DOES THE BANK RE-CAPITALIZATION POLICY ENHANCE CREDIT FLOW TO ECONOMIC SECTORS IN NIGERIA? EVIDENCE FROM THE RICE SUB-SECTOR

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ABSTRACT

A well-capitalized banking system is crucial for investment growth in all economies. Consequently, the bank re-capitalization policy has been implemented in Nigeria to foster bank lending and economic growth. Using a time series of data spanning from 1970 to 2021 and the Probit regression model, the propensity of this policy to improve rice farmers' access to bank credit was examined. The result indicates that the policy significantly (3.38 $p \leq 0.05$*) improved rice farmers' access to bank credit. Further evidence indicates that whereas the time deposit in commercial banks had a statistically significant negative influence (-1.11; $p < 0.05$) on the growth of rice farmers' access to bank credit, the inflation rate (-0.56; $p < 0.05$) and loan-to-deposit ratio (1.18; $p < 0.05$) exerted no significant influence on the variable. Overall, it is concluded that the bank re-capitalization policy has been effective in improving rice farmers' access to bank credit. Conversely, a negative relationship exists between time deposits in commercial banks and rice farmers' access to bank credit. A more effective implementation strategy and continuous upscaling of the policy are recommended. The former may include restructuring and adjustments to the bank license.*

Keywords: Bank credit access, Bank re-capitalization policy, Probit model, Time deposit, Commercial banks

INTRODUCTION

A well-capitalized banking system is crucial for the growth of an economy and its sectors. This is because an adequately capitalized banking system fosters access to bank credit and improved investment. The amount of capital or equity held by banks significantly impacts on bank credit portfolio and the overall financial health of the economy. Well-capitalized banks are more likely to lend, and their lending decisions are likely to have a positive impact on economic growth (Nguyen and Dinh, 2022; Kim and Soh, 2017). Conversely, under-capitalized banks may become more cautious about their lending decisions, potentially hindering financial market efficiency and economic activities.

Given the import of agriculture in the Nigerian economy, the rapid increase in rice consumption, the country's comparative advantage in rice production, the increasing population growth, increased income levels, and the rapid urbanization (Kamala et al, 2020), an improved capital base of banks and therefore access to credit is very crucial for increased investment. Thus, the objective of the bank consolidation and re-capitalization policy in Nigeria has been to guarantee a diversified, strong, and reliable banking system.

A system that will not only ensure the safety of depositors' money but also ensure a competent and more competitive banking system as a player in the African regional and global financial system (Soludo, 2004). The initial stage of the exercise, which began in 2004, aimed to address banking system inefficiencies resulting from structural and operational weaknesses (Kama, 2007; Anyanwu, 2010). Thus, the minimum capital requirement of banks was raised from N2 billion (USD 15.38 million) to N25 billion (USD 187.97 million) with a deadline of December 31, 2005, for full compliance (Kama, 2006).

The early impacts of the recapitalization policy have been that many banks have ventured offshore for capital expansion, with a significant number of foreign investors and banks participating in the alliance. The branch network of the banks also expanded, and the banks were no longer largely urban institutions as they had been in the past. Banks made inroads into the semi-urban and rural areas, with the likelihood that rural and agricultural activities will receive more financial attention. The consolidation policy further diluted the ownership structure of Nigerian banks, as opposed to the past, where a few individuals held substantial shares in the banks, which negatively impacted their performance. Ownership became broad-based, with indirect government ownership limited to 10%. The recapitalization policy also made insurance companies more adequately capitalized, reducing their financial risks and increasing their ability to handle larger claims and manage credit risk related to sectors such as agriculture.

Motivated by the precedent of the 2004 bank recapitalization exercise, the 2024 bank recapitalization policy is more ambitious, requiring a minimum capital of N500 billion (approximately USD 333.33 million) for commercial banks with international authorization and N200 billion (approximately USD 133.33 million) for commercial banks with national authorization (CBN, 2024). Furthermore, merchant banks are required to maintain a minimum capital of N50 billion (approximately USD33.25 million), while non-interest banks with national and regional licenses are required to maintain a minimum capital of N20 billion (approximately USD13.33 million) and N10 billion (approximately USD6.67 million), respectively.

Despite these efforts, however, evidence continues to indicate that a significant gap exists between farmers' demand for credit and its supply. For instance, Steemers *et al.* (2022) report that low credit use exists among Nigerian farmers and that a significant gap exists between the aggregate demand for financing (estimated at N8 trillion or USD20 billion) and its aggregate supply. Given the importance of rice to the consumption needs of Nigerians and agricultural growth, there is a need to evaluate the effectiveness of the bank re-capitalization policy on rice farmers' access to bank credit. The rest of the study is organized as follows. Section 2 presents a review of the related literature, while Section 3 outlines the model and the data. Section 4 presents results and discussion.

REVIEW OF RELATED LITERATURE

Bank Recapitalization, Bank Performance and Challenges

The notion that adequate bank capital ensures optimal risk management practices, good capital adequacy ratios, bank stability, improved investor confidence, and enhanced lending practices motivates government policy on bank recapitalization (Iwendi et al., 2024). According to the Basel Committee on Banking Supervision (2011), adequate bank capital ensures that banks are well-equipped to handle financial stress and systemic risks. Furthermore, well-capitalized banks are less likely to engage in risky behaviors, thereby ensuring overall financial stability (Wahukwu, Iwedi, & Barisma, 2023; Berger & Bouwman, 2013). Banks with robust capital adequacy ratios are also more likely to receive higher ratings from rating agency, which not only lowers the cost of capital for these banks but also ensure credibility and their attractiveness to investors (IMF,2019).

Well-capitalized banks are also more likely to adopt rigorous management practices to ensure compliance and profitability (Iwendi et al, 2024). Capital adequacy ratios (CAR) measure banks' financial health, reflecting their ability to absorb potential losses and safeguard depositors. A higher capital base is expected to enhance these ratios across the industry. Higher capital buffers enable banks to absorb unexpected losses, thereby reducing the likelihood of bank failures (Iwedi, Edeh, & Oriakpono, 2023). Banks with a high capital base are better equipped to handle financial stress (Basel Committee on Banking Supervision, 2011). Studies by Wachukwu, Iwedi & Barisua (2023) and Berger & Bouwman (2013) further demonstrated that well-capitalized banks are less likely to engage in risky behavior, thus contributing to overall financial stability.

Increases in banks' capital base are expected to drive the adoption of more rigorous risk management practices and increased profitability (Iwedi et al, 2024). Successful management of an improved capital base can lead to enhanced internal controls and risk assessment frameworks, including improved credit risk assessment, operational risk management, and market risk management practices (CBN, 2018). The new capital requirements will likely also prompt banks to invest in advanced risk management tools and technologies. These tools can aid in more accurate forecasting, stress testing, and scenario analysis, thereby enhancing the overall risk management framework (PwC, 2020). Enhanced risk management practices can also ensure better compliance with regulatory requirements, reducing the likelihood of penalties and sanctions. This is crucial for maintaining operational efficiency and protecting the bank's reputation (CBN, 2018).

Investor confidence is crucial for the banking sector, as it directly influences the ability of banks to attract capital and funding. The bank recapitalization policy is expected to boost investor confidence in various ways. Higher capital bases and improved financial stability make local banks more attractive to foreign investors. This can lead to increased foreign direct investment (FDI) in the banking sector, fostering economic growth (World Bank, 2020). Furthermore, banks with strong capital and sound financial practices are likely to perform better in the stock market.

This will not only benefit the banks but also contribute to the overall health of the financial markets (IMF, 2019). With increased confidence from investors, banks can access capital at lower costs and then lend more cheaply.

Bank re-capitalization policy is also expected to lead to improved lending practices among national banks. This can have far-reaching positive effects on the economy. With higher capital bases, banks can afford to be both selective and thorough in their credit assessments. This reduces the likelihood of loan defaults and improves the overall quality of the loan portfolio (Berger & Bouwman, 2013). A well-capitalized bank is also better positioned to extend credit to individuals and businesses, fostering economic growth. This is particularly important for small and medium-sized enterprises (SMEs), which are crucial for job creation and economic development (World Bank, 2020). Banks with improved capital can more actively support the economy by providing financing for infrastructure projects, agriculture, and other critical sectors of the economy (IMF, 2019). The decision to increase bank capital can also enhance the financial stability and resilience of the banking sector.

In spite of these potential benefits, challenges that include: the difficulties in meeting the recapitalization requirements, the likely negative impact of the policy on smaller banks, potential for regulatory arbitrage among banks, and the difficulty of the regulatory mechanism passing the impact of the policy to the micro sectors of the economy, may confront the recapitalization efforts. More specifically, raising substantial capital in a short period can be challenging to banks, especially in an economy that might be experiencing slow growth or other macroeconomic challenges (Iwedi et al, 2024). Banks may also struggle to attract sufficient investment to meet the new requirements, particularly if investor confidence is low (Owusu-Antwi *et al.* 2020).

Unfavorable market conditions, such as low stock market performance or economic downturns, can further complicate efforts to raise capital. Investors may be hesitant to commit substantial funds to banks during periods of economic uncertainty (IMF, 2019). To meet the new capital requirements, banks may need to issue new shares, which can dilute the holdings of existing shareholders. This can lead to resistance from current shareholders and potential internal conflicts (Berger, Imbierowicz, & Rauch, 2016). Banks may turn to debt financing to meet capital requirements, but this increases their leverage and financial risk. High levels of debt can strain a bank's financial health and increase the likelihood of default during economic downturns (Acharya, Berger, & Roman, 2018)

Moreover, smaller banks may find it harder to raise the required capital compared to their larger counterparts. This puts them at a competitive disadvantage, as they may struggle to attract the same level of investors' interest or access to capital markets (Naceur & Kandil, 2009). The new requirements may also lead to increased consolidation in the banking sector, as smaller banks merge or are acquired by larger institutions to meet capital requirements, resulting in reduced competition and limited consumer choices (Beck, Demirgüç-Kunt, & Levine, 2006). Smaller banks may face significant operational strain in trying to comply with the new requirements.

The costs associated with raising capital, such as legal and advisory fees, can be disproportionately high for smaller institutions (Berger, Imbierowicz, & Rauch, 2016). Some smaller banks may also be compelled to exit the market if they fail to meet the new capital requirements. This can lead to job losses, reduced access to banking services for certain communities, and potential disruptions to the financial system (Owusu-Antwi *et al*., 2020).

Regulatory arbitrage occurs when institutions exploit differences in regulations between jurisdictions to circumvent regulatory requirements (Iwedi *et al.* 2024). The new capital requirements could inadvertently encourage such behavior. Banks or financial institutions might move their operations to less-regulated sectors or jurisdictions to avoid stringent capital requirements. This can lead to a shift in financial activities to areas with weaker oversight, increasing systemic risk (Acharya, Berger, & Roman, 2018). Banks may also develop or engage in complex financial instruments and off-balance-sheet activities to appear compliant while effectively reducing their actual capital base. This can obscure the institution's true financial health and undermine regulatory objectives (Naceur & Kandil, 2009). International banks might also exploit differences in regulatory standards between the country of operation and their home country. This can complicate the regulatory landscape and make it difficult for the regulatory authority to enforce compliance effectively (Beck, Demirgüç-Kunt, & Levine, 2006). Inconsistent implementation of the new requirements across different banks and regions can also lead to uneven playing fields. Banks that find ways to bypass the requirements can gain an unfair competitive advantage, undermining the policy's effectiveness (Owusu-Antwi et al., 2020).

Additionally, poor market information, a weak framework for loan recovery and limited capacity of SMEs to access bank credit could pose a significant hindrance to the success of the recapitalization exercise (KPMG, 2024). Weak and limited credit information can lead farmers and small businesses to turn to informal credit providers, hindering their ability to achieve their full potential. On the other hand, a limited level of financial literacy can prevent farmers from actively seeking credit assistance from banks. Further, the mentality of farming for survival rather than earning income from commercial farming activities can make bank credit and indeed the re-capitalization exercise unsuitable for addressing the needs of many farming communities.

Empirical investigation of the relationship between bank capital, securitization and credit risk by Dionne & Harchaoui (2008), in the context of the Canadian financial sector, found evidence that banks might be induced to shift to more risky assets when regulatory capital levels are too high. By examining the effect of capital requirements regulation on bank operating efficiency in Tanzania, Lotto (2018) also found a positive and significant relationship between capital ratio and bank operating efficiency. This implies that capital adequacy not only strengthens financial stability by providing a larger capital cushion but also improves bank operating efficiency by mitigating the moral hazard problem between shareholders and debt holders.

Kasahara *et al.* (2024) evaluated the effect of government capital injections into financially distressed banks during the 1997 Japanese banking crisis. They found evidence that post-injection banks increased lending to high-productivity non-zombie and low-productivity zombie firms. The conclusion aligns with conventional theories that advocate for supporting high-productivity firms. However, no evidence was found that these injections promoted investments among the firms. In the context of the Nigerian financial sector, Okafor *et al*. (2022) evaluated the effect of bank recapitalization on the performance of deposit money banks. Although evidence was found that the banks were adequately capitalized and had strong earnings in the post-consolidation era, they were found to be poor during this period. Further evidence demonstrated that these banks had very poor asset quality with averagely management operational efficiency. Dikko and Alifah (2020) similarly examined the impact of bank recapitalization on the performance of the banking sector. They found that the bank recapitalization is positively related to bank performance. Their result revealed that all the recapitalization approaches had a positive and significant effect on bank performance. Akpan et al (2023) also evaluated the impact of bank recapitalization on sectoral growth of the Nigerian economy. They concluded that bank credit had a significant impact on the growth of the agricultural and service sectors, but not on the manufacturing sector. Similarly, Ater and Asogwa (2014) evaluated the role of bank recapitalization on economic growth in Nigeria. They found that bank assets had a significant effect on GDP in the post-recapitalization era.

Overall, literature demonstrated that the bank recapitalization policy can grow credit access and investments when it enhances adoption of standard management practices, improve investors' confidence and lending practices among banks, and, challenges relating to regulatory arbitrage, difficulty of small banks meeting the capital requirements as well as the difficulty of getting the policy to impact on the micro sector of the economy, are weathered. However, more research is needed to understand the impact of this policy on rice farmers' access to bank credit in Nigeria.

ECONOMETRIC MODEL AND DATA

The Discrete Choice/Random Utility Model

The discrete choice model, also known as the random utility model (RUM), is the workhorse for modeling choice behaviors (Akande *et al.,* 2016). The RUM characterizes decision-making in terms of the characteristics of choice alternatives, the preferences, and attributes of the entity making the decision. Thus, if we assume that the decision to supply formal credit rests with banks, the random utility model can capture their preference to expand credit access. For example, if there exists a latent or unobservable continuous variable Y* capturing banks' utility from credit supply, this utility will be influenced by the characteristics of the credit, the observable characteristics of the bank and the idiosyncratic or unobservable characteristics of the bank making the choice. Mathematically, this implies

$Y^* = g(XB + \varepsilon_i)$ ----------(1)

Where g is a function mapping the utility from credit supply to the exogenous independent variables; X is a vector of observable bank characteristics and unobservable characteristics of banks; B is a vector of coefficients or parameters associated with independent variables, and ε is random or unpredictable utility associated with the bank's decision to supply credit.

A bank will choose to increase credit supply if the utility it receives from this action is greater than 0 (i.e, Y* >0); otherwise, it will not. Therefore, if we let Y*=1 categorize all instances of improved credit supply and Y*=0 as instances of low bank credit supply, the probability (P) that a bank will increase credit supply to any sector can be stated as:

P(Y=I/X)= P(Y* > 0)=P($XB + \varepsilon_i > 0$), where P is the probability

P(Y=I/X) = P($XB + \varepsilon_i > 0|X$)

= P($XB > -\varepsilon_i$)

= P($\varepsilon_i > -XB$)

= ($\int -XB$) exploiting the symmetry of a logit distribution and integrating yields

$$P = \frac{exp^{X_i B}}{1+exp^{X_i B}}. \quad \text{..... (2)}$$

However, if the unobserved utility is assumed to follow a normal distribution (Probit case), then steps leading to (2) becomes:

P(Y=I/X) = P($XB + \varepsilon_i > 0|X$)

= P($XB > -\varepsilon_i$)

= P($\varepsilon_i > -XB$)

= 1-N(-$\frac{XB}{\sigma}$) exploiting symmetry of the Gaussian distribution and integrating yields

P= $\phi(XB)$ ----------(3)

The Data and Sampling

A longitudinal sampling technique was adopted. The data consisted of time series data spanning from 1970 to 2021. The data were in nominal forms and were collected from the books and publications of the Central Bank of Nigeria, Federal Office of Statistics and FAOSTAT. Specifically, data on time savings, inflation rate, and access to credit were collected from the CBN Statistical Bulletin. Data on crop and rice value added were collected from FAOSTAT.

Estimated Model

The Probit regression model was estimated. The model expressed a dichotomized measure of depth of access to credit of rice farmers as a function of interval and dummy-coded explanatory variables, such that:

$Y_t^* = Q^{-1}[\hat{p}] = \beta_0 + \beta_1 ltd_t + \beta_2 ginf + \beta_3 aggsav_t + \beta_4 d_t + \varepsilon_t$ ..... *(4)*

Where $Q^{-1}[\hat{p}]$ = inverse cumulative distribution function

More explicitly, the model is

$Y_t^* = \beta_0 + \beta\ ltd_t + \beta_2 ginf + \beta_3 aggsav + \beta_4 d_t + \varepsilon_t$ .....*(5)*

Y_t^* = Measure of improvement in access to credit by rice farmers. Credit access is considered improved ($Y_t^* = 1$), when the volume of credit accessed by rice farmers is greater or equals the average score for the study period; and low ($Y_t^* = 0$) otherwise

$Y_t^* = Q^{-1}[\hat{p}] = \beta_0 + \beta_1 ltd_t + \beta_2 ginf + \beta_3 aggsav_t + \beta_4 d_t + \varepsilon_t$ ..... *(6)*

Where:

β_0 -β_5 are parameters

ltd = ratio of the bank's total loans to deposits

ginf = growth in inflation in percentage

aggsav = logarithm of aggregate time savings in million naira

d = dummy-coded measure of bank recapitalization policy, which takes the value of 1 for recapitalization period; and 0 otherwise

t = time period.

RESULTS AND DISCUSSION

Table 1 summarizes the results of the Probit model, which examined the effects of bank re-capitalization policy on rice farmers' access to formal credit. The likelihood ratio was significant (26.6; p≤0.01) and indicates a good fit of the model to the data. The non-zero intercept of the Probit curve implies that the Probit function and, therefore, farmers' access to credit has a non-zero reference point. Further, the coefficients on the bank re-capitalization dummy and time savings variables were significant. Conversely, coefficients on inflation and loan-to-deposit ratio were statistically insignificant in the model.

Table 1: Probit Model of the Effects of Bank Recapitalization Policy on Propensity of Improved Access to Credit by Rice Farmers

Variable	Coefficient	Std. Error	Wald Chi	Sig. level
Intercept	14.85	4.80	9.49	0.02**
Re-capitalization Dummy	3.38	1.34	6.33	0.01***
LnTime Deposit	-1.11	0.34	10.46	0.00***
LnInflation	-0.56	0.49	1.33	0.25
Ln Loan to Deposit Ratio	1.18	1.13	1.09	.30
Likelihood Ratio Chi-Square 26.06; sig. =0.00				

Source: Data Analysis, 2024; *, ** Significant at 1% and 5% respectively**

Specifically, the results revealed that the coefficient on the bank recapitalization dummy was positive and significant (3.3; $p \leq 0.01$), indicating that rice farmers had higher access to loans during the recapitalization period than in the preceding era. The result aligns with *a priori* expectations and is consistent with Sani's (2004) finding that a positive relationship exists between re-capitalization policy and economic growth in Nigeria. Aderinokun (2004) also asserted that increasing the capital base of banks in Nigeria strengthens banks and, in the process, deepens activities within the industry by providing better funding for banks' lending activities and increasing their profitability. Bank recapitalization can increase credit access by reducing lending rates through competition and lowering the risk premium that banks must pay on their deposits (Mink and Pool, 2018). Additionally, government-funded re-capitalization policies, which can be interpreted as a form of deposit insurance, prevent bank defaults or runs, thereby instilling stability in bank lending operations (Diamond and Dybvig, 1983; Mink and Pool, 2018). Moreover, low lending rates resulting from the recapitalization policy reflect that the expected value of a future recapitalization effectively constitutes a subsidy. This subsidy, which the (competitive) banking sector passes on to its borrowers, increases demand for credit (Mink and Pool, 2018).

The model further showed that the coefficient on time deposit was negative and statistically significant (-1.11; $p \leq 0.01 < 0.05$implying that increases in time deposit decreased the probability of higher access to credit among rice farmers. This is in line with *a priori* expectations, as a higher deposit rate results in a higher lending rate, which discourages demand for agricultural credit. Banks relax their lending standards and grant new loans with high credit risk only when short-term interest rates are low but will have a low appetite for credit risk under high-interest rate conditions (Loanadou, *et al*. 2007). Therefore, increases in time deposits, which raise the lending rate, are unlikely to improve lending to agriculture, as banks are discouraged from taking on risk.

CONCLUSION AND RECOMMENDATIONS

It is concluded that the bank re-capitalization policy has been effective in improving rice farmers' access to bank credit. Conversely, a negative relationship exists between time deposits in commercial banks and rice farmers' access to bank credit. A more effective implementation strategy and continuous upscaling of the policy are recommended. The former may include restructuring and adjustments to the bank license.

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