


# “The impact of financial regulations on bank lending in emerging economies in Sub-Saharan Africa”

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# THE IMPACT OF FINANCIAL REGULATIONS ON BANK LENDING IN EMERGING ECONOMIES IN SUB-SAHARAN AFRICA

## Abstract

The aim of this study is to investigate the impact of financial regulations on bank lending in emerging economies in Sub-Saharan Africa. The dynamic system-generalized method of measures (GMM) is used to address difficulties such as unexplained periods and nation-specific implications, besides the endogeneity of the variables in question. Spanning from 2012 to 2022, the research used data from 80 banks in 20 sub-Saharan African nations. The findings show that expansive financial regulation, which includes a boost in the amount of cash in circulation, induces bank lending. At the same time, restrictive financial regulations, with the value as an improvement in interest rates by central banks, lead to credit contractions, albeit with little impact because of the attainable poverty of banking sectors, organizational limitations, bank-focused attention, and additional system rigidity typical of developing nations, which compromises the efficiency of the system. Other characteristics that substantially impact bank lending routes include capital sufficiency ratios and the scale of economic activity. Sub-Saharan African countries may boost the efficiency of financial regulations propagation on bank lending by making better use of the transfer process of fluctuations in cash supplies and interest rates.

## Keywords

financial regulation, bank lending, emerging economies, financial intermediaries

## JEL Classification

G21, G28, O16

## INTRODUCTION

The lack of necessary capital to expand commercial property businesses significantly hinders economic growth in Africa, posing a substantial barrier to the continent's overall development (Anarfo & Abor, 2020). This issue is particularly acute in Sub-Saharan Africa, which suffers from a fragile financial system, erratic monetary management, and misaligned fiscal and monetary policies (Msomi, 2023). These factors contribute to a large gap between the demand for and supply of investment. Effective fiscal regulation is crucial for achieving economic stability, full employment, and growth (Afful & Asiedu, 2014), aligning with broader national financial security and development goals. The primary aim of macroeconomic regulation is to achieve price stability through controlled inflation that supports output growth (Thamae & Odhiambo, 2023). Financial regulations impact credit intermediaries via transmission channels, such as interest rates and cash availability, driving productivity increases in the real estate sector (Mecagni et al., 2015). Whether interest rates are high or restrictive, they influence the economy by affecting borrowing and lending costs. Higher interest rates lead to increased costs for goods and services, contributing to inflation (Aliamutu & Mkhize, 2024c). Regulators often adjust interest rates to stimulate production and control inflation, but high rates can also restrict credit and negatively impact the real estate industry (Brei et al., 2020). This monetary policy shift influences bank lending

behaviors and the availability of loanable funds. In developing countries, especially in southern Africa, financial and transmission mechanisms are limited by underdeveloped financial structures and economic challenges (Aliamutu & Mkhize, 2024a). Conversely, in advanced economies, robust financial infrastructures enhance the effectiveness of these channels (Akinsola & Odhiambo, 2017).

Institutional constraints in developing nations hinder effective financial regulation, with weak legal frameworks and consolidated financial institutions impeding implementation (Frey & Volz, 2013). Banks play a crucial role in financial regulation by influencing the real economy through the supply route. A key issue is whether financial regulatory actions successfully influence loan intermediation. Policymakers and economists agree that interest rates are central to the transmission of financial regulation (Karikari, 2010; Msomi & Olarewaju, 2022). For instance, tighter central bank regulations increase reserve requirements, raising interest rates and reducing investment in debt-sensitive sectors (Aliamutu & Mkhize, 2024b). This interest rate mechanism is essential for banks, as decreased cash availability from bank deposits raises interest rates (Tarus & Manyala, 2018). Therefore, monetary regulations can restrict banks' lending capacity, immediately affecting loans and borrowing costs (Dwumfour, 2017). Recent research on bank credit networks has explored the reliance of different borrowers on bank lending and the direct impact of financial regulation changes on lending behaviors (Allen & Giovannetti, 2011; Msomi, 2022). Empirical studies have yielded mixed results, with some indicating that disruptions in bank loans due to regulatory changes can negatively impact economic growth (Aluko & Ajayi, 2018; Akinlo & Egbetunde, 2010). This paper investigates the relationship between financial regulation transmission and bank lending, providing new insights. While nation-specific studies have linked monetary regulations to macroeconomic indicators like investment and trade, there is limited research on financial regulation's impact on lending at regional or national levels in Sub-Saharan Africa. This study aims to fill this gap, offering empirical evidence to inform policies that enhance financial regulation efficacy for development.

## 1. LITERATURE REVIEW

The 2007–2009 financial crisis has sparked increased attention among experts worldwide regarding the need of enhancing financial market regulation. This has resulted in the enhancement and advancement of new rules designed to enhance the safety of financial institutions, such as commercial banks, which are organizations that accept deposits. These policies prioritize the improvement of asset quality. Financial regulation encompasses procedures aimed at governing the amount, worth, and expenses of cash within a nation's economy, aligned with economic activity to foster rapid growth, stable employment, controlled prices, and a balanced balance of payments. Anthony-Orji et al. (2019) describe financial regulation as an endeavor to achieve national objectives such as optimal job creation without price increases, rapid industrial growth, and transaction stability through cash supply management, loan costs, and lending quantities. Considering that interest is the price of credit, financial regulation involves managing cash availability and interest

rates (Akudugu, 2013). Financial regulation's primary objective is to achieve national goals, such as optimal job creation, rapid industrial growth, and transaction stability through cash supply management, loan costs, and lending quantities (Anthony-Orji et al., 2019). Akudugu (2013) expands on this by highlighting the role of interest rates in financial regulation.

From a theoretical perspective, financial regulation can influence the external value of local currency through exchange rate control, rooted in Irving Fisher's measurement theory of money (Pearce, 2011). Both monetarists and Keynesians provide insights into how financial regulation impacts bank lending. According to Amatus and Alireza (2015), increasing cash supply in the short term can lower interest rates and boost bank lending. Tita and Aziakpono (2017) support this monetarist view, arguing that financial regulation enhances the cash supply in business bank deposits, increasing banks' lending capacity through the multiplier effect. Stringent monetary conditions, however, reduce lender liquidity and lending capacity, limit-

ing loans to high-risk consumers and commercial entities and thus reducing consumer demand and expenditure (Jungo et al., 2022). The effectiveness of financial regulation on borrowing is contingent on whether it is expansive or restrictive. Expansive financial regulation leads to more credit availability, while restrictive regulation limits banks' lending capacity (Khan et al., 2022). Relaxing financial regulation increases cash supply or lowers interest rates, which in turn boosts bank savings and lending capacity; the opposite occurs with restrictive regulation (García & José, 2016).

There is evidence that bank lending is weaker in developing countries compared to industrialized nations, with the exact magnitude of this difference remaining unclear (Beck et al., 2015). Evans (2016) identifies a significant connection between financial regulation and bank lending, while Anarfo et al. (2019a) suggest that borrowing costs account for roughly half of interest rate fluctuations, indicating a significant financial impact. Well-capitalized institutions are less affected by shifts in financial regulation compared to lower-capitalized banks (Siddik & Kabiraj, 2018). Studies focusing on Nigerian bank lending reveal that central bank rates and price levels have little impact on lending, whereas firm-specific factors such as capitalization and flexibility do (Zeqiraj et al., 2022). Data from large multinational banks indicate that reducing short-term financing costs may not necessarily boost bank loan demand when rates are extremely low (Anarfo et al., 2019b). This suggests that poor lending behavior in banks might stem from diminished efficiency in traditional facilitating activities (Ahamed & Mallick, 2019).

Greater liquidity implies financial soundness, as banks with more liquidity can better support loans during periods of tighter financial regulation by utilizing their liquid assets. Mwega (2016) identifies socioeconomic factors hindering bank lending in emerging economies, including small banking sectors, unstable financial markets, and low competition. Motelle and Biekpe (2015) highlight that banks in Sub-Saharan Africa tend to maintain higher reserves than necessary, undermining the money transmission process. The effectiveness of financial regulation varies between prosperous and poor nations due to administrative, organizational, and market information deficiencies (Motelle &

Biekpe, 2015; Phesa et al., 2023). Poor intermediation rates in developing countries are exacerbated by weak property rights and legal frameworks, which worsen information and financial disputes in lending. Asuming et al. (2019) discuss systemic and institutional barriers in the financial sectors of emerging markets, while Arun and Kamath (2015) find that poor contraction environments hinder the transfer of financial regulation to the real economy in developing countries.

Using loan request and issuance data, Kebede et al. (2021) explore the impact of financial regulation on financial services and the economy, showing that interest rate hikes decrease bank credit availability. Afful and Asiedu (2014) argue that the state of the banking industry influences how financial regulation affects economic growth. Thaddeus et al. (2022) examine the impact of financial regulation on lending in Uganda, finding that tighter financial regulation reduces bank credit availability, particularly for highly leveraged banks. Omachar (2022) investigates the effect of financial regulation on lending in Venezuela and Uruguay, revealing significant loan contraction in Venezuela but not in Uruguay. Yakubu et al. (2021) studied the relationship between bank capitalization, size, and financial regulation in the US, finding that smaller, underfunded banks struggle to maintain loan growth under restrictive regulation. Aluko and Kolapo (2020) conclude that small capital banks are more affected by restrictive regulations compared to high-capital banks.

Ho (2017) identifies a financial regulation route through price limitations in markets, showing that adverse regulation surprises raise insurance rates for specific banks, thereby reducing their lending capacity. Abdullahi and Fakunmoju (2019) confirm that variations in cash supply and temporary return rates impact banks' lending routes, noting that the effects differ across EU nations' banks. Limited empirical research exists on financial regulation and bank lending in Sub-Saharan Africa, making this study valuable for providing new insights.

The study aims to explore the impact of financial regulation on bank lending in Sub-Saharan Africa, considering the unique financial structures and economic challenges of developing nations.

## 2. RESEARCH METHODS

To study the relationship between financial regulation and bank lending in Sub-Saharan African nations, a simplified model is provided:

$$L_{i,t} = f(FR_{i,t}, X_{i,t}). \tag{1}$$

The model includes  $L_{it}$  (the total number of bank loans provided to GDP percentage),  $FR$  (financial regulations measured by modifications to the financial regulation rate as well as cash availability),  $t$  (year repaired particular impact), and  $X$  (a vector that includes extra macroeconomic factors influencing bank lending in accordance with the literature) (Muyanga, 2014). The determinants influencing the number of loans included banking-specific parameters such as capital adequacy ratios (Tier 1 + Tier 2), risk-weighted assets, and the bank’s size. Banks that are adequately funded and have strong liquidity are much more inclined to grant loans than those with lower capital and liquidity. In addition, significant macroeconomic indicators such as GDP and inflation rates are included while analyzing bank lending. This technique aligns with Akinkuotu (2021). Financial regulatory distribution could differ depending on bank capital, size, and economic circumstances (Nwakobi et al., 2020). The enlarged model for understanding the factors influencing bank lending in Sub-Saharan African nations is as follows:

$$L_{i,t} = f\left(\begin{matrix} MS_{i,t}, FR_{i,t}, CAR_{i,t}, BS_{i,t}, \\ GRGDP_{i,t}, INF_{i,t} \end{matrix}\right). \tag{2}$$

The empirical specifications of the model are:

$$L_{i,t} = a_0 + a_1MS_{i,t} + a_2FR_{i,t} + a_3CAR_{i,t} + a_4BS_{i,t} + a_5GGDP_{i,t} + a_6INF_{i,t} + \varepsilon_{i,t}. \tag{3}$$

The values that need to be evaluated are  $\alpha_1$ - $\alpha_6$ ,  $t$  indicates the year-fixed specified impact, while  $\varepsilon$  is the unexplained error factor. From the beginning, we anticipate:  $\alpha_1, \alpha_3, \alpha_4, \alpha_5 > 0$ ;  $\alpha_2, \alpha_6 < 0$ .

The dynamic system-GMM approximation is simultaneously effective, resilient to heteroskedasticity, and can handle bias due to omission and causality reversed (simultaneous). Static panel estimations (fixed or randomized im-

pacts) do not effectively handle endogeneity, neglect, or unexplained impacts in determining the dependent variable, whereas assuming significant cross-sectional heterogeneity (Idowu et al., 2020). To analyze factors throughout countries and time, a unique model is needed to account for the time frame and nation-specific economic peculiarities, which may lead to endogeneity. System-GMM is an appropriate approach for this purpose. The system-GMM estimation can be more exact and less biased than the initial-differenced-GMM estimation. It incorporates the moment requirements for the first differential equations and uses properly delayed factors such as instrumentation. The research uses data from 80 banks in 20 sub-Saharan African nations between 2012 and 2022. The period and choice are determined by the accessibility of data.

## 3. RESULTS AND DISCUSSION

Table 1 includes descriptions of model variables, units of evaluation, and data sources. The descriptive statistics of the data on the elements that were considered in the study are shown in Table 1. Among the sub-Saharan African countries that were investigated, the overall loan granted as a percentage of total assets was 12.8%, with a median value of 12.12%. This indicates that the lending rate varies amongst the countries that were investigated.

**Table 1.** Description of variables and data sources

Source: Self-generated.

| Variables   | Descriptions   |
|---|--|
| Leading   | The entire quantity of loan funding (credit) granted as a percentage of the total assets of financial institutions |
| Money supply  | Wide cash provided to GDP percent  |
| Financial regulation rate                             | Financial regulation rate for three months   |
| Increased rate of actual gross domestic product (GDP) | Hearily rate of increase in nominal GDP percentage   |
| Inflation rate  | Increase the rate of customer price index  |
| Capital adequacy ratio                                | Total Regulatory Capital (Tier 1 þ Tier 2)   |
| Bank size   | Dummy variable with a value of 1 for banks with total assets over the median and 0 otherwise                       |

**Table 2.** Descriptive statistics

Source: Self-generated.

| Variables | Mean  | Median | Max   | Min   | Std. dev. |
|-----------|-------|--------|-------|-------|-----------|
| L         | 11.53 | 11.24  | 18.47 | 6.20  | 8.40      |
| MS        | 20.23 | 19.48  | 46.30 | 9.36  | 7.28      |
| FR        | 22.28 | 21.68  | 46.23 | 8.35  | 6.76      |
| CAR       | 26.00 | 23.77  | 38.46 | 11.86 | 8.40      |
| GGDP      | 5.60  | 4.15   | 9.30  | -2.36 | 6.20      |
| INF       | 16.4  | 14.77  | 29.39 | 4.39  | 17.64     |

The money supply to GDP ratio averages 20.23%. The average capital adequacy ratio is 26%. The greatest and smallest numbers are 38.4 and 11.86%, respectively. The average real GDP expansion rate is 5.6, while the inflation rate is 16.4 %. Their standard deviations of 8.4 and 17.6 indicate that inflation and expansion vary among Sub-Saharan African nations, which typically experience macroeconomic volatility.

The findings of the static panel estimate with the fixed effect are shown in Table 3. This estimate was performed using the Hausman selection criteria in conjunction with the system GMM. The emphasis is on system-GMM results, which give better, regular, and accurate approximations for the fixed effects outcomes. The study found a positive but non-significant connection between a bank's historical lending stance and its present lending position. Bank lending in Sub-Saharan African nations responds asymmetrically to financial regulations, with historical borrowing not considerably influencing present lending. Higher

money supply results in higher bank lending, as indicated by a positive and substantial coefficient at the 5% rate. Expanding the cash supplied leads to increased bank deposits and lending capability. Expansion in cash supplied boosts bank lending, whereas deflation limits credit availability by rejecting requests for financing, restricting loan volumes and rates, and even limiting loans. The findings are similar to Akinkuotu (2021).

The 1% expansive supply of cash has caused a rise in bank lending in 0.2%. Even if the coefficient for the rate of financial regulation is negative, it is not a significant percentage. Financial regulation rates have little effect on loan routes in emerging economies due to undeveloped capital markets, organizational restrictions, and systemic limitations that hinder efficient transfer. The results support Nwaogwugwu's (2018) conclusions. Every one percent rise in regulatory interest rates results in a 0.1% drop in the amount of money that banks give out. Despite the fact that the coefficients of capital adequacy ratio and bank size are suitably and positively acknowledged, the only one that has statistical significance is the correlation coefficient of capital adequacy ratio. This is in accordance with the predictions that were made before for this particular situation. Banks with greater capital adequacy ratios appear to be comparatively more functioning properly, viable, and reliable in granting loans to consumers than less capitalized banks since becoming adequately funded indicates reduced sensitivity to liquidity concerns and

**Table 3.** Outcomes of the bank lending method

| Bank lending variable          | Fixed effects    | System-GMM       |
|--------------------------------|------------------|------------------|
| L(-1)                          | –                | 0.020 (0.024)    |
| MS                             | 0.321** (2.031)  | 0.3321** (2.351) |
| MP                             | –0.2212* (1.032) | –0.2.11 (1.466)  |
| BS                             | 0.034 (1.383)    | 0.021** (2.087)  |
| GGDP                           | 0.414** (3.33)   | 0.1824** (1.073) |
| INF                            | –0.032 (0.138)   | 0.331 (–1.232)   |
| Adjusted R <sup>2</sup>        | 0.79             | –                |
| F-statistic                    | 39.09 [0.000]    | –                |
| Breusch-Godfrey serial LM test | 1.82 [0.46]      | –                |
| <b>Post-diagnostic</b>         |                  |                  |
| Instrument count               | 8                |                  |
| J-stat                         | 2.55 (0.58)      |                  |
| AR(1)                          | –2.89 (0.004)    |                  |
| AR(2)                          | –0.70 (0.651)    |                  |

Note: \*\*\* statistical value at the 1% level; \*\* statistical value at the 5% level; \* statistical value at the 10% level; t-ratios in parentheses.

systemic crises. Banks using a significant combination of cash are more confident in granting loans.

The outcomes support Antwi et al.'s (2013) conclusions. The t-ratio of GDP growth rate is the sole important indicator of macroeconomic circumstances, as measured by GDP growth and inflation rates. Increasing economic activity leads to increased bank lending, whereas high inflation rates reduce financial intermediaries. Supposedly, when economic activity goes up, banks are expected to make more money based on Pasinetti's revenue growth model. This, in turn, leads to more lending. However, when inflation rises, it creates uncertainty in the financial system, which causes banks to become hesitant and lend less. The outcomes are consistent with Adeleke and Olusola (2021). The Breusch-Godfrey serial correlation LM test is used to evaluate the presence or lack of serial correlation in the fixed static panel results. However, the Hansen J-statistic is utilized to assess the validity of the estimated techniques by testing for over-identifying restrictions. These experiments provide empirical support for the dependability of the system-GMM estimators. The post-estimation analysis presents evidence against the null hypothesis that there is no first-degree serial correlation in the first-difference errors. Nevertheless, the available evidence is insufficient to exclude the null hypothesis at the second-degree level, as shown by the values of  $AR(1) = -2.89 (0.004) ***$  and  $AR(2) = 0.70 (0.651)$ . There is no justification for dismissing the hypothesis due to the absence of evidence for second-order serial correlations in the context of error. However, it does show resilience in first-order serial correlations. This technique is suitable for basic and regulatory perspectives.

Many key ramifications for regulation may be drawn from the empirical results. First, data sug-

gest that an expanding supply of cash, and therefore liquidity, stimulates bank lending. Increased fiscal liquidity stimulates bank lending, but restrictive regulations do not. Financial regulators in emerging economies can use modifications to the availability of cash to affect bank lending and investment in the economy. The study found that increased rates of financial regulation had a modest influence on bank lending in poor nations, possibly because of undeveloped financial markets and organizational restrictions that hinder regulation propagation. Such a rise in regulation rates reduces credit availability owing to the exclusion impact, complicated and excessive collateral specifications, restrictions on credit, and as a result, banks' unwillingness to make loans. Successful regulations to strengthen the banking sector in order to eliminate economic limitations and create excellent organizational structures are thus critical to improving economic regulation efficiency in transmission. Third, the empirical findings indicate that an elevated proportion of adequate capital is a significant predictor of bank lending in Sub-Saharan Africa.

Adequately funded banks are less risky while being more solid, allowing them to offer greater amounts of financing than those with a weaker capital basis. To provide legitimate and secure trading services, banks must fulfil minimal ratios of capital sufficiency through efficient oversight and regulations. Fourth, research indicates that greater economic activity is a key factor in stimulating bank lending. Banks are more likely to provide financing as economic activity increases. Policymakers in emerging economies ought to implement regulations that promote economic development and promote banks' loan intermediary function. The study found that elevated inflation rates hinder borrowing in developing nations by creating uncertainties and uneven lending behavior among banks.

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## CONCLUSION

This study aims to investigate the relationship between financial regulation, alongside other control variables, and bank lending in sub-Saharan Africa. Empirical findings indicate that cash flow significantly influences credit channels in sub-Saharan African nations, whereas financial regulation rates have minimal impact on bank lending operations. The limited influence of financial regulation rates on lending may be attributed to factors such as low levels of economic growth, the limited number of banks, organizational vulnerabilities, and various structural issues that diminish the effectiveness of financial regulation in emerging economies.

Additional factors that substantially impact bank loans include capital adequacy ratios and macroeconomic conditions, such as GDP growth rates, which serve as indicators of economic activity. The study's limitations arise from the lack of comprehensive data covering all 46 sub-Saharan African countries. This data scarcity is due to underdeveloped financial systems, weak governmental institutions, and a pervasive culture of accountability repression in these nations.

The results suggest that developing nations, particularly in sub-Saharan Africa, can enhance the transmission of financial regulation to bank lending. Effective communication between shifts in cash supply and inflation rates (interest rates) is crucial. To promote lending, banks should focus on maintaining capital adequacy, managing risk effectively, and fostering positive macroeconomic trends, such as economic growth and price stability.

Future research should expand this study's scope by including additional countries in the sample. To address data deficiencies, researchers should consider integrating primary and secondary data sources. This approach will improve the generalizability of the findings and contribute to the body of knowledge on bank lending mechanisms.

## AUTHOR CONTRIBUTIONS

Conceptualization: Kansilembo Freddy Aliamutu, Thabiso Sthembiso Msomi.

Data curation: Kansilembo Freddy Aliamutu, Thabiso Sthembiso Msomi.

Formal analysis: Kansilembo Freddy Aliamutu, Thabiso Sthembiso Msomi.

Funding acquisition: Kansilembo Freddy Aliamutu.

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Writing – original draft: Kansilembo Freddy Aliamutu, Thabiso Sthembiso Msomi.

Writing – reviewing & editing: Kansilembo Freddy Aliamutu, Thabiso Sthembiso Msomi.

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