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The Effect of Non-Performing Loans on the Profitability of Banks in Africa

Authors:

Jane Arthur-Sam
Faculty of Business, Law and Tourism, University of Sunderland, Sunderland, United Kingdom

Abstract:

The study examines the impact of non-performing loan (NPL) on the profitability of banks in Africa. This research further investigate the bank specific factors and macroeconomic indicators on the profitability of the African banks by employing return on equity (ROE) to be the profitability measurement. The panel data estimation framework on the 26 African countries from 2017-2023 was analysed using Stata statistical software. The study used descriptive statistics, correlation and regression analysis. With regards to the based model, fixed effect model was preferred and this research found that NPL had a negative impact on the profitability of banks in Africa. Also, liquidity, operating efficiency and net interest margin also had negative effect on the profitability of banks in Africa. Concerning the expanded model of the non-bank specific variables, random effect model was selected and the results show that inflation had a significant positive impact on ROE, while exchange rate was not significant; gross domestic product (GDP) also had a negative impact on the African banks' profitability. The study therefore recommends that, there should be policies and actions that can tighten loan granting procedures so as to reduce loan losses especially during economic booms and there should be policy measures which are suitable for credit risk management in helping build a quality loan book among banks in the African countries.

Keywords:

Non-Performing Loan, Liquidity, Operating Efficiency, Net Interest Margin, GDP, Exchange Rate, Inflation, Profitability, Banks, Africa.

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Introduction

Banks in Africa are key contributors in the financial sector of the economy. Thus, banks constitute a significant component in the service industry of every country. Banks lend out funds (assets) from their deposits to clients for specified time-period in the form of loans/overdraft facilities and in turn charge interest rates as compensation for the utilization of such funds. This serves as interest income to banks. The financial activities of banks in every economy are very significant. They play intermediation roles by channeling funds between surplus and deficit units. Granting loan to borrowers is the approach that banks use to promote the development of the economy. The core business of banks, which is providing capital to deficit spending divisions from excess spending divisions, is what keeps the financial system of every nation afloat (Kashyap et al., 2002).

Non-performing loan is a credit facility with interest and principal amounts being consistently overdue for a specified period of time. An excessive rate of non-performing loans indicates possible difficulties faced by the bank. Banks` performance is sometimes assessed on the rate of NPL ratios as well as other factors. If payments become overdue in the short run, a loan is termed as overdue, and if payment stands overdue (generally for ninety days), the loan is referred to as being non-performing (Gosztonyi, 2023). According to Odebode, Ishioro, & Ezi (2024), NPL portion of every loan portfolio impacts operational performance; it has an impact on banks' profitability, liquidity and solvency. NPL have adverse impact on survival and growth of banks. Thus, if they are not effectively managed well, they can lead to failure of many banks.

Korankye, Bright & Dunyoh (2022) assert that non-performing loans not only restrict lending but also have a variety of other effects, such as decreasing commercial banks' profitability, eroding bank capital, deteriorating bank assets, and creating an efficiency issue for the banking industry. At the governmental level, non-performing loans can also make it more difficult to achieve goals for macroeconomic stability and growth. Macroeconomic factors are those that are outside banks' ability to directly control in their operating areas such as inflation. Since banks engage in non-interest revenue-generating activities such as forex trading (or related activities of currency swaps), such transactions are affected by fluctuations in exchange rates. Stable or improved macroeconomic indicators such as low inflation rates and increased GDP reflect booming economic activities. Hence, there are more deposits and more demand for loans which results in more profits. Thus, there are bank-specific factors and non-bank specific factors that can affect their profit position (Niroula, Upadhaya, & Singh, 2024).

Non-performing loans (NPL) have over the past been the focus of many empirical research investigating factors. The rising rates of non-performing loans could be attributed to either bank management, environmental or macroeconomic performances of the economy in which the banks operate (Schicks, 2014). Despite efforts by the Central Banks and governments in many African countries to reduce NPLs,

the performance of NPL ratio over the recent years has remained significantly high and consistently shows no decline in its values. Measures placed to reduce the levels of high non-performing loans ratio in Africa seem to have had temporal effects (Olarewaju, 2020). Thus, there is the need to examine the relationship between non-performing loans and the profitability of banks in the African banking industry considering other bank specific factors and macroeconomic indicators as well. Though non-performing loans is known to be detrimental to banks` profit, it has remained consistently high for most developing African banking industries relative to others such as in Europe (Brief, 2019). Thus, there is the need to examine the effect of non-performing loans on banks profitability in the African banking industry. Drawing from the previously mentioned above, the research aims to accomplish the subsequent goals:

1. Examining the effect of non-performing loans on the profitability of banks' in Africa.
2. Analysing the effect of other bank-specific factors on banks' profitability in Africa.
3. Determining the effects of non-banks specific (macroeconomic) indicators on banks' profitability in Africa.

The main aim of this research is to analyse the effect of NPL on the profit of banks in Africa. The level of non-performing loan ratios (NPLs), and other bank specific factors such as operating efficiency, liquidity and net interest margin could affect the performance of the banks internally coupled with macroeconomic indicators, such as poor performance of currency exchange, inflation and GDP, could indicates possible difficulties relating to risk, sustainability and profitability of the banks. Given the aforementioned information, it is important to determine the degree to which non-performing loans (that is, the variable of interest) impact banks' profitability in the African banking industry.

Literature Review

Banks derive most of their income from the interest they charge on loans they disburse which contribute to their profitability. In view of this, when such loans end up as not performing, the financial strength of these banks are affected. As stipulated in the banking regulations, banks undertake enough provisions and charges for bad loan that is impairment charges and therefore the impact is undesirably on the financial performance these banks. The Central Bank of West African States regards non-performing loans (NPLs) as loans, being standard or sub-standard, which does not generate interest income for a relatively long while. However, the Central Bank of "Central African States" regards NPLs as loans whose interest and principal amount has been left unpaid by the debtor for at least three (3) month period. Nonetheless, the Basel II Commission stressed the need to advance in the direction of a standardized for comparison ratings (Fofack, 2005).

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Theoretical and Empirical Review

Two theories relating to NPLs were used in this research work. The study explains credit default theory as the insolvency of an entity (a person or a firm) which is represented by a credit default. An organized understanding of the factors that directly contribute to the consequences connected to credit defaults is represented in a theory of credit default. A theory of credit default is essential for banks in comprehending lending risk, control credit risk and maintain stability of the financial system (Sy, 2007). In addition, this research utilised the information asymmetry theory which suggests that, it might be challenging to identify good borrowers from bad, which might contribute to problems in adverse selection and moral hazard. The principle states that in a market, the party who knows more about a certain product that is for sale is in a better position than the other party to bargain for the best conditions surrounding the transaction. Consequently, the less knowledgeable party trading is in a best position to determine whether or not to carry out the transaction effectively (Auronen, 2003).

The study provides an expectation that bank specific factors and macroeconomic indicators are essential components to be monitored by the banks in Africa to promote financial stability, resilience, and sustainability, as well as for the perpetuated impact on the economies they support. Therefore this study is conducted to identify the gaps to fill in literature by examining the various studies conducted by previous researchers which are explained below:

The research work investigated the effect of non-performing loans on the profit of banks by utilising the information asymmetry theory and the bad management hypothesis. The study adopted a causality research approach by utilising panel data from 16 banks in Tanzania between 2007 and 2015. In the analysis, estimate methods for multiple regression analysis as well as descriptive statistics were applied. This was achieved by applying the Ordinary Least-Squares (OLS) regression method using the Fixed Effects and Random Effects assumptions. This research discovered that the profitability of commercial banks had a negative relationship with the percentage of non-performing loans (Kingu, Macha & Gwahula, 2018).

Alshebmi, Adam, Mustafa & Abdelmaksoud (2020) investigated on how non-performing loans in the Saudi banking industry impact specific bank factors (internal variables) and macroeconomic indicators (external factors). The study used 12 commercial banks as the sample. Panel data covering 2009 - 2018 was used in the research. A variety of statistical method, included regression analysis, correlation, and descriptive statistics were utilised for the research. The review of the correlation between the GDP growth, bank liquidity risk, credit risk, and nonperforming loans (NPLs) found a weak and negative relationship. Additionally, it demonstrated a modest but positive correlation between NPL and the capital adequacy ratio (CAR).

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Analysing the impact of non-performing loans on bank profitability was the aim of the research. Profitability was the dependent variable while non-performing loan was the explanatory variable. The control variables used in the analysis include size, gross domestic product, capital adequacy ratio, and liquidity ratio. Using purposive sampling, this study examines 26 conventional banks that were listed between 2009 and 2017 on the Indonesian Stock Exchange. The results of the research indicated that non-performing loans significantly reduce bank profits. The gross domestic product and the liquidity ratio had positive effects on bank profitability, while the capital adequacy ratio had no identifiable effect (Martiningtiyas & Nitinegeri, 2020).

The objective of the research was to gain insight into the correlation between non-performing loans (NPLs) and the profitability of 25 Bangladeshi banks between 2010 and 2021. Using the ordinary least square (OLS) regression model to analyse the data, the study discovered that the non-performing loan (NPL) significantly reduces the profitability as measured by the return on asset (ROA). Furthermore, the analysis showed an inverse relationship between the profit of the selected banks utilized in the study and the size of the bank, as determined by the total assets of the banks. According to the study's findings, stakeholders especially bank management and regulators should exercise greater caution when it comes to non-performing loans (NPLs) and work to reduce the amount of them because they can have disastrous effects on Bangladesh's macroeconomic and microeconomic indicators (Karim, Roshid, Shamme & Hasan, 2022).

Niroula et al., (2024) explored how non-performing loans have an impact on commercial banks in Nepal. This research work used bank-specific and macroeconomic variables. The results was analysed and interpreted using descriptive research design. Secondary data was gathered from the financial statement of those banks; macroeconomic variables were gathered from the Economic Survey. Data was gathered on the 12 commercial banks from 2015 – 2020. Inferential statistics, such as multiple regression and correlation were used in the study. 5 explanatory factors (capital adequacy ratio (CAR), cash reserve ratio (CRR), Size, GDP, and Inflation) and two dependent variables (ROA and ROE) were utilized in the analysis. The findings demonstrate that size and inflation had significant positive effects on ROA and cash reserve ratio and inflation also had positive effects on ROE. Additionally, the outcome showed that CRR and CAR had statistical negative effect on ROA and ROE. The performance of Nepal's commercial banks was marginally influenced by GDP and CAR.

This study evaluated how non-performing loans affected certain Nigerian commercial banks' return on assets. The estimation method used was panel least square analysis and annual time series secondary data from 2010 to 2021 from the annual financial reports and the Central Bank of Nigeria Statistical Bulletin. The findings indicted that, interest rates had a positive impact on the ROA of the chosen commercial banks, whereas loan loss provisions had a negative impact. To reduce the detrimental

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effects of loan defaults, the study advises that the selected commercial banks implement an efficient credit policy, restructure lending terms, and convert (Odebode, Ishioro, & Ezi, 2024).

Independent Variables	Symbols	Expected Sign
Operating efficiency	OpEff	-
Liquidity	LQTY	+
Net Interest Margin	NIM	-
Non-performing loan	NPL	+
Gross Domestic Product	GDP	+
Inflation	INF	+
Exchange Rate	Ex_rate	-

Table 1: Summary of variables priori expectations effect on ROE

Methods and Data

Utilizing a quantitative research design, the study evaluated how bank specific factors (internal) and macroeconomic factors (external) affect the profitability of banks in Africa. Thus, bank specific variables, macroeconomic variables and the dependent variable on the 26 African countries from 2017 to 2023 were obtained from the World Developement Indicators - World Bank and the Central Bank of the individual countries. The study used descriptive statistics, correlation and regression analysis. Stata 17 statistical software was employed to analyse the data gathered. The study employed the use of secondary data. This study selected 26 African countries out of the 54 countries. The list of the 26 countries are Algeria, Botswana, Congo, Rep. Djibouti, Egypt Arab Rep, Gabon, Ghana, Guinea, Kenya, Lesotho, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, South Sudan, Swaziland, Tanzania, Tunisia, Uganda and Zambia.

Model Specification

The study's model for multi-linear regression is similar to the one utilised by Kaaya and Pastory (2013) in analysing the influence of credit risk on the performance of banks in Tanzania with few modifications adopted for this research: This expanded model combines both the bank specific factors and the macroeconomic indicators of the banks in Africa.

$$Pft_{i,t} = Ko + \alpha_i \sum x_{i,t-i} + \beta_i \sum Y_{i,t-1} + \mu_{i,t}$$

Where:

Pft_{ind} = vector of the African banks profit indicator variable (ROE)

X_i = vector of bank specific factors that can impact the profitability of the African banks

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Y_i = vector of non-bank specific factors that can affect African banks profit

K_0, α, and β are coefficients to be estimated.

$U_{i,t}$ = error term

Thus, the base model used for the study is:

$$Y_{it} = \beta_{it}X_{it} + \alpha_i + \mu_{it}$$

where, Y_{it} is banks profit, β_{it} is the coefficient for X_{it}, X_{it} represents vector of time varying regressors of internal factors of non-performing loans, net interest margin, operating efficient and liquidity, α_i is the unknown intercept for the bank (bank specific intercept) and μ_{it} is the error term.

Choice Between Fixed and Random Effect Estimates

The study employed two methods (that is, the fixed and random effects) to evaluate the profitability of banks. As there is the need to compare which of the estimates is better suited to the data, the study thus, employed the Hausman test on the null hypothesis. Should the Hausman test turn out significant, the fixed effect model is to be used. However, if the Hausman test statistic turns out as insignificant, then the conclusion is to use the random effect estimator.

Unit Root Test

A unit root test is a statistical technique used to assess whether a time series is non-stationary, meaning that its variance and mean fluctuate over time. It does this by examining whether the series exhibits a "unit root," which represents a pattern in which historical values significantly influence present values, making it challenging to a model using standard statistical techniques. Generally, the commonly used method of analysing unit root in time series data are the Augmented Dickey Fuller (ADF), the Philip Peron and the Fisher-type. The Fisher PP Panel unit root test is performed to ascertained the stationarity status of the regression series (Torres-Reyna, 2007). This research focused its discussions on the Fisher PP Panel test.

Variable Description

The dependent and independent variables utilized in the study are presented in this section. The aggregated average of the figures at country level of both the dependent and bank specific factors were used in the study.

Dependent Variables

Profitability is defined as the capability to make return from a business activity. Most studies such as Arthur-Sam, Seddighi & Osseo-Asare Jr (2024) and Arthur-Sam (2024) used either ROA or ROE in their

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research to measure firm performance but this study employed the return on equity (ROE) as the indicator of bank's profit. ROE measures the return on each unit of invested capital by shareholders. It demonstrates the efficiency of management in utilising shareholders' funds for profitable venture and is expressed as: **ROE = Net Profit Income after Tax / Total Shareholders' Equity** (Brooks, 2016).

Independent Variables

The independent variables used in this study can be divided into two categories: banks specific factors and non-banks specific factors.

Bank Specific Factors

Bank specific factors are those that can be influenced by the Bank. Hence, these variables are under the control and management of these banks, and are discussed as follows.

Operating efficiency (OpEff): Operating efficiency is the amount of expenditure that the firm makes so as to earn an income and is an indicator that banks manage their cost in boosting up profit levels. Thus, the amount of expenditure that the bank makes so as to earn an income is the Operating Efficiency (Silversides & Sundberg, 2013). **OpEff = Operational Expenses / Total Generated Revenues**

Liquidity (LQTY): Liquidity measures a firm's capacity to cover its current obligations. Liquidity risk refers to the possibility that a bank will be unable to satisfy its short-term obligations since (Brooks, 2016). **LQTY = Current Assets / Current Liabilities**

Net interest margin (NIM): When clients make deposits at the banks, they earn interest on their deposits. When banks take the deposit monies and give them out as loans, the bank charges interest on the loan. The NIM is the difference between the interest paid on the loan and the interest paid on the deposit (Busch & Memmel, 2017).

Non-performing loan (NPL): A loan is regarded non-performing if the borrower hasn't repaid the principal or interest on it for at least ninety days. The banks' non-performing loan (NPL) is calculated using the total value of gross loan advances (Gosztonyi, 2023).

Non-Bank Specific (External/Macroeconomic) Factors

The components that are beyond the management of the bank are the non-bank specific factors. Thus, the bank cannot directly influence the variable but can make strategies to absorb the shock from fluctuations or instability in their performance so as to not get adversely affected.

Gross domestic product (GDP): A country's gross domestic product (GDP) is the total monetary worth of all products and services generated locally over a given year in a country. A boost in GDP implies increased economic activities, more investments & consumption and hence more income (Times, 2021).

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The study used the log of GDP because logs make it easier to illustrate a growth rate that is one of the main reasons we use them so frequently in economic growth analysis (Martinez, 2022).

Inflation (INF): According to O'Neill, Ralph, Smith, O'Neill, Ralph & Smith (2017), inflation is a measure of a nation's overall level of prices for goods and services. It is typically calculated by the World Bank and a nation's central bank using the percentage change in the consumer price index.

Exchange rate (Ex_rate): A currency's relative price expressed in terms of another currency is called its exchange rate. Banks on their own also do engage in FOREX activities so as to diversify their income generating activities (Engel & West, 2005).

Results

Variable	Mean	Std. Dev	Min	Max
ROE	18.545	9.119	-6.770	46.460
Operating Efficiency	63.261	18.355	21.560	125.630
Liquidity	68.750	27.387	9.220	132.870
NIM	7.005	3.212	0.530	14.973
NPL	8.305	6.256	0.960	37.300
Log(GDP)	12.115	1.044	10.169	13.792
Inflation	8.974	27.393	-2.405	380.777
Exchange rate	672.335	1490.093	1.350	7485.510

Table 2: Descriptive statistics of regression variables

The descriptive statistics shows that, the highest ROE value was 46.460 and the lowest value was -6.770 having a mean ROE value of 18.545 with a 9.119 standard deviation score. This shows that ROE exhibit fluctuations in their values. Concerning the explanatory variables, OpEff had an overall standard deviation of 18.355 and the mean indicates a figure of 63.261. Also the maximum figure for Operating efficiency was 125.630 as well as the minimum being 21.560. Liquidity had an overall standard deviation of 27.387 and had a maximum figure of 132.870 as well as the minimum figure of 9.220. The mean score of LQTY is estimated to be 68.750. NIM showed a mean score of 7.005 and had a standard deviation of 3.212 with maximum value of 0.530 and a minimum figure of 14.973. NPL which is the variable of interest ranged from as low as 0.96 to as high as 37.3 with a mean value of 8.305. NPL had an overall standard deviation of 6.256. Concerning the control variables, the mean values for Log (GDP),

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Inflation and exchange rate were 12.115, 8.974 and 672.335 respectively. From the Table both the dependent and independent variables all exhibit significant variations in their values.

	OpEff	**LQTY**	**NIM**	**NPL**	**GDP**	**INF**	**Ex_rate**
OpEff	1						
Liquidity	0.326	1					
NIM	0.142	-0.412	1				
NPL	-0.072	-0.343	0.041	1			
Log(GDP)	0.089	-0.082	0.272	0.220	1		
INF	-0.112	-0.388	0.464	0.044	0.072	1	
Ex_rate	0.198	-0.217	0.504	0.230	0.507	0.25	1

Table 3: Correlation matrix for multicollinearity

According to Gujarati (2021), the presence of a degree of association among the regressors would render the regression result with problems of multicollinearity which causes inferential problems. A correlation value of more than 0.8 implies the presence of high association. Based on Table 4.2, every variable exhibits a correlation less than 0.7 which means that the variables are not highly correlated, and as a result, will not cause multicollinearity problems.

	Fisher PP Panel Test		**ADP Panel Test**	
Variable	**Statistic**	**P-Value**	**Statistic**	**P-value**
Dependent Variable				
ROE	625.207	0.0000	325.810	0.0000
Bank Specific Factors				
OpEff	174.529	0.0000	178.467	0.0000
Liquidity	137.845	0.0147	234.560	0.0000
NIM	148.813	0.0007	150.966	0.0005
NPL	142.470	0.0000	136.584	0.0000

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Non-Bank Specific Factors				
Inflation	507.9970	0.0000	722.9280	0.0000
Log(GDP)	66.6775	0.0153	41.8505	0.0564
Exchange Rate	17.5766	0.0425	92.5766	0.0286

Table 4: Unit root test result for stationarity analysis

According to Gujarati (2021), a series is stationary when its probability does not change over time. Stationarity demands future series to remain like the past at least in a probabilistic sense. The regression series' stationarity is determined using the Fisher PP panel unit root test. The panel regression variables came out with test statistics that had their corresponding p-values being less than 0.05. This means that, the unit root null hypothesis testing for the explanatory variables is rejected at 5% critical error. Hence, each of the individual panel variables are said to be stationary and hence, the regression would not produce misleading estimated relationship. The study therefore procees to estimate the empirical model specification outlined.

	BASE MODEL				**EXPANDED MODEL**			
Dep = ROE	**Fixed Effects**		**Random-effects**		**Fixed effects**		**Random-effects**	
Bank specific Factors								
OpEff	-0.1105 (-3.0379)	***	-0.0966 (-2.8402)	***	-0.1196 (-2.9087)	***	-0.0930 (-2.6096)	**
Liquidity	-0.1462 (-1.6946)	*	-0.1016 (-2.4241)	**	-0.1630 (-1.9622)	*	-0.0208 (-0.5442)	
NIM	-0.0455 (-0.1082)		0.3363 (1.1032)		0.1842 (0.3303)		0.1784 (0.5975)	**
NPL	-0.0344 (-0.2387)		-0.2278 (-1.9644)	*	-0.0486 (-0.3496)		-0.2221 (-2.2342)	
Non-Bank specific Factors								
Log(GDP)					13.8926		-2.4466	

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					(0.9783)		(-2.3927)	
Inflation					0.4600 (4.2129)	***	0.4139 (4.2135)	
Exchange Rate					0.0035 (0.9453)		0.0007 (0.692)	
Constant	36.2948 (5.4590)	***	31.2913 (7.1411)	***	-140.4591 (-0.8194)		51.1812 (4.0112)	
F test	8.3305	***	7.3311	***	6.6087	***	7.3762	
R^2	0.6593		0.1990		0.5658		0.3595	
Adjusted R^2	0.5801		0.1718		0.3432		0.3107	
Hausman Test	10.3199	***					8.3454	

Table 5: Panel Data Regression Result (Dependent variable = ROE)
(Source: Researcher`s Survey, 2025)

Note: ***, ** & * means, variable is significant at 1%, 5% and 10% respectively. T-statistics are in parenthesis ( ).

Discussion

Table 5 shows the panel regression result with return on equity (ROE) as the dependent variable. Before interpreting the results in Table 5, the study first discusses the diagnostic results. The study, therefore, estimated both the random effect and fixed effect regression for both the base model as well as the extended model (containing the additional non-bank specific factors). With regard to the base model for the panel estimated ROE, it can be seen from Table 5 that over-all regression F-test for both the random and fixed effect for the base model were statistically significant.

However, the explanatory power (R^2) for that of the random effect was 19.90% while the fixed effect base model had a considerable satisfactory R^2 value of 65.93%. This implies that, the fixed effect base model is able to explain about 65.93% of the variations in ROE from the study independent variables, which is better than the base random effect model. Having discussed the base model, the study

proceeded to estimate the expanded model which incorporated both bank specific and non-bank specific as possible factors that affects profitability of banks in Africa. It can be seen that, with regards to the expanded model, the Hausman test statistic is not significant, and this indicates the fixed effect model had an R^2 of 56.58% which indicate that fixed effect model explain 56.56% of the variation in ROE whiles the random effect explain 35.95% of the variation in ROE.

From the base model in Table 5, the Hausman test indicates that, the fixed effect model is consistent and corresponds to the data when compared to the alternative model (the random effect model). Thus, discussions and analysis of the ROE estimated base model is made with inference to the fixed effect estimates. Regarding the base model, the variable operating efficiency (OpEff) had a significant negative effect on the profitability of the banks (ROE). The coefficient for ROE is -0.1105, which is statistically significant at 1% error demonstrates that, a unit increase in operating efficiency results to a -0.1105 reduction in ROE. This means that the banks in Africa are not managing operational cost well in their equity income generation process. The finding is consistent to Buchory (2015) who found a negative impact of operating efficiency on banks profit measured by ROE.

Liquidity is also found to have a negative coefficient. The estimated coefficient from the base fixed effect model is -0.1462 which is statistically significant at 10%. This indicates that a unit increase in current assets to current liabilities exposes banks to liquidity risk and possibility of financial distress. As liquidity ratio increases, banks consequently become constrained as their ability to fund their current liabilities out of the assets attains a limit. Thus, they channel possible funds from debt and equity into loans which is costly thus, affecting their profit levels negatively. This finding is similar to Doan & Bui (2021) who found a negative effect of liquidity on the profit of Nepalese commercial banks. On the contrary, Arthur-Sam (2024) discovered that, liquidity had a significant positive impact on the ROE of the rural and community banks in Ghana.

Net interest margin had a negative effect on banks profit calculated by ROE. However, this negative impact is statistically insignificant. This implies that though higher net interest margins are expected to boost interest incomes, it poses a threat on the ability for loan repayments. However, it does not significant renders NIM as not a factor in determining the profit performance of African banking industry. The study of Hanzlík & Teplý (2022) also found a negative influence of NIM on the European and US banks.

Concerning the key variable of interest among the bank specific factors, the results shows that non-performing loans (NPLs) had a negative impact on the African banks profitability. The estimated coefficient for NPL is -0.0344 and this is not statistically significant. This finding is consistent to Vinh (2017) who found out that non-performing loan had significant negative effect on the profitability of Vietnamese banks and lending behaviour. Martiningtiyas & Nitinegeri (2020) also demonstrated that

non-performing loans had a significant adverse influence on bank's profitability. Afriyie & Akotey (2013) on the contrary found a positive impact of NPL on banks profit performance. They concluded that despite the evidence of swelling level of NPLs, the positive impact implied that, these banks transfer the peril of loan loss to other client via high interests.

Concerning the expanded ROE model, it can be inferred from the Hausman Test that the random effect model is preferred to the fixed effect model. The test statistic of 8.3454 is also not significant. As seen in Table 5, Operating efficiency, Net Interest Margin and non-performing loans ratios (NPL) are the significant bank-specific factors in the expanded ROE random effect model.

Operating efficiency had a negative estimated coefficient of -0.0930 and is statistically significant at 5% critical error. This is the same as discussions on the ROE base model. This is consistent to Buchory (2015) who found a negative impact of operating efficiency on the profitability of Banks in Indonesia.

Net interest margin (NIM) had a positive impact on banks profit. The estimated coefficient for NIM was 0.1784 and was statistically significant at 5% critical error. This suggest that although high interest margins are expected to accrue more profits, extreme NIM above a threshold may be detrimental to banks profit as it may cause more NPLs and hence losses. The positive relationship between NIM and banks profit measured by ROE is in tandem with the findings of Mandagie (2021).

Non-performing loans ratio (NPL) which is the variable of interest is found to be detrimental to profit performance measured by ROE on the African banks. A unit increase in NPL causes a -0.2221 reduction in ROE as it is significant at 5% critical error. According to (Riyadi, 2017), high NPL ratios indicate credit risk which has ripple effects and eventually lead to banks insolvency as they underperform.

With respect to the non-bank specific factors, it is noticed that, GDP and inflation were significant determinants. GDP and Inflation were hence helpful in predicting profit performance of banks in Africa measured by ROE. The variable GDP is found to have a negative relationship with ROE and this was significant at 5% error. This negative relationship implies that, during economic booms, banks engage in riskier investment expecting more returns. Thus, their caution on risky venture investment relaxes and having their guards down does not reflect efficient management of investment funds in times of increasing business activities. Thus, the negative sign found in this study is contrary to the findings of Hong & Razak (2015) who found out that GDP had a positive significant effect on the performance of Islamic banks Malaysia.

Inflation on the other hand is found to have a positive impact on the profitability of Banks. The estimated coefficient for inflation was 0.4139 and is highly significant at 1% error. The evidence of significant positive impact from inflation on bank's profit indicator was similar to the conclusions of Batsinda & Shukla (2019). Bhattarai (2020) also found a positive relationship between inflation and banks profit.

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This means that, banks are able to anticipate inflation well, and make the most out of it in their profit decision making.

Fluctuations in the exchange rate on the other hand, are found to have an insignificant positive impact on ROE. Fluctuations in the exchange rate are found to have a positive effect on banks profitability when measured by ROE. However, the impact is very small, as the estimated coefficient was 0.0007 but this is not statistically significant. The positive sign relationship is in contrast to the sign expectations from the study of Osuagwu (2014).

To statistically compare whether the fixed effect or the random effect model fits well to the data, the study employed the Hausman test. The Hausman specification test by Hausman (1978) yielded a test statistic of 10.3199 for the fixed effects on the based model which is statistically significant at 5% critical error.

Conclusion

The study evaluated the effects of both bank-specific (internal) and non-bank-specific factors on the profitability of banks in Africa measured with ROE by employing the panel data method of analysis. The fixed effect model was preferred to the random effect model when using the base model. However, the random effect is preferred when using the expanded model for the regression from the Hausman test. With the variable of interest, the study found NPL to negatively affect the profitability (ROE) of banks in Africa. Despite the findings, the research was restricted to some variables of both banks-specific factors and non-bank- specific factors that can impact the profitability of banks in Africa. The following recommendation was suggested are:

From the findings, operating efficiency which measures how much is spent to generate income is discovered to have a negative effect on the profitability of the banks. This highlights the degree of bank inefficiency in the sense of expenses mismanagement in generating incomes. It is recommended that banks should consider re-evaluation of certain expenses, reduction strategies so as to minimize cost incurred in the process of generating both interest incomes and non-interest incomes. NPL has a negative impact on the profitability (ROE) of banks of Africa. GDP is also found to have a negative effect on the profitability of the banks in Africa. The consistently high level of NPL over the time periods shows the possibility of haphazard loaning attitudes of these African banks. However, it is not recommended that such consistently high levels of NPL ratios be encouraged. Central banks of the African countries should consider policy actions that can lessen the rates of loan defaults such as tightening loan granting procedures so as to curb such loan losses especially during economic booms. The transfer of such loan loss at higher interest to other new loan clients render the feasibility of investment decisions and projects which can improve certain socio-economic conditions of the beneficial less achievable. The positive

impact of Net Interest Margin does not guarantee that ever increasing NIM would lead to more profits. Thus, banks are advised to consider the degree of profit margins they put on interests so as not to counter the positive impact it performs in their profits. It is highly advised that bank management and loan officers constantly pay close attention to the state of the banks' asset quality, particularly loan performance for the prevention of loan loss, in order to improve asset quality, particularly loans. In addition, loan officers ought to assist consumers financially on how to use loans wisely and ought to make decisions quickly enough to satisfy their needs. Lastly, it is essential for banks in Africa to put in policies measures which is suitable for credit risk management to help in building of quality loan book which will not lead to high volumes of non-performing loans. An improvement in credit risk management will improve the profitability of banks in Africa.

This study will be significant in both theory and practice. This research will not only add to the already existing literature but will also support existing literature on the study theme on the African banking industry. In this regard, the findings of this research will aid further researchers in examining the challenges faced by these banks. Again, the study will serve the management needs of governments, Central Banks, African Development Bank as well as banks operating in the African Banking Sector in their management actions of resources so as to efficiently optimize their policy drafts and plans. This study will also establish the relationship between macroeconomic variables such as fluctuations in exchange rate, GDP, inflation on banks' profitability in Africa. This will aid African banks to put in measures to safeguard their profitability in case of exogenous changes that may adversely affect their profit levels so as not to be adversely affected. The study will also be useful for other lenders in Africa, non-banking institutions and various lenders for financial businesses by providing needed funds for different periods to be repaid at a given time period. Such lenders are equally exposed to NPL and other risks.

The findings will, therefore, help lenders to improve on their solvency and profitability; the findings will enable them to ensure that loans can be repaid as and when they fall due. Lenders would also be interested in the values of borrowing companies for collateral purposes. Furthermore, this research will guide shareholders or investors who contribute capital to the business in various banks in Africa with the objective of earning profits to know the performance of management. This will indicate to shareholders whether or not their company is making profits and growing while also ensuring the continued solvency of the company. As shareholders are contributors of capital, they are also interested in the risk inherent in the bank's operations. Finally, employees and trade unions in various banks of the African countries will need information to assess the potential performance of the business. These findings will be a source of information which will be relevant because it will help them discover the stability and survival of the company to provide job security over a long period of time. Trade unions will need the information on the profitability of the firm to use as basis for the agitation for higher

remuneration. They are also interested in the potential profit of the company to know employment opportunities and retirement benefits.

Author

Dr. Jane Arthur-Sam, Researcher, Faculty of Business, Law and Tourism, University of Sunderland, United Kingdom.

References

Afriyie, H. O., & Akotey, J. O. (2013). Credit risk management and profitability of rural banks in the Brong Ahafo region of Ghana. management, 5, 24.

Alshebmi, A. S., Adam, M. H. M., Mustafa, A. M., & Abdelmaksoud, M. T. D. O. E. (2020). Assessing the non-performing loans and their effect on banks profitability: Empirical evidence from the Saudi Arabia banking sector. International Journal of Innovation, Creativity and Change, 11(8), 69-93.

Anastasiou, D. (2023). Management and Resolution methods of Non-performing loans: A Review of the Literature. Crises and Uncertainty in the Economy, 187-201.

Arthur-Sam, J., Seddighi, H. R., & Osseo-Asare Jr, A. (2024). Assessing the Impact of Financial Characteristics on the Performance of Ghana Club 100 Companies. Technium Business and Management, 8, 96-106

Arthur-Sam, J. (2024). Analyzing the Impact of Liquidity and Financial Leverage on the Performance of Rural and Community Banks in Ghana. International Journal of Applied Research in Business and Management, 5(2). https:doi.org/10.51137/ijarbm.2024.5.2.11

Auronen, L. (2003, May). Asymmetric information: theory and applications. In Seminar of Strategy and International Business as Helsinki University of Technology (Vol. 167, pp. 14-18).

Batsinda, G., & Shukla, J. (2019). Inflation and profitability of commercial banks in Rwanda: A case study of bank of Kigali. International Journal of Business and Management, 14(10), 35-43.

Bhattarai, B. P. (2020). Effects of non-performing loan on profitability of commercial banks in Nepal.

Brief, A. E. (2019). The Banking System in Africa: Main Facts and Challenges. Volume 3 Issue 4 2019.

Brooks, R. M. (2016). Financial management: core concepts. Pearson.

Buchory, H. A. (2015). Banking profitability: How does the credit risk and operational efficiency effect. Journal of Business and Management Sciences, 3(4), 118-123.

Buchory, H. A. (2015, August). Banking intermediation, operational efficiency and credit risk in the banking profitability. In Proceeding-Kuala Lumpur International Business, Economics and Law Conference (Vol. 7, No. 2, pp. 141-152).

Busch, R., & Memmel, C. (2017). Banks' net interest margin and the level of interest rates. Credit and Capital Markets–Kredit und Kapital, (3), 363-392.

Doan, T., & Bui, T. (2021). How does liquidity influence bank profitability? A panel data approach. Accounting, 7(1), 59-64.Engel, C., & West, K. D. (2005). Exchange rates and fundamentals. Journal of political Economy, 113(3), 485-517.

Fofack, H. (2005). Nonperforming loans in Sub-Saharan Africa: causal analysis and macroeconomic implications (Vol. 3769). World Bank Publications.

Gashi, A., Tafa, S., & Bajrami, R. (2022). The impact of macroeconomic factors on non-performing loans in the Western Balkans. Emerging Science Journal, 6(5), 1032-1045.

Gosztonyi, B. (2023). Non-Performing Loans, Non-Performing People. Life and Struggle with Mortgage Debt in Spain.

Gujarati, D. N. (2021). Essentials of econometrics. Sage Publications.

Hanzlík, P., & Teplý, P. (2022). Key factors of the net interest margin of European and US banks in a low interest rate environment. International Journal of Finance & Economics, 27(3), 2795-2818.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica: Journal of the econometric society, 1251-1271.

Hong, S. C., & Razak, S. H. A. (2015). The impact of nominal GDP and inflation on the financial performance of Islamic banks in Malaysia. Journal of Islamic Economics, Banking and Finance, 113(3281), 1-24.

Kaaya, I., & Pastory, D. (2013). Credit Risk and Commercial Banks Performance in Tanzania: a Panel Data Analysis.

Karim, R., Roshid, M. M., Shamme, F. B., & Hasan, M. M. (2022). Non-performing loans and bank profitability: Evidence from Bangladesh. International Journal of Finance & Banking Studies (2147-4486), 11(4), 95-102.

Kashyap, A. K., Rajan, R., & Stein, J. C. (2002). Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking. The Journal of finance, 57(1), 33-73.

Kingu, P. S., Macha, S., & Gwahula, R. (2018). Impact of non-performing loans on bank's profitability: Empirical evidence from commercial banks in Tanzania. International Journal of Scientific Research and Management, 6(1), 71-79.

Korankye, M., Bright, D., & Dunyoh, M. (2022). Effect of Non-Performing Loans on the Profitability of Universal Banks: A Time Series Analysis of the Ghanaian Banking Industry. Research Journal of Finance and Accounting, 13(2), 33-46.

Mandagie, Y. (2021). Analyzing the impact of CAR, NIM and NPL on ROA of banking companies (An empirical study on BEI listed companies). INQUISITIVE: International Journal of Economic, 1(2), 72-87.

Martinez, L. R. (2022). How much should we trust the dictator's GDP growth estimates?. Journal of Political Economy, 130(10), 2731-2769.

Martiningtiyas, C. R., & Nitinegeri, D. T. (2020, September). The effect of non-performing loans on profitability in banking sector in Indonesia. In International Conference on Management, Accounting, and Economy (ICMAE 2020) (pp. 64-67). Atlantis Press.

Niroula, B., Upadhaya, J. P., & Singh, S. K. (2024). Effect of Non-Performing Loans On The Financial Performance Of Nepalese Commercial Banks. Jurnal Manajemen Dan Bisnis, 2(1), 18-27.

Odebode, O. K., Ishioro, B. O., & Ezi, C. T. (2024). Effects Of Non-Performing Loans On Return On Assets Of Selected Commercial Banks In Nigeria. International Journal Of Advanced Economics, 6(2), 12-25.

Olarewaju, O. M. (2020). Investigating the factors affecting nonperforming loans in commercial banks: The case of African lower middle-income countries. African Development Review, 32(4), 744-757.

O'Neill, R., Ralph, J., Smith, P. A., O'Neill, R., Ralph, J., & A Smith, P. (2017). What Is Inflation? (pp. 21-43). Springer International Publishing.

Osuagwu, E. S. (2014). Determinants of bank profitability in Nigeria. Available at SSRN 4100483.

Riyadi, S. (2017). Financial performance efficiency of Indonesia government banks in improving profitability. International Journal of Financial Innovation in Banking, 1(3-4), 239-252.

Schicks, J. (2014). Over-indebtedness in microfinance–an empirical analysis of related factors on the borrower level. World development, 54, 301-324.

Silversides, C. R., & Sundberg, B. (2013). Operational efficiency in forestry: Vol. 2: Practice (Vol. 32). Springer Science & Business Media.

Sy, W. N. (2007). A causal framework for credit default theory. Australian Prudential Regulation Authority Working Paper.

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https://doi.org/10.51137/wrp.ijarbm.2025.jatt.45720

Times, E. (2021). What is Gross Domestic Product? Definition of Gross Domestic Product, Gross Domestic Product Meaning.

Torres-Reyna, O. (2007). Panel data analysis fixed and random effects using Stata (v. 4.2). Data & Statistical Services, Priceton University.

Vinh, N. T. H. (2017). The impact of non-performing loans on bank profitability and lending behavior: Evidence from Vietnam. Journal of Economic Development.