"Factors affecting non-performing loans in commercial banks of selected West African countries"

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Thabiso Sthembiso Msomi, Master of
Accounting, Ph.D. Student, Lecturer,
Faculty of Accounting and Informatics,
Department of Management
Accounting, Durban University of
Technology, South Africa.

Thabiso Sthembiso Msomi (South Africa)

FACTORS AFFECTING NON-PERFORMING LOANS IN COMMERCIAL BANKS OF SELECTED WEST AFRICAN COUNTRIES

Abstract

This paper examines the macro-economic and bank-specific factors affecting non-performing loans in commercial banks. Using 47 listed commercial banks from six countries, namely 19 banks from Nigeria, 14 banks from Benin, 3 banks from Burkina Faso, 3 banks from Gambia, 3 banks from Guinea, and 5 banks from Liberia for the period 2008 to 2019, fixed and random effect model was used. The Hausman test favored the selection of fixed effect model, and it was found from the estimation that the liquidity ratio, capital adequacy ratio and inflation rate significantly affect non-performing loans. As a result, it is advised that banks depend not only on their ability to achieve the capital adequacy ratio, but also guarantee that loans are thoroughly scrutinized before being issued to beneficiaries. Bank managers should guarantee that banking staff is not simply awarding loans to secure their jobs by accumulating deposits from consumers at the price of the bank's long-term stake. In addition, the economies of West Africa should keep their inflation rates low so that repayment of loans on time is cheap and realistic.

Keywords	non-performing loans, West Africa, commercial banks, credit risk, economic growth
JEL Classification	G21, G11, C23

INTRODUCTION

The 2008–2009 world financial crisis has reinvigorated the interest of researchers in the origins of banking crises, given the catastrophic consequences for various economies as a whole. There is a broad awareness that the development and growth of the banking sector is essential for economic growth (Majeed & Iftikhar, 2020). A well-developed banking sector, in addition to its significance in the growth of an economy, can also promote equality by creating opportunities for low-income earners to save and obtain loans (Osei & Kim, 2020). In any economy, financial intermediation carried out by banks encourages investment and increases productivity (Alhassan & Asare, 2016). Commercial banks are responsible for mobilizing savings and improving the flow of capital into the market. A stable banking system needs efficient financial intermediation to channel excess funds into investment savings to encourage economic expansion. According to Klein (2013), in many countries, the levels of rapidly rising non-performing loans (NPLs) continue to face strong pressure on bank balance sheets to a great extent, with a feasible detrimental impact on bank lending operational activities. NPLs are being considered as a key limiting factor to the banking sector's efficacy in fostering economic growth (Caporale et al., 2014).

NPLs are a global problem that affects overall financial market stability as well as the viability of the banking sector. NPLs are, according

to Ghosh (2017), loans that are non-recoverable during the duration prescribed by the laws of a country or as agreed upon by the borrower and the lender at the time of provision. The probability of receiving revenue from such loans is unclear. Loans with a repayment duration of more than 90 days are considered as NPLs. The reason provided by different banks differs according to the performance of their fewer quality assets, but in general, it is caused by different factors. NPLs are known to be a significant cause of bank failures and can lead to a banking crisis (Caporale et al., 2014). Gabriel et al. (2019) observed that Nigerian banks have one of the greatest and highest NPLs among African countries.

According to Ghosh (2017), regardless of the justifications for the NPLs' loan default, this issue cannot be allowed to grow, whether the failure to pay is due to the countries' ineffectiveness or economic tragedy. These NPLs become stresses on the lender, the borrower and the economy at large for all the affected parties. The balance sheets of banks are adversely impacted by NPLs, contributing to a decline in banks' profitability sector (Kingu et al., 2018). Countries in Africa echoed an increase in the exposure to loan loss liability that can mitigate risks resulting from bad loans. Yet, in certain African countries, there is a steady rise in NPLs (Olarewaju, 2020).

Credit risk continues to be a challenge while been an important commercial function as it impacts the sustainability and viability of the banking sector (Serwadda, 2018). Bank-specific factors and macro-economic factors are the two issues concerning NPLs or credit risk. The credit risk theory of the capital market has both an idiosyncratic and a systemic aspect (Novales & Chamizo, 2019). However, only a few macro-economic variables are necessary to justify the systemic risk of any risk associated with a loan contract (Battiston & Martinez-Jaramillo, 2018).

There are several explanations for the resurgence in commercial banks of NPLs. Macro-economic factors are a comprehensive statement that includes not only economic development, national economic policies and economic systems, but also other factors that are not directly related to commercial banks and businesses (Om'mbongo, 2020). For instance, the effects of macro-economic developments on NPLs, the economic slowdown, the decrease in corporate income and profitability would cause problems in the turnover of corporate capital, accompanied by deficits on loans and an intensification in NPLs from commercial banks. NPLs generation is clearly connected to commercial businesses and banks. Weak bank lending is a significant factor to generate bad loans. There are three key points here. First, risk tolerance of the commercial bank is low. Second, there are institutional vulnerabilities, as commercial banks have not developed a set of ideal support mechanisms when expanding their reach. Third, monitoring of the risk of loans is bad. Regarding the corporate aspect, there are many explanations for defaults on corporate loans, some of which are unpleasant business administration, wasteful loans and a company's bad credit history. Thus, the investigation of NPLs in this region is paramount as the menace cannot be left unattended to.

In West African countries NPLs present a significant risk to the banking sector (Adeola & Ikpesu, 2017). Uncontrolled or high levels of NPLs can catalyze the deterioration of not only one bank, but also the entire banking system and the economy, provided that banks rely to the maximum extent on performing loans for their revenues. It is, therefore, imperative to conceptualize the factors influencing NPLs in order to identify proper and sensitive frameworks for coping with them. Rising levels of NPLs can have some severe consequences. For example, rising levels of NPLs inhibit the commercial bank from refinancing the defaulting customer, which once again places the defaulters in a nasty low-productivity loop (Kedir et al., 2018). Due to the variations, lenders need to be vigilant to follow predetermined strict criteria and ensure that certain risks are resolved and, if not, at least lower the risk of default on loans.

It is surprising that although the consequences of NPLs have drawn intensive literature attention on the African continent, comparatively minimal attention is given to the assessment of the factors that precipitate them, particularly in West Africa. The fact of the matter remains, however, that it is important to

recognize the factors causing NPLs to enforce mechanisms that promote the prevention of their occurrence. In order to reduce the likelihood of such bad loans arising in commercial banks, the detection of the root causes of NPLs is important. In addition, it is important to examine the different mechanisms that have been introduced and are being implemented to tackle the issue of NPLs in West African banks, as this will allow conclusions to be drawn regarding their efficacy. There is minimal literature that has unequivocally evaluated these areas of concern.

1. LITERATURE REVIEW

1.1. Overview of the banking sector in West Africa

The historical political uncertainty, poor transparency, fragility and lack of accountability have discouraged West African countries from mobilizing adequate domestic resources to meet development needs, contributing to an undeveloped West African banking system (The World Bank, 2018). Despite the relatively low barriers to entry throughout the market, West Africa is highly clustered and characterized by significantly lower competition. For instance, Nigeria has more than 20 banks, accounting for almost 10% of total bank assets and about 15% to 17% of Africa's net banking revenue (Ehigiamusoe & Lean, 2020). However, only few banks account for more than half of the total assets and deposits in the banking sector of the country. In general, low competition helps explaining why penetration rates in the area are still very low, especially when compared to other parts of Africa. The regional darling is Nigeria, with bank penetration rates merely above 30%. Overall, West Africa averages less than 15% with bank penetration rates in Senegal sitting at a low 6% (Ehigiamusoe & Lean, 2020). In the country, economic inequality worsens the problem. Credible estimates indicate that amid rapid economic growth, deprivation may have risen in Nigeria over the past five years. Increasingly integrated regional banking systems should also help

to boost the prospects for financial services in the region. The region's net NPLs ratio has been 6.7% in 2013, 6.7% in 2014, 6.5% in 2015, 6% in 2016, and 5.2% in 2017 (The World Bank, 2018), while NPLs of some countries are indicated in Table 1.

1.2. Hypotheses development

Non-performing loan (NPL) ratio: This refers to the ratio of the amount of NPLs in a bank's loan portfolio to the total amount of outstanding loans held by the bank (Ciukaj & Kil, 2020). The NPL ratio tests a bank's efficiency in earning repayments for its loans (Rezina et al., 2020). As a way of measuring of the bank's level of credit risk and the quality of the outstanding loans, banks are expected by regulation to disclose their ratio of NPLs to total loans (Ciukaj & Kil, 2020). A higher ratio indicates that if the bank does not repay the owed loan amounts, the bank is at greater risk of loss, while a lower ratio means that the outstanding loans present a minimal risk to the bank (Rezina et al., 2020).

Lending interest rate (LIR): This is one of the key terms in the financing structure. Interest rate limits the ability to service debt, while an increase in interest rate repayments may result in increased incidence of NPLs (Atoi, 2018). In line with Stiglitz and Weiss's (1981) theory of adverse selection, Bredl (2018) identified lending rates as one of the factors that cause NPLs. As interest rates rise, good borrowers are priced out of the market, as they will not be willing to pay more than market

Table 1. Summary of NPLs rate in 2020

Source: The World Bank (2020).

West African countries	NPLs rate (%)
Nigeria	6.0
Benin	20.3
Burkina Faso	9.7
Gambia	4.5
Guinea	10
Liberia	17.2

rates. Commensurately the commercial banks actually attract low quality customers who are usually happy to pay more. Consequently, banks may charge higher interest rates on these extremely risky loans, thereby raising the likelihood of default. As a result, from the origination date, banks will be waiting patiently for NPLs. In the related literature, the effect of the interest rate on NPLs is noticeable. Findings by Kjosevski and Petkovski (2020) have shown that NPLs have been optimistic and that interest rates have been lent. This analysis also anticipates a strong relationship between NPLs as well as the interest rate for lending. Loans at higher interest rates are costly for companies. Interest rates are boosted and profit margins for businesses are strained. Corporations may be financially vulnerable and default on their loans in such a situation. The reduction of interest rates could lessen interest payment burden on companies, which leads to an expansion of their profit margins. As a result, businesses are becoming financially sound and are therefore more likely to pay back their loans in a timely manner. The studies by Om'mbongo (2020) and Olarewaju (2020) have found that lending interest rates had a negative effect on NPLs.

Liquidity ratio (LIQ): A liquid bank appears not to make an attempt to resolve bad loans. There would be enough money to operate the bank; therefore, proper loan management is not a primary consideration. The current study is expected to have a mixed liquidity effect on NPLs as other studies such as Bhattarai (2015) indicate. Liquidity was captured by the ratio of total loans to total deposits. This ratio is a widely utilized statistic for the estimation of the liquidity of a bank and represents the bank's utilization funds policy (Patni & Darma, 2017). A rise in this ratio is an indicator that the bank is distributing further loan funds. A less liquid position for the bank represents such a situation. Weak associations between loan to deposit ratios and NPLs have been developed by Jameel (2014). A high liquidity ratio would contribute to lower NPLs levels, whereas a low liquidity ratio would convert into high NPLs. If the ratio is increased, it implies that deposits are stimulated to produce income, thereby enhancing productivity, which in effect stimulates investment in industries that

are less risky, and thus avoiding bad debts. When the ratio is poor, the ineptitude in resource distribution is seen, so profits decrease (Ambarawati & Abundanti, 2018).

Cost income ratio (CIR): This shows the bank's operating efficiency (Fajar & Umanto, 2017). According to Guan et al. (2017), credit risk would be more cost-effective with less resources. If there is effective management, a bank that is operationally productive would have truncated NPLs. Contrastingly, NPLs would rise in a bank that is operationally productive when the bank's management skills are low because credit ratings and borrowers' monitoring appear to increase the costs, which can lead to negative loans (Pradhan & Parajuli, 2017). The negative impact of the cost-to-income ratio on NPLs is anticipated in this study, as previously argued research results found (Trung, 2019).

Inflation rate (INF): There is no straightforward impact of inflation on NPLs (Darmawan, 2018). Inflation can potentially have a negative effect on NPLs, since mounting inflation will improve borrowers' capacity to pay for loans by lessening the actual value of unpaid debt (Fajar & Umanto, 2017). In comparison, since rising inflation levels are perceived to be an indication of macro-economic uncertainty, commercial banks will need an elevated risk premium, leading to subsequent increased INFs and interest payments (Shonhadji, 2020). This scenario causes a decline in the cash flow of borrowers that reduces their ability to pay back their loans. The literature also strongly suggests that the INF and NPLs have a higher correlation. For example, Mpofu and Nikolaidou (2018) show that inflation expectations in a number of sub-Saharan African countries with flexible exchange rate regimes lead to the high level of impaired loans. Inflation is due to the rapid deterioration of the equity of financial institutions and subsequently greater credit risk in the banking sectors of these African countries.

Capital adequacy ratio (CAR): This is the ratio of total equity to total assets (Rachman et al., 2018). It measures solvency in the capacity of a bank to handle risks. In their analysis, Madugu et al. (2020) identified a pessimistic correlation between the CAR and the NPLs.

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Correspondingly, Abid et al. (2014) identified a pessimistic correlation amongst the CAR and the NPLs. They found that banks with stronger CARs can allow putting in place successful measures to alleviate the default risks that contribute to lowered levels of NPLs.

Real interest rate (INR): Panta (2018) notes that as the actual interest rate rises, the debt value of the borrowers rises. The bank trimmed rate, provided by the reserve banks of the countries examined, is being used. The pace where banks can function cannot fall below this point of reference. Poor lending results from the volatility and non-uniformity of the Low-Moderate-Income (LMI) economies (Hamid & Rahman, 2020). Bank officials do not inform clients in detail of interest rate increases, and it is usually difficult for loan beneficiaries to pay the interest and principal on the loan when due. Therefore, a mixed interest rate impact on NPLs is predicted (Fernando & Rathnasiri, 2019).

Gross domestic product (GDP) growth rate: Important empirical evidence of a negative correlation exists between real GDP growth and NPLs (Mohaddes et al., 2017; Khaliq & Thaker, 2017; Apan & Islamoglu, 2019). The reason given in the literature for this correlation is that the significant positive GDP growth rate typically results in more revenue that increases the borrowers' debt servicing ability, which in turn leads to lower NPLs. Contrarily, if the economy slows down (relatively low GDP growth), the level of NPLs is expected to rise.

The purpose of this work is to study the macroeconomic and bank-specific factors that affect non-performing loans in commercial banks.

As a result, the following hypotheses are proposed:

H_{01}: *Lending interest rate does not affect NPLs in selected West African countries' commercial banks.*

H_{02}: *Liquidity ratio does not affect NPLs in selected West African countries' commercial banks.*

H_{03}: *Inflation rate does not affect NPLs in selected West African countries' commercial banks.*

H_{04}: *Capital adequacy ratio does not affect NPLs in selected West African countries' commercial banks.*

H_{05}: *Real interest rate does not affect NPLs in selected West African countries' commercial banks.*

H_{06}: *Cost income ratio does not affect NPLs in selected West African countries' commercial banks.*

H_{07}: *Gross domestic product growth rate does not affect NPLs in selected West African countries' commercial banks.*

1.3. Theoretical framework: information asymmetry theory

The foundation of this theory is that the creditor would definitely have more knowledge on the threats for which the project collects funds than the borrower. This adds to the issues of moral danger and adverse selection (Chantal et al., 2018). These issues reduce the effectiveness of the transition of funds from surplus to deficit units. Banks solve these problems first by providing dedication to long-term consumer relationships and then by exchanging information and ultimately, by delegating borrowers' monitoring (Atoi, 2018).

2. METHODOLOGY

The population of this study is selected West African countries (Nigeria, Benin, Burkina Faso, Gambia, Guinea, and Liberia). This study used explanatory research design for the regional (West African countries) study for the period 2008 to 2019 for 47 listed commercial banks from the six countries. The year 2008 was chosen as the base year because the banking sector globally faced financial crisis and survived unharmed (Olarewaju & Msomi, 2021). This study used unbalanced panel data static analysis based on the fact that it cut across 47 banks in 12 years (564 observations). The bank-specific data were sourced from BankScope (Bureau van Dijk), while the macro-economic data were sourced from World Development Indicator and International Financial Statistics. The details of the sample of banks is shown below.

Table 2. Population and sample of banks used

West African countries	No. of banks listed in each country	No. of banks used	No. of banks to be used (in percentage)
Nigeria	21	19	90.48%
Benin	20	14	70%
Burkina Faso	5	3	60%
Gambia	4	3	75%
Guinea	5	3	60%
Liberia	9	5	56%
Total banks	64	47	73.4%

Thus, the model for this study is specified as follows:

$$NPL_{it} = \beta_0 + \beta_1 LIR_{it} + \beta_2 CAR_{it} + \\ + \beta_3 LIQ_{it} + \beta_4 CIR_{it} + \beta_5 INF_{it-1} + \\ + \beta_6 INR_{it} + \beta_7 GDP_{it} + \mu_{it}, \qquad (1)$$

where $\beta_1 - \beta_2$ are the estimated coefficients of the regressors; β_0 is the constant; μ_{it} is the stochastic error term; it reveals a panel study of i (47) commercial banks for t (12) number of years.

This model will be estimated using Fixed and Random effect, while Hausman test will be used to select the best model. For clarity purposes, NPL is the non-performing loans ratio; LIR is the lending rate; CAR is the capital adequacy ratio; LIQ is the liquidity ratio; CIR is the cost income ratio; INF is the inflation rate; INR is the real interest rate; and GDP is the Gross Domestic Product growth rate.

3. DATA ANALYSIS

Descriptive statistics of the variables used in this study were presented in Table 3. There is great disparity between the minimum and the maximum values of the variables except NPL (min –0.293%; max 0.295%), CIR (min –2%; max 6%) and INR (min –1%; max 21%). INF with 564 number of observations has the least minimum and maximum values respectively and also the least disparity of values between –0.15% minimum value to 0.26% maximum value. Only LIR has a positive minimum and maximum values, while others have negatives values. This denotes that banks present their capital adequacy, cost income ratio and liquidity ratios both in negative and positive signs, respectively. However, for all the variables, the mean and standard deviations are positive values. The total observation for the variables is balanced except GDP that has 481 observations, which is below the expected number 564, and this denotes an unbalanced panel of West African commercial banks data.

3.1. Correlation analysis

Correlation coefficients between the different regressors are low except for the relationship between INF and NPL (0.523); INF and CAR (0.556) but not up to the 0.7 limit that denotes a multicollinearity issue (Rekha, 2019). NPL is negatively correlated to all the variables except LIR, CIR and GDP (0.2102; –0.0215; –0.1277), which is at a 1% level of significance. CAR, LIQ and INF have negative correlation with LIR at a 1% significance level. LIQ, CIR and GDP are negatively related with CAR at a 1% significance level. CIR and INF are negatively and significantly related to LIQ (–0.04 and –0.02, respectively). INF has negative and significant correlation with CIR (–0.01). Also, INR and GDP have a negative relationship with INF even though the INR and INF are insignificant. Conclusively, INR has a positive and insignificant relationship with GDP.

Table 3. Summary statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
NPL	564	0.0175873	0.0358789	−0.2930973	0.2954892
LIR	564	0.8967802	0.2826924	0.2052155	5.572873
CAR	564	0.1204737	0.1324367	−0.4447174	0.8091629
LIQ	564	0.2008674	1.014675	−0.9912991	18.18689
CIR	564	1.871059	19.93593	−2	6.069
INF	564	0.0109484	0.0265938	−0.1590017	0.2635914
INR	564	0.2822329	1.500507	−1.6535	21.48262
GDP	481	52.28115	31.76851	−6.875	56.54

Note: NPL is the non-performing loans ratio; LIR is the lending rate; CAR is the capital adequacy ratio; LIQ is the liquidity ratio; CIR is the cost income ratio; INF is the inflation rate; INR is the real interest rate; GDP is the Gross Domestic Product growth rate.

Table 4. Correlation analysis

	NPL	**LIR**	**CAR**	**LIQ**	**CIR**	**INF**	**INR**	**GDP**
NPL	1.0000	−	−	−	−	−	−	−
LIR	−0.2102	1.0000	−	−	−	−	−	−
p-value	0.0000	−	−	−	−	−	−	−
CAR	0.4024	−0.2770	1.0000	−	−	−	−	−
p-value	0.0000	0.0000	−	−	−	−	−	−
LIQ	0.0209	−0.0313	−0.0536	1.0000	−	−	−	−
p-value	0.6198	0.4580	0.2034	−	−	−	−	−
CIR	−0.0256	0.0072	−0.0185	−0.0440	1.0000	−	−	−
p-value	0.5438	0.8636	0.6614	0.2973	−	−	−	−
INF	0.5233	−0.2896	0.5566	−0.0277	−0.0186	1.0000	−	−
p-value	0.0000	0.0000	0.0000	0.5116	0.6588	−	−	−
INR	0.0138	0.0486	0.0379	0.0625	0.0090	−0.0011	1.0000	−
p-value	0.7445	0.2496	0.3691	0.1384	0.8302	0.9785	−	−
GDP	−0.1277	0.0382	−0.1354	0.0926	0.0808	−0.1172	0.0012	1.0000
p-value	0.0050	0.4028	0.0029	0.0424	0.0766	0.0101	0.9794	−

*Note: * $p < 10\%$; ** $p < 5\%$; *** $p < 1\%$. NPL is the non-performing loans ratio; LIR is the lending rate; CAR is the capital adequacy ratio; LIQ is the liquidity ratio; CIR is the cost income ratio; INF is the inflation rate; INR is the real interest rate; GDP is the Gross Domestic Product growth rate.*

Table 5. General least square estimation

NPL as a dependent variable
Number of groups (*i*) = 47 listed commercial banks
t = 12 years (2008–2019)

Variables	**Fixed effect**				**Random effect**			
	Coef.	Std. error	t-stat	Prob.	Coef.	Std. error	z-stat	Prob.
Constant	0.0086	0.0080	1.08	0.280	0.01531	0.0079	1.94	0.053**
LIR	−0.0059	0.0073	−0.81	0.416	−0.0085	0.0072	−1.17	0.241
CAR	0.0637	0.0168	3.79	0.000***	0.03582	0.0139	2.56	0.010***
LIQ	0.0068	0.0023	2.93	0.004***	0.0055	0.0023	2.43	0.015***
CIR	0.00003	0.0001	0.46	0.644	5.48e−04	0.0001	0.09	0.927
INF	0.7459	0.0698	10.68	0.000***	0.7074	0.0617	11.46	0.000***
INR	0.0018	.0014	1.29	0.198	0.0028	0.0014	2.04	0.042***
GDP	−.00005	.00005	−1.10	0.270	−0.00006	0.00004	−1.50	0.134
Adj R²	0.6304				0.6509			
F	F(7,427) (0.0000)***				Wald chi2(7) (0.0000)***			
N	481				481			
Hausman test								
B)'[(V_b−V_B)^(−1)](b−B)					chi²(7) = 33.96			
Prob. > chi2 = 0.0000***					(V_b−V_B is not positive definite)			

*Note: * $p < 10\%$; ** $p < 5\%$; *** $p < 1\%$; NPL is the non-performing loans ratio; LIR is the lending rate; CAR is the capital adequacy ratio; LIQ is the liquidity ratio; CIR is the cost income ratio; INF is the inflation rate; INR is the real interest rate; GDP is the Gross Domestic Product growth rate.*

The results of the Fixed and Random estimate are displayed in Table 5. The adjusted R-squares are 63% and 65%. This denotes that the independent variables significantly explained NPLs in the estimated model. The significance of the F-statistics and Wald chi square at 1% reveals the fitness of the model, while N of 481 denotes the unbalanced panel that makes the observation less than the 564 expected observation. From the Hausman test, the result of the fixed effect is selected based on the 0.000 probability value. Hence, the discussion of findings will be based on the results of the fixed effect model. From the analysis, only three variables, *CAR*, *LIQ* and *INF*, are significant at 1%.

LIR has an unconstructive and insignificant effect on NPLs. This implies that increasing interest rate results in reduced incidence of NPLs. This contradicts the findings of Bredl (2018), Atoi

(2018) and the adverse selection theory, as explained by Stiglitz and Weiss (1981). As interest rates rise, good borrowers are priced out of the market, as they will not be willing to pay more than market rates. Commensurately, with increased LIR, commercial banks actually attract high quality customers who are usually unhappy to pay more, hence they will strife to meet the due date for payment and this results into lower NPLs. Conversely, CAR has a positive and substantial effect on NPLs at a 1% level of significance. This implies that banks with stronger CARs have excess funds which would have shifted their attention from putting in place successful measures to alleviate the default risks that contribute to lowered levels of NPLs. The findings in this study confirms those of Madugu et al. (2020) and Abid et al. (2014) who found that there is a deleterious effect of CAR on NPLs in Ghanaian domestic banks and the Tunisian household sector respectively.

LIQ has a positive and significant effect on NPLs at a 5% level. This finding implies that the more liquid West African commercial banks are, the more their NPL ratio. This further means that liquid banks appear not to make an attempt to resolve bad loans because there would be enough money to operate the bank; hence, proper loan management is not a primary consideration. This finding is in line with Jameel (2014). A high LIQ ratio would have been expected to contribute to a lesser NPL ratio, whereas a low LIQ ratio would have been expected to lead to a high NPL ratio. Therefore, the positive effect found in this study means that ineptitude in resource distribution is seen, so unproductive loans are inevitable (Ambarawati & Abundanti, 2018).

CIR that measures the operational efficiency of banks has a positive and insignificant effect on NPLs of the examined commercial banks. This is against *a priori* expectations. With effective management, a bank that is operationally productive would have low NPLs, but this finding denotes an ineffective management in West African commercial banks. The findings in this study imply that the NPL ratio is rising, despite the fact that the banks are operationally productive because the banks' management skills are low. This is due to the fact that cred-

it ratings and borrowers' monitoring increase the operating costs, which can lead to negative loans. This conclusion is in line with the conclusions of Pradhan and Parajuli (2017) in a study of Nepalese commercial banks but opposes the findings of Trung (2019) in a study of Vietnam commercial banks.

From the external factors examined, INF has positive and substantial impact on NPLs. This finding contradicts the findings of Fajar and Umanto (2017) that inflation has a negative impact on NPLs. This implies that rising inflation will inhibit borrowers' ability to pay for loans by increasing the actual value of unpaid debt. In agreement with the study conducted by Shonhadji (2020), rising inflation levels are perceived to be an indication of macro-economic uncertainty, commercial banks will need an increased risk premium, leading to increased interest rates and interest payments, which causes a decline in the cash flow of borrowers, which reduces their ability to pay back their loans (meaning higher NPLs). Inflation is due to the rapid deterioration of the equity of financial institutions and subsequently greater credit risk in the banking sector. INR has positive and insignificant effect on NPLs. Although a mixed effect is expected, this study contradicts those of Panta (2018) and Fernando and Rathnasiri (2019). This finding implies that as the actual interest rate rises, the debt value of the borrowers reduces. Poor lending results from the volatility and instability of the LMI economies (Hamid & Rahman, 2020). It can be said from this finding that bank officials do not inform clients in detail of interest rate fluctuations and its impact, which makes it usually difficult for loan beneficiaries to pay the interest and principal on the loan when due.

Conclusively, GDP has negative and insignificant effect on NPLs. This denotes that the higher the GDP, the lower the NPLs. The finding in this study is tantamount to the findings by Mohaddes et al. (2017), Khaliq and Thaker (2017), and Apan and Islamoglu (2019) from studies conducted in Italy, Malaysia and Turkey banking sectors respectively. A significant positive GDP growth rate typically results in more revenue that upsurges the borrowers' debt servicing ability, which in turn leads to lower NPLs.

CONCLUSION

The purpose of this study was to examine the factors (macro-economic and bank-specific) affecting non-performing loans in commercial banks of West African countries. From the analysis in this study, only LIR and GDP negatively affect NPLs, while other factors have a positive and significant effect on NPLs. It is therefore concluded that the determinants of NPLs in West African countries' commercial banks are capital adequacy ratio, liquidity and inflation rate, based on the fact that they are the only significant factors. Thus, it is recommended that banks should not only keep their capital adequacy ratio above the minimum but adopt strict measures on every aspect of their operations. In terms of banks liquidity, proper and strict loan management should be prioritized to ensure that proper scrutiny is done before loans are disbursed to beneficiaries. Liquidity having a positive effect on non-performing loan ratios of the banks signals the mismanagement of excess funds in the bank, which has led to loosen loan management.

Collateral security alone is not enough for screening loan applicants, bank managers should ensure that banking officers are not just awarding loans to secure their jobs through Demand Deposit Account (DDA) accumulation from customers at the expense of the long-term stake of the bank. Banks should take appropriate measures to ensure that repayment of loans (principal and interest) on time is affordable and realistic. Also, in terms of the macro-economic factor, inflation that positively and significantly affects non-performing loans is a wakeup call on the economies of these banks to reduce inflation rate and maintain economic stability.

This study is limited by the fact that not all the commercial banks in the West African region economies could be included in the study due to paucity of access to their data. However, the few countries with available data were well represented and this in no way affects the potency of the findings and the relevance of the study. Further research should focus on the use of all listed commercial banks from all countries in the region, since NPLs remain a great threat to the banking sector of West African economies.

AUTHOR CONTRIBUTIONS

Conceptualization: Thabiso Sthembiso Msomi.
Data curation: Thabiso Sthembiso Msomi.
Formal analysis: Thabiso Sthembiso Msomi.
Funding acquisition: Thabiso Sthembiso Msomi.
Investigation: Thabiso Sthembiso Msomi.
Methodology: Thabiso Sthembiso Msomi.
Project administration: Thabiso Sthembiso Msomi.
Resources: Thabiso Sthembiso Msomi.
Software: Thabiso Sthembiso Msomi.
Supervision: Thabiso Sthembiso Msomi.
Validation: Thabiso Sthembiso Msomi.
Visualization: Thabiso Sthembiso Msomi.
Writing – original draft: Thabiso Sthembiso Msomi.
Writing – reviewing & editing: Thabiso Sthembiso Msomi.

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