as the measure of the difference between interest revenues and interest costs. Although the study was performed on a single country, a reasonable number of banks were included and the study is commended for including macroeconomic variables that consider the environments within which the banking system works, although the study period appears to be short with only four years of data. This could have somewhat impacted the outcome of the study due to the time lag that the industry and the macroeconomic variables might take to display any material impacts on the independent variables, in this case, ROA and NIM. This argument is supported by the findings of this study that concludes that overall, the banking specific variables appear to have a positive effect on the profitability of banks in Bangladesh whilst the industry and macroeconomic variables such as higher taxation, higher banking assets to gross domestic product (GDP) appear to decrease profitability. The study contributes to the body of knowledge on the rare literature on determining the banks' profitability in emerging markets.

The rarity of studies of this nature has been highlighted by other researchers such as Abbasoglu, Aysan and Gunes (2005), Ali, Akhtar, and Ahmed (2011) whose studies on the profitability of banks in developing countries found challenges in finding relevant and "recent" literature. The trio's study was performed on commercial banks in Pakistan with data collected for a short period from 2006 to 2009. The objective of the study was to analyse the effect of public and private variables on the profitability of banks in Pakistan. The findings are similar to those of Abdullah, Parvez, and Ayreen (2014) in Bangladesh, although their study was performed almost four years later. The study was performed under similar circumstances, with ROE and ROA used as measures of profitability.

Other earlier studies such as those on the internal factor analysis of the banking sector in Pakistan by Javaid, Anwar, Zaman and Gafoor (2011) examined the profitability of 10 banks for a period of about four years with almost similar findings, although the proxy for profitability was the return on equity (ROE) and ROA. Akbas (2012) studied the determinants of bank profitability on the Turkish banking sector by examining the impact of bank, industry and macroeconomic specific factors on the profitability of 26 commercial banks in Turkey over five years. This study found that the ratio of loan loss provisions to gross loans, the ratio of the total cost to total income, Herfindahl-Hirschman Index (HHI) for deposits and inflation, have statistical significance and negative relationship with return on assets. Similar findings were true when the return on equity (ROE) was taken as a measure of profitability.

The study followed the one previously done by Alper and Anbar (2011) where they examined bank and macroeconomic determinants of commercial bank profitability in Turkey. Theirs excluded the industry-specific determinants and the results were slightly different, although they also used ROA and ROE as proxies for profitability. The study, using a balanced panel dataset suggests that profitability in banks can be improved through increasing bank size and non – interest income. This missed the point on the increase in costs and the risk created by banks venturing too much into the business of banking. Besides, the theory that growth in the size of the bank should increase income is well known within banking, however, banks should be cautious towards organic growth as inorganic growth might impact on the risk profile of banks.

El-Kassem (2017) investigated the main determinants of the profitability of six major lender banks using panel data from Qatar for the period 2008 to 2015. The study was an attempt to determine the effect of liquidity and risk variables on the explained variation of the bank's performance in Qatar. The data was sampled from the world Bankscope database. Although the study was performed over a relatively long period in comparison to other studies in that region, the period is still short relative to studies in developed countries. The study estimates the "return on average assets" (ROAA) as a function of independent variables that are liquidity and risk variables. It is not clear what the proxy of this variable represents, performance or profitability of banks in Qatar. Besides, the study fails to explain and distinguish profitability from performance in banks. It appears as if the two are used interchangeably, and therefore should be richer if the introduction of a new variable and its representation is significantly explained to distinguish profitability and performance in banks. In its conclusion, the study findings refer to performance and fail to discuss any determinants of profitability as it highlighted that the variation of the independent variable "total capital ratio %" significantly affects the variation in performance of banks in Qatar measured by ROAA.

The study by Abedin and Dawan (2016) used a panel data analysis to estimate the profitability of the banking sector in Bangladesh. The study evaluated a panel of 29 banks using the Panel Generalised Method of Moments (GMM) approach and random effect ordinary least squares (OLS). They found that loans and advances, human resources, efficiency, and the growth of economic money supply have a positive impact on profitability whilst investment in government securities and shares has a significant negative impact.

From the literature reviews, it appears that there are several variables within the banks' financial statement that can be used as a proxy for profitability. The internal variables that banks are utilising for determining profitability are the return on equity (ROE) that measures the rate of return that shareholders receive for investing their capital into banks. The return on assets (ROA) shows the efficiency of the management of banks in managing the assets of the bank into net earnings. Net Interest Margin (NIM) and Net Non-Interest Margin (NNIM) measures how the management of interest received from banks' activities such as deposits and

borrowings is realised into net earnings. The latter deals with interest received from the non-banking activities of the bank.

RESEARCH METHODOLOGY

In this section, an insight into the methodology that is adopted in the collection, analysis and interpretation of the data that is collected for the study is provided. It attempts to provide a detailed analysis of the research plan and tools utilised in the actualisation of the study.

This study employed secondary data to estimate, analyse and interpret the influence of the factors that determine the profitability of banks in selected countries in Africa. Drawing from the two-step dynamic panel data approach that was pioneered by Blundell and Bond (1998), the study proposed a dynamic panel model to apprehend the determination of profitability and how it is impacted by the independent factors. The study drew from the work performed by Athanasoglou *et al.* (2005) who examined the effects of bank-specific, industry specific and macroeconomic determinants of bank profitability in Greece. The work also applied dynamic panel model techniques to a panel of Greek banks that covered the period 1985 to 2001. This study also drew from this work in the development of the Model.

The Model

The general model used for this study is estimated linearly as follows:

$$\Pi_{it} = C + \sum_{k=1}^K \beta_k X_{it}^k + \varepsilon_{it} \text{ where } \varepsilon_{it} = v_i + \mu_{it} \quad (1)$$

From the above general equation, Π_{it} represent the profitability of the bank at a certain time t , with $i=1$ to N and $t=1$ to T . The C in the equation represents a constant term.

X_{it}^k represents the k explanatory variables,

ε_{it} is the error term with v_i the unobserved effect specific to the bank, and

μ_{it} is the idiosyncratic error,

This is a one-way error component regression model, where $v_i \sim \text{IIN}(0, \delta_v^2)$ and independent of $u_{it} \sim \text{IIN}(0, \delta_\mu^2)$.

The explanatory variable may be grouped according to bank, industry, and macroeconomic variables. In this case the specification of equation (1) maybe broken down into three groups as follows:

$$\Pi_{it} = C + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{l=1}^L \beta_l X_{it}^l + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it} \quad (2)$$

X_{it} with j , l and m as subscripts representing bank, industry, and macroeconomic variables respectively. Berger (2000) highlighted that bank profits show a tendency to persist over time. This is a reflection of impediments to market competition, opacity of information, and sensitivity to regional shocks to the extent that these are serially correlated. The model therefore adopts a dynamic specification by including a lagged dependent variable among the regressors. This is done by augmenting equation (2) with a lagged profitability.

$$\Pi_{it} = C + \delta \Pi_{i,t-1} + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{l=1}^L \beta_l X_{it}^l + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it} \quad (3)$$

$\Pi_{i,t-1}$ is the one period lagged profitability and δ is the speed of adjustment to equilibrium. A value of δ between 0 and 1 implies that profits persist but they will return to their normal (average) level. A value close to 0 means that the industry is competitive while a value close to 1 implies less competitive structure.

Although this study adopts the general model as to the above estimation, the following dynamic panel data method was applied for this study. This is mainly informed by the paucity of data in explanatory variables in specific African countries and some of their major banks. The estimation of the profitability of banks is therefore being formulated as follows:

$$\text{Profitability}_{i,t} = \beta_0 + \beta_1 \text{Profitability}_{i,t-1} + \beta_2 \text{lqd}_{i,t} + \beta_3 \text{as}_{i,t} + \beta_4 \text{CAR}_{i,t} + \beta_5 \text{Dep}_{i,t} + \beta_6 \text{MQ}_{i,t} + \beta_7 \text{FR}_{i,t} + \beta_8 \text{AQ}_{i,t} + \beta_9 \text{LLR}_{i,t} + \beta_{10} \text{A}_{i,t} + \beta_{11} \text{NPL}_{i,t} + \dots + \beta_{12} \text{CPI}_t + \beta_{12} \text{GDP}_t + \varepsilon_{i,t} \quad (4)$$

Where:

i refers to the banks in the sample ($i = 1, 2, \dots, n$), and t denotes the time period $t = 1990, \dots, 2019$); β^i refers to the model parameters and $\varepsilon_{i,t}$ is the error term; Profitability $_{i,t}$ refers to the i^{th} bank's profit (or risk) for a given year t which is represented by return on equities (ROE); CAR refers to capital adequacy ratio which is calculated as bank capital to equity ratio ; NPL represent bank nonperforming loans to total gross loan ratio; NLTA represent net loans/total assets ratio; LLR: Loan loss reserve/Gross loans ratio; MQ: Management quality; AQ: asset quality; Dep: Deposits; LQD: liquidity; FR: capital leverage calculated by total liabilities to total assets; AS: Bank size measured by the log of total assets; CPI is the inflation, which is measured by Consumer Price Index; and RGDP, which represents the annual percentage of gross domestic product per capita growth.

DEPENDENT VARIABLE

In this study the dependent variable is the profitability of banks in the selected African countries. Profitability is determined by the return on equity (ROE). According to the literature, ROA as a measure of profitability is a proxy for the capital variable (Ali, 2016). This constitutes the amount that is available to banks through the shareholders to support the business and therefore acts as a safety net in the case of the possible bank failure. ROE measures the

efficiency of the management of the bank in using the resources of the bank (investments). ROA is calculated by dividing the Net investment after tax by the average total assets of the bank. On the other hand, ROE that determines the performance of banks is calculated as net income divided by total equity.

INDEPENDENT VARIABLE

Bank-specific variables

Bank specific variables are independent variables that include Liquidity (lqd), quality of the assets (aq), size of the assets (as), management of the assets (ma), deposits (dep), financial risk (fr), among others. These variables are briefly outlined below:

Liquidity: In order to meet the demands of the depositor and the creditor, banks are expected to be liquid at all times. This ratio measures/ determines the ability of the banks to meet their obligations when they are due over the short period of time. The ratio is calculated by dividing liquid assets of the bank by total assets. Liquidity is found to impact positively on profitability.

Size of the bank (Asset Size): The size of the assets of the bank relative to its profitability may be expected to be non-linear. Therefore this variable is expressed as the bank's logarithm of the bank's real assets and the square to capture the possibility on non-linear relationship (natural logarithm of the total assets of the bank). The literature by Smirlock (1985) found that the size of the bank impacts positively on the profitability of the bank in general.

Asset Quality: The asset quality ratio is a proxy for the loan impairment charged annually as a percentage of the loan and advances to the customer of the bank. The impact of the ratio to the profitability of the bank is anticipated to be positive (Ali, 2016).

Deposits: This constitutes funds that customers place into the bank for safe keeping. Deposits are the "lifeblood" of banks since they are mostly dependent on them for growing the business. The impact on profitability should be positive. The ratio is measured as deposits divided by total assets.

Management Quality: Good Management of banks is important for the success of the institution; for the banks to realise the profits and efficiency, it requires a robust and perfect/good information system. Management/ Banks Personnel should be academically qualified with the requisite banking experience. In this study earnings/profitability ratio to proxy management were used. This ratio was sourced from the audited financial statements of respective banks.

Capital Adequacy (CAR): The capital adequacy ratio is a proxy that is used to determine the banks' ability to pay their liabilities in the response to credit risk and operational risk. Central

Banks set standards for the level of capital adequacy ratio required for banks. The ratio is calculated as follows

$$\text{CAR} = (\text{Tier 1 Capital} + \text{Tier 2 Capital}) / (\text{Risk Weighted Assets})$$

Or simply stated:

$$\text{CAR: } (\text{Capital Paid} + \text{funds in the reserve} + \text{net profit}) / (\text{Total Assets} - \text{Loan Provision} - \text{Risk Free Assets})$$

NB: Risk Free Assets include cash on hand and due from the banks and interbank loans and government guarantees.

Financial Risk: Financial risk is a proxy for liquidity that shows how the bank is capital leveraged. This ratio is calculated by total liabilities to total assets.

Loan Losses provisions: In banks provisions are meant to provide for the losses that the bank had recorded and write-offs of total loans. In addition, provisions cover expected losses to ensure that the relationship between bad losses and loan losses provisions is positive.

Net Interest Margin: The competitive nature of banks is reflected by the development of net interest margin. Constriction of margins as a result of competition, weakens the competition of banks, therefore, banks could adopt a risky stance impacting on the quality of the business underwritten.

MACROECONOMIC VARIABLES

Economic Activity: The annual real growth domestic product (RGDP) is used to proxy the macroeconomic activities of the countries under study.

Inflation: The literature defines the relationship between inflation and profitability as inconclusive. In this study the inflation is proxied by current inflation as calculated in the world development indicators database. Profitability can impact positively or negatively, depending on whether the inflation is anticipated or unanticipated (Perry, 1992).

INDUSTRY SPECIFIC VARIABLES

The relationship between bank profitability and ownership could be due to spill over effects from the superior performance of the privately owned banks relative to publicly owned banks. The literature indicates no empirical support for such a view (Anathsoglou *et al.*, 2005).

DATA COLLECTION METHODS

The study utilised the latest secondary data from Bankscope, Banks audited financial statements and the World Bank for data variables on financial factors and regulation and supervision respectively. Macroeconomic variables were sourced from the World Development Indicators (WDI) database. The study included at least six in the nine African countries that at least seek to implement the requirement of the Basel II framework in their regulatory and supervisory framework. The selected countries were South Africa, Nigeria, Kenya, Ghana, Zambia, Egypt, Tunisia, Namibia and Uganda.

The theory on this method of collection was informed by documents and work from the Central Banks of selected countries, research articles and work from large banks in the countries selected for the study. The availability of data in the selected countries banks, the size of the turnover of the banks in US dollars were also considered in selecting the countries. These constituted the inclusion and exclusion criteria for the study.

Data Analysis

The study applied the dynamic panel data approach to analyse the variables that impact on the activities of banks in selected countries in Africa. It adopted the descriptive statistical analysis approach. The data series for this study was analysed for both stationarity and co-integration to determine the existence on long-term relationship between or among the variables using the Eviews statistical computing software.

For the panel data unit root tests, the Augmented Dickey-Fuller (ADF) category tests are traditionally used; however these tests have some constraints of low power in rejecting the null hypothesis of stationarity of the time-series, especially in instances of small data size. The latest studies in the phenomenon of panel unit root tests include studies by Hadri (2000); Choi (2001); Levin, Lin and Chu (LLC) (2002) and Im, Pesaran and Shin (IPS) (2003). For this study, the LLC and the IPS were used to test for the panel unit root. The two tests are special cases of the Augmented Dickey-Fuller principle.

The cointegration technique for panel data deals with the instances where there are long-run relationships between economic variables in the panel. If the variables are found to have unit roots (non-stationarity), and are of the same order of integration, the cointegrating relationship among variables determined (that is the tendency of the variables to move together in the long run) is studied either by the Engle-Granger (1987) procedure or the Johansen-Juselius procedure (Johansen 1988; Johansen-Juselius 1992, 1996) to overcome the associated problem of spurious correlation and misleading inferences.

However, The Johansen-Juselius procedure is not suitable for cointegration tests in the panel settings, but is useful in testing cointegration at individual settings. Pedroni (1999) established

the heterogeneous panel cointegration procedure that overcomes the problem of individual settings procedures as discussed above.

Pedroni's tests (seven) are centred on the estimated residuals from the following equation:

$$y_{it} = \alpha_i + \sum_{j=1}^m \beta_j x_{jit} \varepsilon_{it} \quad (3)$$

Where $\varepsilon_{it} = \rho_i \varepsilon_{i(t-1)} + \omega_{it}$ are the residuals estimated from the panel regression. In this instance, the null hypothesis $\rho_i = 1$ is tested and the seven statistics are normally distributed. The hypothesis is rejected if the comparison of the statistics with the critical values is exceeded, thereby implying a non-existent relationship between the variables.

ESTIMATION OF THE PANEL MODEL

The following equation is used to determine the evidence of the factors that influence the profitability of banks in select countries in Africa. Profitability is proxied by the return on equity (ROE).

Fixed Effects Models:

$$\text{ROE}_{it} = \alpha_0 + \beta_1 \text{CAR}_{it} + \beta_2 \text{NPL}_{it} + \beta_3 \text{RGDP}_{it} + \beta_4 \text{Inflation}_{it} + \beta_5 \text{llr}_{it} + \beta_6 \text{nim}_{it} \\ + \beta_7 \text{Cost_to_Income}_{it} + \varepsilon_{it}$$

where,

ROE represents the return on equity: ROE measures the efficiency of the management of the bank in using the resources of the bank (investments). ROE that determines the performance of banks is calculated as net income divided by total equity.

CAR represents the capital adequacy ratio: The capital adequacy ratio is a proxy that is used to determine the banks' ability to pay their liabilities in the response to credit risk and operational risk. Central Banks set standards for the level of capital adequacy ratio required for banks.

NPL represents the non-performing loans: Non performing loans ratio articulates the quality of the portfolio of loans of the bank. The ratio is calculated as the non-performing loans as a percentage of the total loans advanced by the bank. This would express the quality of the credit exposed to the bank; therefore it is crucial for banks to screen credit policies as this could impact on the profile of the bank.



RGDP represents gross domestic product: The real gross domestic products (RGDP) will be used to proxy the macroeconomic activities of the countries under study. High GDP attracts investments in the country which could in turn be good for the business of the bank. A lower GDP could impact negatively on the bank's return and the portfolio of the banks.

Inflation: Inflation represents the change in the general price level of goods and services in the economy which affects ROA and ROE (Bilal *et al.*, 2013). It can impact the cost and revenues of banks. The interest rate can be adjusted to provide good returns on loans in instances where it is predicted appropriately. The literature defines the relationship between inflation and profitability as inconclusive. In this study, the inflation is proxied current inflation as calculated in the world development indicators database. Profitability can impact positively or negatively depending on whether the inflation is anticipated or unanticipated (Perry, 1992).

NIM represents the net interest margin: The competitive nature of banks is reflected by the development of the net interest margin. Constriction of margins as a result of competition weakens the competition of banks; therefore, banks could adopt a risky stance impacting on the quality of the business underwritten.

LLR represents the loan loss reserve: This ratio shows how the total loan portfolio of the bank is provided for and not charged off by the bank. It is expressed as the loan reserves as a percentage of the total loans advanced by the bank. The ratio impacts on the quality of the bank loan portfolio.

Cost to Income represents the loan to income ratio: The cost to income ratio is a measure of the cost of running the bank. To operate a bank, just like in many businesses, some expenses need to be catered for (such as hardware and software resources, salaries of human resources, etc.) as a percentage of income generated before provisions. This ratio measures efficiency and can be affected/distorted by volatile trading income.

EMPIRICAL RESULTS ANALYSIS

The table below tabulates the results of the panel data regression with return on equity (ROE) as the dependent variable estimated using the fixed effect model.

Table 1: ROE estimates using the fixed-effect model

Dependent Variable: ROE				
Method: Panel Least Squares				
Date: 06/29/20 Time: 20:03				
Sample: 2009 2019				
Periods included: 11				
Cross-sections included: 17				
Total panel (unbalanced) observations: 137				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP	1.088559	0.345166	3.153725	0.0021
NPL	0.223320	0.209279	-0.179520	0.8579
NIM	-0.644271	0.264756	-2.433451	0.0165
LLR	-1.233628	0.379676	-3.249162	0.0015
INFLATION	0.879429	0.206526	4.258192	0.0000
COST TO INCOME RATIO	-0.298457	0.041564	-7.180602	0.0000
CAR	-0.062795	0.198643	-0.316120	0.7525
C	16.77162	3.403977	4.927066	0.0000
Effects specification				
Cross-section fixed (dummy variables)				
Root MSE	5.475066	R-squared	0.878041	
Mean dependent var	3.651626	Adjusted R-squared	0.853218	
S.D. dependent var	3.114893	S.E. of regression	4.020753	
Akaike info criterion	5.778587	Sum squared resid	1826.809	
Schwarz criterion	6.290117	Log likelihood	-371.8332	
Hannan-Quinn criter.	5.986461	F-statistic	35.37149	
Durbin-Watson stat	2.120476	Prob (F-statistic)	0.000000	

Statistically significant at 0.05 %

Based on the results of the panel regression above (Table 1), it can be observed that among the internal factors or bank-specific variables, NIM, LLR, cost_to_income ratio have a statistically significant relationship with profitability at 99.95% significance level. Although the relationship is negative with ROE, there is however, a positive and statistically significant relationship between ROE and the external factors or macroeconomic-specific variables, namely: Inflation and RGDP. The relationship between NPL, CAR and ROE is statistically not significant.

In the results of the profitability estimates reflected under table 1 (using the fixed effect model), the statistically significant values reflect whether the variables contribute significantly to the estimation model at 99, 95% significance level. Variables with a probability value equal to or less than 0, 05% level make a significant contribution towards the prediction of profitability, the dependent variables. Variables above the 0, 05% level do not contribute significantly to the prediction of the dependent variables.

The study uses an unbalanced panel of commercial banks in select countries in Africa to estimate the model. The panel was used to estimate the return on equity (ROE) that proxy the profitability of banks. From the results of the model tabled in table 1, estimation seems to fit the dependent variables reasonably well with R squared of 87.80% at 99.95% level. This means that 87.80% of the sample describes ROE. With the model having high F statistics at 35.37%, this shows the overall significance of the estimated model. The high R squared, and F statistic generated by the model also show that only just over 10% of the variation remains unexplained by the independent variables. This shows that banks in Africa tend to have good quality management and therefore are able to convert the assets of the bank into good earnings for the shareholders.

The good fit of the panel for ROE augur well for the study as this is an important measure for evaluating the quality of management of banks that manage the capital that they are entrusted with to generate the returns from the assets financed by the bank. The generation of a good return on assets has in turn a good impact on the shareholders' value.

Real gross domestic product (RGDP) is statistically significant to ROE with a positive coefficient. This reflects that when the macroeconomic conditions are healthy, shareholders' expectations of good returns can be realised under good RGDP. The RGDP positive relationship with ROE is expected and is in line with the findings in studies by Ozil (2017), Demircuc-Kunt and Huizinga (1999) and Flamini *et al.* (2009).

The impact of non-performing loans (NPL) has an insignificant impact on ROE with a negative coefficient. The negative coefficient on NPL is predictable (expected) and it reflects that as losses from loans are materialised, the ROE of banks in Africa decrease. Ozil (2017) also came to similar conclusions. Amuakwa-Mensah and Marbuah (2015) also found that the state of the economy has some impact on the profitability of banks.

The coefficient of net interest margin (NIM) is negative and (NIM) is statistically highly significant. This reflects that margins commanded by banks in Africa impact negatively on shareholders' value as long as the quality of the assets is not maintained. It indicates that banks in Africa are earning poor interest on the loans that are offered to the customers relative to the interest paid to the customers on funds deposited with the banks. The offsets of this result are a decrease of profits for the banks and a poor return on investment for the shareholders. The negative relationship is inconsistent with the previous literature that confirms the findings on the study by Demircuc-Kunt and Huizinga (2000) in the study to examine the impact of financial development on bank profits and bank margins, and Naceur and Goaeid (2003) in the examination of factors that had an impact on the profits of ten Tunisian banks over the period 1980–2000. These studies and many others that were concluded in the developed countries found a positive and significant relationship between net interest margin and bank profitability.

Although the loan loss reserve (LLR) ratio is statistically highly significant, its coefficient is negative, indicating higher reserves held by banks as an indication of the low quality of the loan portfolio and therefore is not desirable to the return on shareholders' equity.

Inflation is statistically significant to the dependent variables with positive coefficients to the return on equity. This shows that inflation impacts on profitability in a positive manner for the management shareholders' equity. This could be attributed to the bank's management ability to satisfactorily forecast future inflation (although not fully) and therefore implying that interest rates have been appropriately adjusted to achieve higher profits. It reflects that above-normal profits could be gained from asymmetric information. It is consistent with the study by Boyd, Levine and Smith (2001) and also a study by Haron and Azmin (2004).

Coefficient of the capital adequacy ratio (CAR) is negative and statistically insignificant. This is counterintuitive as the literature on studies in other regions shows that higher bank's capital ratio can take advantage of higher profitability (Mendes, 2000; Demirguc-Kunt and Huizinga, 1999; and Bashir, 2000). This could be a reflection of the poor status of the financial conditions of most banks in Africa, however, observing the behaviour of other variables there is an indication that there are pockets of countries with strong financial regulations and supervision and sound capital positions. Banks in these countries can pursue business opportunities more effectively and at times generate more than normal profits in comparison to the global counterparts of similar stature.

On the other hand, there are countries with poor or nonexistent financial regulation and/or supervision. The aggregated status shows poorly capitalised banks in Africa, a misleading state to investors as many countries are reforming their regulatory and supervisory regimes. It could also be attributable to the fact that banks that reserve or maintain adequate capital levels do not have profitable investment proposition to invest the extra capital. Excess capital could therefore become a cost to the banks as it is not used profitably. The quality of management of banks' assets in many countries needs to improve so that assets could be managed in ways that contribute positively to shareholders' value.

Negative and statistically insignificant CAR could also reflect the risk profile of banks in the continent. Banks could be taking calculated risks resulting in a good portfolio that renders capital holding insignificant. Holding less capital or no capital could contribute to profitability in the short term as all the assets are counted towards the revenue of banks. This is in line with Gale (2010) whose work found that there is no clarity that higher capital requirements will reduce the level of risk in the banking system. Barth (2012) also suggested that there is no statistically significant relationship between capital stringency, official supervisory power, and bank supervision. Leaven and Levine (2009) alluded to this in an earlier study that found that capital stringency has little impact on the actual bank risk.

Non-performing loans are not significant as expected, an indication that banks could improve profitability by screening and monitoring of credit risk and such policies involve the forecasting of future levels of risks (Bilal, Saeed, Ali Gull and Akram, 2013).

The cost to income ratio is statistically significant in the ROE estimation. This shows that the cost of operating banks does affect the banks' income and therefore their profitability. The increase in this ratio reflects the inefficient manner in which management of the banks are administrating the business.

CONCLUSION AND RECOMMENDATIONS

The paper analysed factors that influence the profitability of banks in selected African countries. Thirty-three banks that spread across nine countries were investigated. Specifically, the paper sought to analyse the evidence of an impact of bank and macroeconomic specific factors to the profitability of banks in select African countries concerning the continuous developments, review, and implementation of banking regulation and supervision as countries strive to meet "international best practice". The analyses of the various interrelations were done using dynamic panel data modelling, co-integration, and error correlation modelling approaches. On the whole, evidence points to a general agreement by researchers that a well-regulated, stable and supervised banking industry is vital in the sustainability of growth in the economy. It is therefore imperative to apprehend the factors that impact the profitability of banks, to develop "appropriate" regulations to ensure the maintenance of stability in the banking sector.

The analyses of both the bank and macroeconomic specific factors show a mixed impact on the profitability and risk profile of banks in select countries in Africa. Some of the outcomes of the analyses align with the findings from studies in other regions, although there are also statistical behavioural outcomes that reflect the uniqueness of data analysis from the continent relative to the developed economies.



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