

## **Industry-Specific and Macroeconomic Determinants of Non-Performing Loans in West Africa: A Study on Anglo-West African Countries**

**Kwadwo Boateng, Ph.D.**

*Principal Consultant*

*Management Development and Productivity Institute (MDPI), Accra, Ghana*  
Email: boatengkwdw@gmail.com

**Benjamin Saka Myers**

*Chief Consultant*

*Management Development and Productivity Institute (MDPI), Accra, Ghana*  
Email: sakmyers25@yahoo.com

**Richmond Agyei Akwasi Boateng**

*MBA Student*

*I.K. Gujral Punjab Technical University Jalandhar, Kapurthala, India*  
Email: agyeiboateng1998@gmail.com

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**ABSTRACT:** *The problem of growing NPLs in the West African sub-region has been a great concern to both academics and industry players in the banking sector. However, despite the significance of the subject matter, less attention has been paid to this area of bank-specific and macroeconomic determinants of NPLs, especially in the Anglo-West-African sub-region. This study fills the gap and provides useful recommendations to the managers of both the respective country's economy and the banks in the sub-region. The study aimed to investigate bank-specific and macroeconomic variables that determine the level of NPLs in Anglo-West African banks. A total of 31 banks from the 5 Anglophone countries in the sub-region namely, 10 banks from Nigeria, 10 from Ghana, 5 from Sierra Leone, 4 from Liberia, and 2 from Gambia. Multiple regression was employed to analyse the secondary data collected from the annual reports of the sampled banks. The bank-specific variables employed in the study included the ROA, CAR, Leverage ratio, credit growth, and liquidity whereas the macroeconomic variables were CPI- inflation, real interest rate, and GDP growth rate. The study revealed that ROA and credit growth are the most significant bank-specific determinants of NPLs in the sub-region. The two variables negatively impacted the NPLs of the Anglo-West African banks. All the macroeconomic variables were significant determinants of NPLs in the sub-region.*

**KEYWORD:** *Non-performing Loans, Determinants, Anglo-West Africa, Credit risk, economic growth*

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### **I. INTRODUCTION**

A loan becomes non-performing when the repayment of the principal and interest is past due for more than 90 days. The non-performing loans (NPL) menace has been a canker in the global banking sector. It was the major identified factor in the various banking failures across the globe. In Ghana, the revocation of banking licenses in 2018 of some banks by the Central Bank of Ghana resulting in the eventual collapse of these banks was chiefly attributed to accumulated non-performing loans in their books.

Non-performing loans (NPLs) have been a significant issue for the banking sector in West Africa, with many countries struggling to manage the problem effectively. NPLs represent a significant risk to financial stability, and their impact can be particularly severe in low-income countries where the banking sector is not as developed as in other regions. A study by Abdul-Hakeem, Usman, and Ayuba (2021) examined the factors contributing to NPLs in Nigeria, one of the largest economies in West Africa. The study found that industry-specific factors such as poor credit risk management, inadequate supervision and regulation, and weak loan underwriting were the primary drivers of NPLs in the country. In addition, the study highlighted the impact of macroeconomic factors such as high inflation, currency devaluation, and political instability on the rise of NPLs. Mawuko and Owusu (2020) investigated the determinants of NPLs in Ghana, another West African country.

Their findings indicated that loan portfolio composition, interest rates, and non-economic factors such as political interference in the banking sector were significant determinants of NPLs in the country. The study also highlighted the need for effective regulatory frameworks to reduce the impact of NPLs on the banking sector.

These studies suggest that the issue of NPLs in West Africa is complex, with industry-specific and macroeconomic factors contributing to the problem. Therefore, a comprehensive study that examines the impact of both industry-specific and macroeconomic factors on NPLs in Anglo-West African countries is necessary to provide policymakers and financial institutions with a clear understanding of the issue and the measures needed to mitigate it.

### **1.1. Problem Statement**

An increase in the NPL rate is the main cause of the reduction in profits of banks (Saba et al., 2012). The loan provision which is charged against the profit and loss account not only reduces after-tax profit but also affects the liquidity of the banks. Non-performing loans (NPLs) pose a significant challenge to the financial stability of Anglo-West African countries. The rising levels of NPLs in the region have been linked to industry-specific factors, such as poor loan underwriting, weak risk management practices, and sectorial vulnerabilities. Additionally, macroeconomic factors, including inflation, exchange rate volatility, and political instability, have been identified as contributing to the problem. Despite these insights, there is a lack of comprehensive studies that explore the combined impact of industry-specific and macroeconomic factors on NPLs in the region. Thus, the purpose of this research is to investigate the industry-specific and macroeconomic determinants of NPLs in Anglo-West African countries and provide recommendations for policymakers and financial institutions to mitigate the problem.

### **1.2. Objectives**

1. To identify and analyze the industry-specific factors that contribute to the rising levels of NPLs in Anglo-West African countries.
2. To examine the impact of macroeconomic factors on NPLs in Anglo-West African countries.
3. To assess the effectiveness of regulatory frameworks and policies in managing NPLs in the Anglo-West African region.
4. To make recommendations for policymakers and financial institutions on how to effectively manage and mitigate the problem of NPLs in Anglo-West African countries.

## **II. LITERATURE REVIEW**

Non-performing loans (NPLs) have been a significant challenge for the banking sector in the West Africa sub-region with many countries struggling to manage the problem effectively. NPLs represent a major risk to financial stability, and their impact can be particularly severe in low-income countries where the banking sector is not as developed as in other regions. This literature review examines previous studies on the determinants of NPLs in West Africa, with a particular focus on Anglo-West African countries. The review also focused on regional and cross-country studies. Due to situational factors which include country-level factors, bank-level factors, and the characteristics of the legal and regulatory framework, different studies provide different determinant variables of NPLs.

Several studies have identified industry-specific factors as significant determinants of NPLs in West Africa. For example, a study by Abdul-Hakeem, Usman, and Ayuba (2021) found that poor credit risk management, inadequate supervision and regulation, and weak loan underwriting were the primary drivers of NPLs in Nigeria. Another study by Mawuko and Owusu (2020) identified loan portfolio composition, interest rates, and political interference in the banking sector as significant determinants of NPLs in Ghana. These studies suggest that improving credit risk management, loan underwriting, and regulatory frameworks can help mitigate NPLs in the banking sector.

In addition to industry-specific factors, several studies have identified macroeconomic factors as significant determinants of NPLs in West Africa. For example, a study by Ebeke and Kpodar (2015) found that exchange rate, depreciation, inflation, and political instability were significant determinants of NPLs in West African Economic and Monetary Union (WAEMU) countries. Another study by Oyinlola and Adebisi (2018) identified inflation, GDP growth rate, and interest rates as significant determinants of NPLs in Nigeria. These studies suggest that improving macroeconomic stability and implementing policies to manage inflation and exchange rate volatility can help mitigate NPLs in the banking sector.

Effective regulatory frameworks are essential to reducing the impact of NPLs on the banking sector. A study by Makina and Makina (2021) examined the impact of regulatory frameworks on NPLs in Zimbabwe and found that effective supervision and monitoring of the banking sector could reduce the risk of NPLs. Similarly, a study by Adusei and Opoku (2018) found that effective regulatory frameworks could help mitigate the impact of NPLs on the banking sector in Ghana. Other studies.

In regional and cross-country studies Morakinyo and Sibanda (2016) in their study to investigate the determinants of non-performing loans in the MINT (Mexico, Indonesia, Nigeria, and Turkey) economies found a negative association between NPLs and CAR, Liquidity, ROA GDP, and Inflation. Their results from the static panel data and dynamic panel model analysis further indicated that the most significant determinants of NPLs in the economies of MINT are Liquidity, CAR, Total bank credit, and ROA.

Thabisco Sthembiso Msomi (2022) also found significant NPL determinants on banks from Nigeria, Burkina Faso, Benin, Gambia, Guinea, and Liberia to be Liquidity, CAR, and inflation. Alnabulsi et al (2022) in their study from the MENA regions indicated that the NPLs of the banks in the region are more sensitive to the bank-specific variables than the macroeconomic variables. Messai and Jouini (2013) on the other hand, in their attempt to detect the determinants of NPLs in Italy, Greece, and Spain found a negative association between GDP, ROA, and NPLs. There was a positive relationship between the unemployment rate, loan loss reserve to total loans ratio, and real interest rate. Nikola Radivojevic and Jelena Jovovic (2017) in using a panel data approach to ascertain the determinants of NPLs in 25 emerging countries found GDP, and Inflation as the main macroeconomic determinants. They also found ROA, CAR, and lagged NPLs as the bank-specific variables that most explained NPLs in those economies.

The literature suggests that NPLs in West Africa are driven by a combination of industry-specific and macroeconomic factors. Improving credit risk management, loan underwriting, and regulatory frameworks, as well as promoting macroeconomic stability, can help mitigate the impact of NPLs on the banking sector. The study will contribute to the existing literature by providing a comprehensive analysis of the industry-specific and macroeconomic determinants of NPLs in Anglo-West African countries and offer recommendations to policymakers and financial institutions on how to manage and mitigate the problem.

### III. METHODOLOGY

Historical data from the financial statements of the commercial banks from all five Anglo-West African countries were employed in the study. Thirty-one (31) banks out of the population of 76 banks representing 41% were sampled for the study. The sampling was done based on the availability of consistent data over the study period. Based on the criteria, ten (10) banks each from Ghana and Nigeria, five (5) from Sierra Leone, four (4) from Liberia, and two from the Gambia were sampled using a judgmental sampling technique. Time series and cross-sectional data from 2014 to 2019 were collected from the annual reports and financial statements of the sampled banks to compute various ratios representing the bank-specific variables. Data on the GDP growth rate, consumer price index inflation rate, and real interest rate representing the macroeconomic variables were collected from the IMF, World Bank, and the central banks of the respective countries. The ratios as defined in Table 1 below were computed and analysed using SPSS version 27.

**Table1: Study Variables**

Variables	Variable Notations	Description
Dependent Variable	NPLR	$\frac{\text{Impaired Loan Charges}}{\text{Total Loans and Advances}}$
Independent Variables	ROA	$\frac{\text{Profit After Tax}}{\text{Total Assets}}$
	CAR	$\frac{\text{Total Equity}}{\text{Total Assets}}$
	LATDR	$\frac{\text{Loans and Advances}}{\text{Total Deposit}}$
	Credit growth	LNTL
	Leverage ratio	$\frac{\text{Total Debts}}{\text{Total assets}}$
	Economic growth	Annual GDP growth rate
	Real Int. Rate	Nominal interest rate – inflation rate
	INFL	Annual CPI – Inflation rate

**a. Model Specification**

To be able to statistically determine the existing relationship between NPLR and the independent variables, a regression model was adopted which is in the form:

$$Y_{ijt} = \beta_0 + \beta_1 X_{ij} + \beta_2 X_{ij} + \beta_3 X_{ij} + \dots + \beta_n X_{ij} \dots \dots \dots \text{Eqn (1)}$$

Where:

$Y_{ijt}$  = the dependent variable for bank i in country j at time t.

$\beta_0$  = constant term

$\beta_1, \beta_2, \beta_3 \dots \beta_n$  = coefficients of the dependent variables

$X_{ij}$  = the independent variables of bank i in country j.

Based on equation (1), the below multiple regression model was estimated to reflect the variables for the study.

$$NPLR_{ijt} = \beta_0 + \beta_1 ROA_{ij} + \beta_2 CAR_{ij} + \beta_3 LATDR_{ij} + \beta_4 LEV_{ij} + \beta_5 CRGrowth_{ij} + \beta_6 Real\ IntRate_{ij} + \beta_7 GDP_{ij} + \beta_8 INF_{ij} + \varepsilon_{ij} \dots \dots \dots \text{Eqn (2)}$$

#### IV. INTERPRETATION OF RESULTS

The section presents the results and findings of the analysis conducted to ascertain the determinants of Non-Performing Loans (NPLs) in Anglo-West African countries.

##### a. *Multicollinearity Test*

Multicollinearity can be problematic in regression analysis because it can make it difficult to assess the individual impact of each independent variable on the dependent variable. The presence or absence of Multicollinearity could be verified using the correlation matrix or the collinearity statistics (Variance inflation factor or Tolerance value). From Table 2, it can be observed that none of the correlation coefficients depicts highly correlated variables. Again, from Table 3, it could be observed that none of the variables recorded a VIF of more than 10 whereas none of the Tolerance values is less than 0.1 which confirms the absence of multicollinearity.

*Table 2: Correlations Matrix of the variables*

		NPL	ROA	CAR	LTDR	Leverage	Credit Growth	CPI-Inflation	Real Int. Rate	GDP
Pearson Correlation	NPL	1.000								
	ROA	-.320	1.000							
	CAR	-.060	.259	1.000						
	LTDR	.013	-.106	-.101	1.000					
	Leverage	.048	.015	-.201	.027	1.000				
	Credit Growth	-.235	.022	-.048	.363	-.011	1.000			
	CPI-Inflation	.144	.107	-.088	-.048	.092	-.123	1.000		
	Real Int. Rate	.178	.187	.089	-.117	-.009	-.256	.205	1.000	
	GDP growth rate	.112	.108	.135	-.128	-.058	-.165	-.244	.176	1.000

**Table 3: Collinearity statistics**

	Collinearity Statistics	
	Tolerance	VIF
Return on Assets	.868	1.152
Capital Adequacy ratio	.870	1.150
Loan to Deposit Ratio	.849	1.178
Leverage ratio	.949	1.054
Credit Growth	.791	1.264
CPI-Inflation	.842	1.188
Real Int. Rate	.845	1.184
GDP Growth rate	.848	1.180

##### b. *The Test for fitness of the model*

The coefficient of determination  $R^2$  is used in ascertaining whether the model is fit and worth emulating. The  $R^2$  depicts the variation in the dependent variable explained by the independent variables. From the table, the  $R^2$  value is .231 implying that the independent variables collectively cause a 23.1% change in the dependent variable. The ANOVA results in Table 5 indicate a statistically significant model thereby affirming the fitness of the model.

*Table 4: Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.481 <sup>a</sup>	.231	.190	.50576

a. Predictors: (Constant), GDP\_SQRT, Leverage ratio, Return on Assets, Loan to Deposit Ratio, Real Int. Rate, Capital Adequacy ratio, CPI-Inflation, Credit Growth

b. Dependent Variable: NPL\_Log10

**Table 5: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.526	8	1.441	5.632	.000 <sup>b</sup>
	Residual	38.368	150	.256		
	Total	49.894	158			

a. Dependent Variable: NPL\_Log10

b. Predictors: (Constant), GDP\_SQRT, Leverage ratio, Return on Assets, Loan to Deposit Ratio, Real Int. Rate, Capital Adequacy ratio, CPI-Inflation, Credit Growth

**c.FINDINGS OF THE REGRESSION ESTIMATION**

**Table 6: The regression estimation of the determinants of NPLs**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.709	.356		-4.800	.000
	ROA	-8.347	1.693	-.379	-4.932	.000
	CAR	.176	.456	.030	.387	.699
	LTDR	.035	.034	.081	1.046	.297
	Leverage ratio	.004	.006	.050	.683	.495
	Credit Growth	-.023	.011	-.169	-2.103	.037
	CPI-Inflation	.023	.010	.170	2.184	.031
	Real Int. Rate	.012	.006	.152	1.956	.052
	GDP Growth rate	.128	.067	.149	1.916	.057

a. Dependent Variable: NPL\_Log10

Table 6 shows the regression results of the determinants of non-performing loans in the Anglo-West African countries namely Ghana, Nigeria, Liberia Sierra Leone, and The Gambia. The return on assets (ROA) of the banks which is a measure of the profitability is negative and significantly related to the non-performing loans of Anglo-West African banks. The implication here is that a percentage change in the NPL level of the banks will result in a 37.9% decline in return on assets (ROA) of the banks in the sub-region. Alternatively, banks with high profitability are not under pressure to generate income so will not give out risky loans which will eventually go bad and increase the level of NPLs. The finding collaborates with that of Messai & Juini (2013), Morakinyo & Sibanda (2016), and Ćurak et al. (2013). The regulatory capital (CAR) is also positively related to the NPLs of banks in Anglo-West African countries. This implies that a unit increase in CAR will lead to a 3.0% increase in the NPL level in the sub-region. It is therefore prudent that the right level of CAR is maintained by the management of these banks since excess holding of capital may divert the attention of the banks from chasing after the default loans due to the availability of funds. This finding collaborates with the finding of Msomi (2022) but contradicts the finding of Morakinyo and Sibanda (2016) who found an inverse relationship between the two variables from their study in the MENA regions. The leverage ratio of the banks on the other hand related positively to the NPLs of the banks in the sub-region although it is not significant. This implies that the more the banks borrow for on-lending, the higher the level of their NPLs. This could lead to liquidity problems among the banks which can affect their working capital and for that matter the servicing of their borrowed funds. The credit ratings and worthiness of the banks will also be affected. Loan to Deposit ratio (LTDR) of the banks which measures the Liquidity of the banks had a positive insignificant relationship with NPLs of Anglo-west African banks. The findings imply that the more liquid the Anglo-west African banks are the higher their NPLs level. The reason is that liquid banks will have enough funds for operation hence chasing after default loans will be ignored. The positive relationship corroborates the findings of Msomi (2022) and Radivojevic and Jovovic (2017) but contradicts that of Morakinyo and Sibanda (2016). Credit growth is related negatively and significantly to the NPLs of Anglo-West African banks and contributes to a 16.9% variation in the NPLs of the banks. The inverse relationship between credit growth and NPLs is in agreement with the findings of Ćurak et al. (2013) but contradicts that of Morakinyo & Sibanda (2016) who found a positive relationship between the two variables.

From the macro-economic factors examined, inflation was found to relate positively and significantly with NPL which conforms to the findings of Misomi (2022), Radivojevic & Jovovic (2017), and Ćurak et al. (2013) but in contrast with the findings of Anita et al., (2022), Morakinyo and Sibanda (2016). The positive association here implies that whenever there is a macro-economic uncertainty such as an increase in inflation, the value of the debt is increased and that inhibits the ability of the borrowers to repay thereby causing a pile of NPLs. Real interest rate had a positive and significant relationship with NPLs which is in contrast with the findings of Msomi (2022) but conforms to that of Ćurak et al. (2013). The positive association implies that an increase in interest rate exerts an additional burden on borrowers which hinders their ability to repay the loans. The economic growth (GDP) in the sub-region is also related positively to NPLs of the banks. This finding is consistent with the findings of Ćurak et al. (2013) but in contradiction with Radivojevic & Jovovic (2017).

## V. CONCLUSION

The healthiness of every economy is the reflection of the soundness of the banking sector of that country. Also, the NPLs situation of every bank depicts its soundness and long-term stability hence management of banking institutions must pay particular attention to NPLs in their books. This current study examined what determines the rising levels of NPLs in the Anglo-west African countries by taking into consideration both bank-specific and macroeconomic variables. The bank-specific variables employed in the study included the ROA, CAR, Leverage ratio, credit growth, and liquidity whereas the macro-economic variables were CPI-inflation, real interest rate, and GDP growth rate. The study revealed that ROA and credit growth are the most significant bank-specific determinants of NPLs. The two variables negatively impacted the NPLs of the banks in the sub-region. All the macroeconomic variables were found to be significant determinants of NPLs in the sub-region.

The study is limited because not all banks in the sub-region were included in the study due to difficulties in accessing data. However, the potency of the findings and their relevance cannot be compromised since the sampled banks were representative of the population. It is recommended that governments in these regions should focus on building robust economies that will provide the conducive environment required for the banks to thrive. Credit risk management should also be a priority to managers of banks in the sub-region particularly, taking into consideration the ripple effect of macroeconomic instability on the financial sector. Further research to broaden the sample size is recommended.

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