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| RESEARCH ARTICLE

The Impact of Corruption on Bank Credit Risk in selected Sub-Saharan Africa

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| ABSTRACT
Corruption is one of societies' core ailments, impacting banks' performance. Corruption may impact lending practices and borrowers' willingness to repay loans, impacting banks' credit risks. We examine the impact of corruption on banks' credit risks in Sub-Saharan Africa. We use panel data from 10 sub-Saharan African countries from 2012 to 2023. We apply panel data analysis to examine the impact of a battery of control variables on banks' credit risks. Our analysis confirms that control of corruption significantly reduces banks' credit risks. Our results have implications for policymakers who aim to reduce banking risks.

| KEYWORDS

control of corruption, non-performing loans, sub-Saharan Africa

| ARTICLE INFORMATION

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1. Introduction

Scholars, bankers, and regulators have all given bank risk a great deal of attention since the 2008 global financial crisis (GFC). It is a broad subject with connections to numerous roles inside and outside the bank. The propensity of banks to take on excessive risk to maximise returns was brought to light by this catastrophe. Furthermore, because of developments both inside and outside of banks, it is anticipated that bank risks may alter and grow over time. Risk in banking is characterised as the possible loss resulting from unfavourable circumstances, like economic recessions, unfavourable changes in trade and fiscal policies, fluctuations in interest or foreign exchange rates, or falling stock values.

The most significant risk facing banks has always been credit risk. Non-performing loans (NPLs) are a significant indicator of credit risk since they have an immediate effect on the banking system and predict losses. According to Khan et al. (2020), the size of NPL is essential to preserving the stability of the banking industry in a nation. Therefore, non-performing loans (NPLs) indicate credit risk and impact banks' operations, which may pressure the economy and finances. The minimal amount of capital a bank needs to maintain to avoid collapse or bankruptcy is governed by regulations. Since lending operations account for most earnings for credit institutions, prudent credit portfolio management is critical to bank stability. (Souissi-Kachouri, 2020) Following the financial crisis, bank lending sharply declined. Corruption may influence banks' lending practices.

Corruption is one of the main reasons why loans in many nations become nonperforming. (Gjeçi & Marinč, 2022) According to the "sand the wheels" theory, increased corruption may have contributed to the financial crisis and can harm financial sector activities (Hugo et al., 2021). Corruption can result in resource misallocation that hinders the growth of the banking industry and raises the number of non-performing loans. When corruption is pervasive, dishonest bank employees may lend money to businesses that don't meet the rules, lowering the loan portfolio's quality. (Mohamad & Jenkins, 2020)

This study aims to bridge the existing vacuum in the literature on non-performing loans (NPLs) by examining the impact of corruption on bank NPLs in Sub-Saharan Africa (SSA), an area where corruption has been an epidemic for centuries and the ratio

of NPLs is not only higher but particularly volatile as compared to the rest of the world. (Gök, 2020) As far as we know, research of a similar kind has not been conducted in this area. Both the study's theoretical and practical contributions demonstrate its importance. Applying the practical importance will help practitioners, policymakers, financial analysts, and regulatory agencies establish a long-lasting framework for bank loan quality portfolios. In addition, the results of this research will assist policymakers in developing banking policies that are more sensible and successful by guiding the study's indicated policy implications. Furthermore, this will aid in identifying crucial weaknesses and developing measures aimed at fortifying overall financial stability.

The Control of Corruption (COC) indicator, which gauges the degree to which public power is used for personal gain—including both small- and large-scale corruption—as well as the "capture" of the state by elites and special interests, is employed in the current study. It also assesses the potency and efficacy of a nation's institutional structure and anti-corruption policies. Depending on availability, it is an index that combines a subset of 24 distinct evaluations and surveys. Each evaluation and survey are given a different weight based on its estimated precision and coverage of different countries

2. Literature review

Corruption is a pervasive issue from various socioeconomic and political angles. It usually refers to the misuse of assigned official authority for personal gain. It can manifest as extortion, bribery, collusion, nepotism, fraud, and other related practices. (Lustrilanang et al., 2022) Economic development can be negatively impacted by corruption in several ways, including the incentives offered to entrepreneurs to invest, the makeup of government spending, the accumulation of human capital, foreign investment inflows, and the efficacy of international aid. In the end, it can result in a financial system that is less effective. (Abuzayed et al., 2023)

According to research and literature on bank organisational models, large banks with more centralised, hierarchical organisational structures can function better when information can be readily transferred across hierarchical boundaries. Small banks have an edge in soft information processing, where a loan officer's discretion is crucial. The issue is that in highly corrupt contexts, discretion may be misused. (Pancotto et al., 2024) Ali et al. (2020) explain how corruption is frequently a barrier to banking activity as regulatory authorities fight to create an institutional system that more successfully intermediates. In bank lending, corruption can manifest itself in various ways. When corruption is widespread, it can make it more difficult for money to be intermediated effectively. As a result, specific borrowers without bank connections may be forced to reject sound financial initiatives, which could slow their growth, while those who do may find it easier to get finance. (Loang et al., 2022) Therefore, corruption fosters a harmful environment in the banking industry that enables loan officers to take advantage of loan contracts for their gain at the expense of other stakeholders, particularly depositors. Hasan and Ashfaq (2021) emphasise how crucial it is that corruption be eliminated for the long-term stability of the financial sectors and offer empirical proof that reducing corruption lowers bank risk-taking and boosts stability.

Recent studies have examined the extent of non-performing loans (NPLs) in bank lending corruption. A non-performing loan is the amount of money on which the debtor cannot make interest payments on time. The principal amount, interest payment, or both would be considered nonpayment. Generally, a loan is deemed non-performing if the planned payment is delayed by more than 90 days. From 2005 to 2016, Kjosevski and Petkovski (2021) carried out research for commercial banks in the Baltic nations. Using a regression panel model, they concluded that NPL is inversely influenced by profitability and loan growth. Additionally, Ciptawan and Melly (2023) used a sample of 46 listed financial institutions in Indonesia to show the inverse link between profitability and NPL. Masrom et al. (2023) talk about how NPLs have been a significant problem for the banking industry in Malaysia. With occasional changes, Malaysia's non-performing loan (NPL) ratio has steadily risen since the late 1990s. Meanwhile, the nation is still having trouble stopping corruption at all levels. Despite the government's attempts to tackle corruption, Malaysia's 2021 Corruption Perception Index (CPI) score of 52 out of 100 placed it 61st out of 180 nations. The CPI index is another measure of corruption which gauges the public's perception of official corruption in a nation. The public's perception of the likelihood of Malaysian authorities engaging in corruption increases with a lower CPI score. Thus, a direct relationship between corruption and NPLs was found. Another study by Son et al. (2020) looked at whether corruption affects the nonperforming loans in the banking system using a sample of 120 countries from 2004 to 2017. The empirical analysis yielded an important finding: there is strong evidence that the ratio of nonperforming loans and corruption are positively correlated, indicating that corruption weakens the financial system's stability.

A study by Nguyen (2023) empirically examines the economic impact of anti-corruption measures on bank performance using a sample of Vietnamese commercial banks from 2005 to 2019. It finds that average bank branch profitability rises with anti-corruption efforts. Also, by examining bank performance over a longer timeframe, it is found that after two years of enhanced anti-corruption intensity, bank performance improved significantly regardless of performance measurements. According to Saliba et al. (2023) findings', the BRICS banking sector's credit risk is heavily influenced by country risk, suggesting that the growing susceptibility of BRICS nations to domestic risk factors leads to a rise in non-performing loans (NPLs) in the banking sector. In

particular, the findings showed that credit risk rises with rising political, economic, and financial risks. The banking sector is most positively impacted by rising levels of domestic political instability in contexts with greater levels of non-performing loans. In their study of US banks, Karadas & Ozdemir (2023) find that a positive correlation exists—that is, more significant corruption equals more bank failures. Another study by Murdock et al. (2023) indicates that a corrupt atmosphere is linked to poorer bank performance without a decrease in risk. Bigger banks frequently undervalue the rise in credit risk. Small and medium-sized banks aim to "re-capture" revenues in fraudulent areas by decreasing their liquidity.

Hence, an overwhelming number of studies in the banking literature suggest that corruption is a key factor contributing to the NPL issue. Corruption impacts both the supply and demand sides of the banking and financial markets. Because money is improperly diverted from beneficial to harmful initiatives, corruption raises the risk to banks and ultimately slows economic growth. (Zhang et al., 2022) Additionally, earlier research revealed that corrupt nations have higher NPL rates. The motivation of this study is to find out more about whether corruption will significantly affect non-performing loans in SSA nations.

Corruption is one of the primary causes of most Sub-Saharan Africa (SSA) governments' inability to meet their Millennium Development Goals. Corruption has been identified as impeding socio-economic growth and good governance in Sub-Saharan Africa (SSA). It also worsens political instability, impedes the fight against poverty, and exacerbates ethnic violence. (Olarewaju, 2020) According to estimates, the SSA GDP shrank in 2020, which would be the worst number in the area's history. Corruption is a problem in SSA nations due to foreign and internal causes. Therefore, the SSA region has a heightened risk of an NPL surge. (Gossel, 2018) Many governments in Sub-Saharan Africa do not have the financial room or access to capital required to assist the real sector adequately. Furthermore, weak banks might be unable to handle even brief repayment difficulties from their borrowers, and asset and risk management procedures in banks are less sophisticated than in industrialised nations. Lastly, a sizable portion of the SSA countries' economies depend directly or indirectly on commodity prices, with about half exporting commodities, including agricultural items. (Eyraud et al., 2021)

While a large body of research has established a global link between non-performing loans and corruption, relatively few studies focus on Sub-Saharan African (SSA) countries. Most previous research on this correlation has been done in larger-scale contexts or specific regions, like Europe, South Asia, or emerging markets. However, SSA's distinct political, institutional, and economic dynamics haven't been fully examined. This disparity emphasises the need for a targeted study to understand how corruption affects non-performing loans in SSA banking systems while considering the area's unique difficulties and conditions.

3. Research Methodology:

Data on NPLs in SSA are gathered for this paper from various sources. The primary data sources are Fitch Connect bank-level data and IMF FSIs at the national level. The country-level data set for 10 SSA nations (Nigeria, Sudan, Rwanda, Kenya, Ghana, Somalia, Mauritius, Mozambique, Namibia, and Chad) chosen for the purpose of this study by the authors spans the years 2013–22. There are still significant gaps in the quality and availability of data. Not many SSA nations regularly provide NPL data to the IMF FSI database; sometimes, they are more than a year behind schedule. With a regional average score of 32 out of 100 on the 2019 Corruption Perceptions Index (CPI), Sub-Saharan Africa was ranked lowest. The average score for the world is 43, and the African average shows how corrupt people believe the public sector to be throughout the continent. This study performed static panel data analysis to evaluate the hypothesis. We employed random effect, fixed effect, and OLS models. For the fixed effects model, the Pool ability F-test was chosen. The fixed effect estimator was used to choose the random effect if the p-value of the F-test was less than 0.05.

$$NPL_{i,t} = \beta_0 + \beta_1 COC_t + \beta_2 SZ_{i,t} + \beta_3 PRFT_{i,t} + \beta_4 CAPITAL_{i,t} + B_5 GDP_t + u_{i,t}$$

We use COC as our only independent variable. COC is a measure of corruption published by the World Bank every year. The scoring ranges from −2.5 (least corrupt) to 2.5 (highly corrupt). Several control variables have also been included in the study, such as the bank's size, profitability, capitalisation, and GDP growth rate. Bank size (SIZE), which is defined as the natural logarithm of total assets (Gupta & Mahakud, 2020), is used because, according to literature, bank size is thought to hurt nonperforming loans, and larger banks have more excellent resources and the ability to collect their debts. (Alnabulsi et al., 2023) Profitability (PRFT) is defined as "return on assets" (ROA), which is calculated by dividing total assets by earnings before interest and taxes. Additionally, banking literature shows that ROA significantly and negatively affects NPLs. Lower Non-Performing Loans (NPL) could result from increased bank revenues and vice versa. On the other hand, excellent governance ought to result in decreased NPL or credit risk. This suggests that ROA and NPL are negatively correlated. (Uddin, 2022) Capitalisation (CAPITAL) is calculated by dividing total assets by equity capital using the capitalisation variable. discover that the Banks' NPLs are adversely affected by capitalisation. Bank managers who have less capital (low capitalisation) to engage in riskier financing are exposed to moral hazard. The "moral hazard" theory suggests that capitalisation and NPLs have the opposite relationship. GDP Growth: The GDP growth variable, which is determined by the GDP's yearly growth rate, is a gauge of the state of the economy. It is contended that NPLs are adversely impacted by the GDP growth rate. Bank NPLs decline during periods of rapid economic expansion.

4. Results

Table 1 presents the descriptive findings, which include the mean, variation from the mean, and lowest and highest values of the study's variables. Table 1 shows that the average score for credit risk in the form of non-performing loans (NPLs) is 0.0830. This indicates that, throughout the study period, the banking sector has a mean trend of above 8% in the form of weak loan performance, with the maximum level of NPL recorded at 0.5159. Furthermore, the COC data shows a mean of 0.7161, with minimum and maximum values of 1.4966 and 0.2397, respectively. These ten nations have weak COCs overall, with negative minimum and maximum indicators. The variables SZ, PRFT, and CAPITAL indicate the control variables unique to each bank. SZ has a maximum value of 20.0868 and a mean value of 15.3314. In the meantime, the maximum values of CAPITAL and PRFT are 0.5392 and 0.2353, respectively, while their mean values are 0.0143 and 0.0779. The macroeconomic control variable is GDP. The mean value of GDP overall is 0.0428, while the maximum value is 0.0711.

Table 1: Descriptive Statistics

Variable	Mean	S.D	Minimum	Maximum
NPL	0.0830	0.0620	0.0009	0.5159
COC	-0.7169	0.3491	-1.4966	-0.2397
SZ	15.3314	1.6621	2.0694	20.0868
PRFT	0.0144	0.0165	-0.1039	0.2353
CAPITAL	0.0782	0.0421	0.0163	0.5392
GDP%	0.0428	0.0201	-0.0058	0.0711

Table 2: Correlation

Variables	NPL	COC	SIZE	PROFIT	CAP	GDP
NPL	1					
COC	-0.208*	1				
SZ	-0.146*	0.620*	1			
PRFT	-0.427*	-0.263*	-0.103*	1		
CAPITAL	0.066*	-0.153	-0.262*	0.169*	1	
GDP%	-0.381*	0.407*	0.289	0.055	-0.1313*	1

The correlation analysis aims to find multicollinearity in the independent variables, as this could affect the regression, i.e., how the independent variables relate to the dependent variables. Multicollinearity is a serious problem because it increases the variance and makes regression coefficients unstable. On the other hand, every single one of these values is above the multicollinearity threshold of 0.70, as seen by the correlation matrix displayed in Table 2. Therefore, there is proof that several of the model's variables have multicollinearity issues.

The multiple regression analysis results are shown in Table 3. According to R-square, 32.1% of the dependent variable's variance (i.e., NPL) can be explained by the regression equation. Simultaneously, the equation's F-statistics are 12.60, indicating 1% significance. Therefore, robust standard errors are used in the computation of t-statistics in order to solve the heteroscedasticity problem. The findings demonstrate that, at the 5% level, the coefficients for the primary variable of interest, COC, are statistically significant. On the other hand, at the 1% level, additional control variables such as PRFT and GDP are found to be statistically significant.

The substantial impact of COC suggests that rising levels of corruption across the nation, particularly in the banking industry, will result in loans being approved improperly and make debt recovery exceedingly challenging. This is not surprising when it comes to the SSA countries; nearly all of them struggle with high levels of corruption (poor control over corruption). The mean COC of 0.7169 indicates poor control over corruption, which explains why NPL is high in SSA countries). According to the regression analysis, as COC increases by a single unit there is a 0.026 unit drop in the banks' NPL.

The first control variable, the PRFT coefficient, is assumed to be negatively significant (p-value = 0.000). This would suggest that a lower level of NPL could result from a greater level of bank revenue and vice versa, as Martiningtiyas et al. (2020) suggested. In terms of economic scale, a 1 unit rise in ROA will result in a 1.749 unit decrease in bank non-performing loans in the sample countries. On the other hand, Bank Size (SZ), the analysis's second control variable, has no statistically significant impact. This suggests that there is insufficient evidence to support the idea that NPL is influenced by the size of the banks chosen for this study. This would support the claim that bank size does not influence the NPL. Furthermore, it is discovered that capitalisation (CAP) has

a negatively insignificant impact on NPL, indicating that there is insufficient data to support the recommendation that CAP be used to estimate NPL for the banks in the sample under investigation (Sebayang, 2020)

Regarding macroeconomic variables, GDP negatively influences NPL at 1% (p-value = 0.009). According to this result, a one-unit rise in GDP will translate into a 0.260 unit decrease in non-performing loans. This implies that robust economic growth will lead to lower NPL and the expulsion of substandard loans from the market. These findings align with the findings of (Anita et al., 2022), who highlight that a strong national economy can increase a borrower's creditworthiness and reduce non-performing loans (NPLs) for the banking industry.

Table 3: Regression Analysis

Variable	Coefficient	Standard error	t-value	p-value
COC	−0.026	0.011	−2.04	0.047**
SZ	−0.005	0.004	−1.4	0.148
PRFT	−1.749	0.342	−5.10	0.00***
CAPITAL	−0.012	0.083	−0.15	0.884
GDP%	−0.260	0.093	−2.74	0.009***
Constant	0.121	0.06	2.41	0.021**
R-squared	0.321			
F-test	12.60			
LM Test (p-value)	0			
No. of observations	848			

5. Conclusion

Control of corruption (COC) was employed to examine the link with NPL to meet the study's purpose. The findings indicate that, for banks in SSA nations, control of corruption (COC) has a strong negative relationship with nonperforming loans. The results are consistent with those of Ahiase et al. (2023), who discovered that more non-performing loans would result from corrupt activity that was not well managed (i.e., higher degrees of corruption). The calculations for COC had a big impact since they showed that insider credit and inappropriate credit would be created if corruption is practised throughout the economy. Loans can also be redirected from programs that the credit committee has authorised. Such projects might be classified as "bad loans" in the end, which would raise the NPL ratio. Additionally, the cost of loans would rise, making it harder for borrowers to meet their repayments. This finding supports the rise in nonperforming loan levels in SSA banks. However, it also suggests that enhanced efforts to combat corruption in the region may be able to limit unethical behaviour linked to corruption between 20 and 2019.

Based on the study's findings, the article makes the following policy recommendations in light of the critical role of banking stability in promoting economic growth: Policymakers should take note of the enormously positive correlation between corruption and the percentage of non-performing loans. The negative effect of corruption on bank soundness justifies the efforts that must be made to combat corruption to sustain the momentum of economic growth. Even though this study offers solid empirical results for modelling the relationship between corruption—particularly financial, economic, and political—and the NPLs of the banking sector in the SSA countries, more empirical studies should examine this relationship for other regions, like the ASEAN, BRICS, or MINT countries, to paint a more complete picture.

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