ADFJ ISSN 2522 – 3186.

African Development Finance Journal

VOLUME 5 (V)

Monetary Policy and Credit Intermediation Nexus in Nigeria: Further Evidence

Hassan O OZEKHOME
Benson A. ESAN
Adeniyi I. OKEOWO

Monetary Policy and Credit Intermediation Nexus in Nigeria: Further Evidence

By: Hassan, O. OZEKHOME[1], Benson, A. ESAN[2] & Adeniyi, I. OKEOWO[3]

Abstract

Asymmetric variation in monetary policy causes substantial changes in the credit intermediation channel. This study investigates the link between monetary policy and credit intermediation in Nigeria, bringing further evidence, for the period 1986-2022. Utilizing the Fully Modified OLS estimation approach, the findings show that a tightening of monetary policy (i.e. a rise in the interest rate/ money supply contraction) leads to lower credit supply, while an expansionary monetary policy stimulates bank credit supply. Other variables that influence credit intermediation are capital adequacy ratio, size of economic activities and inflation rate. Financial development and the institutional quality variable are both positively related to credit intermediation but not significant. The paper suggests the implementation of appropriate monetary policy and strong institutional framework to encourage credit intermediation in Nigeria.

Keywords: Monetary policy, Credit intermediation, financial rigidities, Institutional quality, FMOLS

Introduction

Monetary policy is a combination of measures designed to control the volume, value, as well as cost of money well-matched with the needed level of economic activities in an economy, to attain sustainable economic growth, full employment, price stability and balance of payment equilibrium (Onyiewu, 2012). Monetary policy is an important tool for regulating the activities of banks and the general financial architecture. As a macroeconomic tool, its cardinal role is concerned with the achievement of of price stability predicated on a low and stable inflation rate that is output growth consistent (Owoye & Onafowora, 2007). In the onerous pursuance of macroeconomic stability, monetary policy management has often times, set targets on intermediate variables that includes interest rate, money supply and exchange rate.

A large body of economic literature (see Beck et al., 2000; Beck et al., 2000; Levine, et al., 2000; Beck, & Levine, 2002; Beck & Demirgüç-Kunt, 2006; Ozekhome, 2022), argue that, in addition to many other important factors, the performance and long-run economic growth of a country are connected to its degree

---

[1]*Department of Economics, Glorious Vision University, Ogwa, PMB 001, Edo State, Nigeria, email: hassanozeks1@gmail.com +2348085269169*

[2]*2Department of Banking & Finance, University of Benin, PMB 1154, Benin City, Nigeria, email:*

[3]*Department of Economics, Glorious Vision University, Ogwa, PMB 001, Edo State, Nigeria*

of financial development, and by implication, the degree of credit intermediation. In the quest to drive real sector growth, monetary policy influences credit intermediation principally through intermediate variables like interest rate and money supply. Accordingly, the effectiveness and efficiency of monetary policy, in addition to credit intermediation play important role in real sector growth on the basis of either an expansionary or contractionary policy, given the prevailing economic situation, the goal of the monetary authority, or subsisting challenge faced by a country (Ozekhome, 2017).

The interest rate variable is the most important and potent channel through which monetary policy influences credit supply, investment and output growth. By means of its impact on lending, the volume and cost of credit, business, trade, investment, as well as economic activity are influenced. For instance, in order to enhance credit intermediation to deficit units, the interest is lowered. On the contrary, an increase in the monetary policy rate, results to a contraction in credit, with a consequent reduction in aggregate demand, investment as well as output. Variation in the monetary policy therefore, influences the cost and volume of bank lending (Ozekhome, 2018). In Nigeria and other developing countries, the financial system are characteristically underdeveloped with considerable financial frictions, structural rigidities and concentrated banking systems. Without doubt, these challenges substantially contribute to the small and shallow nature of financial systems with limited outreach and financial intermediation (Ozekhome, 2022). Largely, the degree of financial development and financial infrastructure determine monetary policy effectiveness. Added to a weak institutional environment and a concentrated financial system, credit intermediation is considerably constrained (Beck et al., 2000; Levine et al., 2000; (Mishra et al., 2014; Abuka, et al, 2019).

There is still mixed and inconclusive evidence on the monetary policy and credit intermediation nexus in Nigeria, arising from differing methodologies, proxies and choice of variables used by past researchers. A fundamental challenge in the bank-lending channel of monetary policy is the isolation of changes in loan supply from changes in loan demand, given that aggregate macroeconomic shocks affect bank credit through both the bank lending and the firm borrowing channels (Albuka, et al., 2019). This study follows this path in order to have a consistent measure of credit intermediation. In addition, country-specificities, such as the level of institutional framework also influences credit intermediation outcomes, which past studies have largely ignored. This study is therefore a conscious attempt to fill this gap, especially as it

considerably improves on the existing knowledge in the subject matter, in addition to the compelling needs of findings to policy and literature.

Literature Review

Theoretical Review

Irvin Fisher, by means of the quantity theory of money (otherwise known as the equation exchange), laid the groundwork for monetary policy. The Monetarists and the Keynesians suggest a number of transmission mechanisms through which monetary policy affect credit. According to the monetarists, a change in the interest rate or money supply causes a change in the volume of credit. The actual role monetary policy plays in the determination of the cost and size of credit was expatiated by Friedman (1968), who posited that a rise in the supply of money, in the short run, causes a fall in the interest rate and consequently, an increase in credit, vice-versa. In line with this, an expansionary monetary policy, by means of open market operations increases the money stock and commercial bank reserves, and thus greater credit intermediation by banks via the multiplier effect. Invariably, a tight monetary policy limits banks' ability to lend. Thus, the cost and size of credit depends on whether an expansionary or contractionary monetary policy is adopted. An expansionary monetary policy reflected in money growth therefore, stimulates credit intermediation, whereas a monetary contraction does the opposite effect of reducing credit supply.

Keynesians, on the other hand suggest, that money supply changes affects financial and economic activities i.e. interest rate, credit, investment, output and prices. An additional policy channel works through the bank credit channel (see Keeton, 1979; Stiglitz & Weiss, 1981) and bank balance sheet-channel. The credit channel is characterized by credit rationing issues, agency problems, asymmetric information (adverse selection), as well as costly contracts enforcement existing in the financial markets (Mishkin, 1995). A fall in the supply of money causes a reduction in the level of bank deposits, further reducing the magnitude of money, bank lending, investment and, ultimately, aggregate demand. This channel enables monetary policy to operate without considering the interest rate, suggesting that decrease in interest rates may not be sufficient to stimulate investment and aggregate demand.

The balance-sheet channel operates through firms' net worth. A tightening of the monetary policy decreases assets value and increase business costs through rising interest rates that reduce the net worth of firms. A reduction in the firm's net worth suggests that lenders must accept less collateral for loans, thus creating

the problem of adverse selection and decrease in credit supply. A decrease in the net worth also causes moral hazard problem given that entrepreneurs have lesser equity stake, with characteristically lower incentive to take part in risky projects in the firm, resulting to reduced credit intermediation (Le & Pfau, 2009). Imperfections in the financial market as well as weak institutional framework hinders monetary policy transmission and credit intermediation (Gertler & Gilchrist, 1993; Ozekhome, 2022).

The theory of financial intermediation suggests that the creation and promotion of efficient financial institutions are necessary for genuine and enduring economic process. Financial institutions have the capacity to ameliorate risk, improve savings, corporate governance, mobilize savings, reduce transaction and information costs, and promotes specialization (Levine, 1997).

Empirical Review

On the monetary policy-credit intermediation nexus, studies have largely focused on the effectiveness of monetary policy on credit channelling. For example, Bernanke and Blinder (1988; 1992); Bernanke and Getler (1989), Kashyap and Stein (2000), Gianneti (2003), Bernake (2007), Khwaja and Mian (2008), Saxegaard (2009) find evidence of a robust impact on monetary policy on credit supply. Studies such as Van-Den-Heuvel (2012), Jimenez (2012; 2014; 2015), Mishra and Montiel (2013), Altunbas et al (2014), Bernardo et al (2015), Berg and Portillo (2018), Gambacorta and Shin (2018), Berger et al (2018; 2019), and Albuka et al (2019) found that the capacity of monetary policy to influence credit and the volume of financial intermediation is dependent on some bank specific and macroeconomic factors. The study Ozekhome (2022), suggested that financial development and strong legal environment are necessary conditions for the efficacy of monetary and credit intermediation. He asserts that monetary policy effectiveness and bank lending capacity are influenced by domestic policy conditions, as well as institutional quality.

The study by Amidu (2006) examined the impact of monetary policy on bank lending, and in particular, the sensitivity of bank lending to monetary policy changes in Ghana, for the period 1998-2004. The results revealed that bank lending in Ghana is strongly influenced by the country's monetary policy. Borio and Gambacorta (2017) investigated the effectiveness of monetary policy on bank lending, utilizing evidence from a sample of 108 large international banks. The results revealed that monetary policy is less effective

in a financially underdeveloped clime. Mishra and Montiel (2013) and Mishra et al. (2014) found similar evidence for developing countries.

De Santis and Surico (2013) examined the extent to which availability of credit depends on monetary policy, and whether this nexus differed with bank characteristics. Based on a common balance sheet data for the four largest economies in the Euro area for the period, 1999-2011 and panel data evidence, the effect of monetary policy on bank lending is found to be significant and dissimilar in Germany and Italy that are characterized by a large number of banks. For Spain, the evidence revealed a weak monetary policy effect on bank lending, while the degree of heterogeneity of monetary policy impact is more pronounced in France where a higher degree of concentrated banking systems exists. Further evidence revealed that monetary policy has a larger impact on banks with lower liquidity, less capital and smaller size. Finally, the evidence found that heterogeneity across banks in the same category in a particular country is less pronounced.

A study carried out by the IMF (2015a) on the impact of monetary policy on real economy activity in developing countries found that bank lending capacity is inhibited by structural and institutional rigidities in the economic and financial space. The study concludes that the efficacy of monetary policy to influence bank lending and real economy activity is weakened by the shallow financial markets and concentrated banking system that characterize developing countries.

Some other studies (e.g. Bulir & Vlcek, 2015; Barajas, et al., 2018; Willems, 2018) found evidence that governance and institutional structures and degree of financial competition influence monetary policy effectiveness on bank lending. For less developed countries, low degree of credit intermediation result from poor property rights and contractual frameworks that exacerbate informational problems and financial frictions. The study by Abuka et al. (2019) investigated the monetary policy and bank lending nexus based on aggregate and micro data in Uganda banks for the 2010–2014 period. The GMM results showed that a contraction in money leads to a reduction in bank credit supply, with increased loanable fund rates. Inflation and economic activity are also found to be strong determinants of bank lending capacity.

Ozekhome (2022) assessed the extent to which institutional settings and financial development influence monetary policy effectiveness on bank lending, based on 74 banks selected across 24 African countries for the period 2005-2020. Utilizing system-GMM techniques, the findings revealed that monetary policy

transmission in Africa is hindered by weaknesses in the legal environment and underdeveloped financial markets monetary. Specifically, financial institutional quality enhance monetary policy efficacy by of 0.37% and -0.54%. The author recommend continuous financial sector reform-cum-financial development policies, as well as strong institutional setups to enhance monetary policy effectiveness in Africa.

The review of the literature shows scarcity of country-specific studies on the monetary policy-credit intermediation nexus, particularly Nigeria. Country-specific studies are important since idiosyncratic economic, financial and institutional structures influence the impact of monetary policy on credit intermediation. Besides, extant studies on the subject matter did not account for the impact of financial development and institutional quality on credit intermediation. This study brings further evidence into the literature, accounting for these factors in the bank credit intermediation framework, thus contributing to, and advancing the existing knowledge in terms of the compelling needs of findings to literature and policy.

Methodology

Model Specification

Following the review of literature, the link between monetary policy and credit intermediation in Nigeria is captured in the stylized credit model:

$$CRE_t = f(MP_t, X_t) \qquad\qquad (1)$$

Where: CRE_t is total volume of credit to the private sector; MP is monetary policy, t, is time, and X is a battery of additional variables that influence credit intermediation (see also Kashyap & Stein, 2000; Borio & Gambarcota, 2017; Abuka et al. 2019). They include capital adequacy ratio (i.e. capital total risk-weighted assets ratio)- total regulatory capital (Tier 1 + Tier 2); growth rate of the economy, inflation rate, institutional quality variable, and financial development, included on the theoretical grounds that a more stable, virile and developed financial sector is able to grant more credit to individual firms and other economic agents (IMF, 2015; Ozekhome, 2022).

On the inclusion of these variables in to (1) the expanded model becomes:

$$CR_t = f(MPR_t, MS_t, GGDP_t, CAR_t, INF_t, FDEV_t) \qquad\qquad (2)$$

The empirical specification form is captured

$$CR_t = \alpha_0 + \alpha_1 MPR_t + \alpha_2 MS_t + \alpha_3 CAR_t + \alpha_4 GGDP_t + \alpha_5 INF_t + \alpha_6 FDEV_t + \alpha_7 INSTQ_t +$$

(3)

$\alpha_1 - \alpha_7$ are parameters to be estimated, and ε is the unobserved error term.

Apriori expectation: $\alpha_1, \alpha_5 < 0$; $\alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_7 > 0$.

The estimation is done using the Fully Modified OLS (FMOLS). The technique sufficiently addresses issues of autocorrelation, possible endogeneity of regressors and reverse causality, to produce asymptotic unbiased estimators and free normal distributions. The estimates are asymptotically unbiased, consistent, efficient, and free from simultaneity problems.

 (Pedroni, 2004).

Measurement of Variables and Data Sources

The measurement of variables and sources of data are provided in Table 1 below.

Table 1. Definition of Variables and Data Sources

Variable	Description/Measurement	Source
Credit	Total volume of credit to the private sector as ratio of GDP percent.	Central Bank of Nigeria (CBN).
Monetary policy rate	Prime interest rate.	Central Bank of Nigeria (CBN)
Money supply	Broad money supply as ratio of GDP	Central Bank of Nigeria (CBN).
Capital adequacy ratio	Ratio of capital to risk-weighted assets {i.e. overall regulatory capital (Tier I + Tier II + III (Capital funds/Risk)) weighted assets	Central Bank of Nigeria (CBN).
GDP Growth rate	Annual growth rate of nominal GDP percent.	WDI
Inflation rate	Changes in the consumer price index (CPI)	WDI).
Institutional framework	Average of six institutional quality variables that pertain to the financial sector, i.e. rule of law, political stability, government effectiveness, regulatory quality, control of corruption and risk of expropriation and enforcement of contracts, measured on an index scale of -2.5 to 2.5	WDI
Financial development	A weighted index of several measures of financial development that include depth, access, efficiency and stability of financial system in line with the Global Financial Development Database (i.e. IMF FD index).	International Monetary Fund (IMF)

Annual time series data for the period 1986-2022 is used for the study. The period is characterized by important reforms and development in the Nigerian financial sector, particularly the liberalization of the financial sector, recapitalization of banks, as well as greater regulatory focus and increased monetary policy management of the financial sector.

Data Analysis

Descriptive Statistics

The summary statistics are presented in Table 2 below. Average credit intermediation as ratio of GDP is 11.66 percent, an indication of weak credit intermediation. Average monetary policy rate is 15.50 percent. Capital adequacy ratio, financial development, GDP growth rate, inflation rate, and financial development have average values of 12.85 percent, 4.1 percent, 13.5 percent and 6.25, respectively. The standard deviation of 15.10 and 5.78 for inflation GDP growth rates are clear indication of growth and inflation volatility in Nigeria, in the reference period. Institutional quality has a mean value of -1.25, an indication of a poor institutional environment in Nigeria.

Table 2: Descriptive Statistics

	Mean	Median	Max.	Min.	Std. Dev.
CRE	11.66	10.84	22.15	3.77	7.12
MPR	15.50	15.25	25.20	10.00	9.50
MS	15.25	14.80	38.00	8.60	7.75
CAR	12.85	12.65	25.10	6.50	5.30
GGDP	4.05	3.90	8.25	-1.75	5.72
INF	13.50	13.15	25.20	4.70	15.10
INSTQ	-1.25	-1.12	2.50	-.158	1.88
FDEV	6.25	5.87	9.25	2.28	3.88

Unit Root Test

Unit root test is conducted on the variables to investigate their stationarity status given that time-series variables drift over time. The results, using the Augmented Dickey Fuller (ADF) test for levels and first difference is reported in Table 3 below.

Table 3: Test of Unit Roots

Variable	ADF Statistic (Levels)	ADF Test Statistic (First Difference)	Integration Order	Comment
MP	-1.023	-5.224**	I(1)	Stationary
MS	-1019	-5.412***	I(1)	"
GGDP	-1.152	-4.671**	I(1)	"
CAR	-1.825	-5.4424**	I(1)	"
INF	-1.771	-4.991**	I(1)	"
INSTQ	-0.987	-4.017**	I(1)	"
FDEV	-1.123	4.7782	I(1)	"

*Note: **statistical significance at 5% level*

A cursory examination of the unit root test results indicates that for all the variables, the null hypothesis of no unit root could not be rejected. This implies that the variables are levels-non-stationary. However, after taking their first differences, the variables became stationary. The variables are thus, first difference-stationary, i.e. attaining stationary after first differencing.

Test of Cointegration

Cointegration (convergence) test is conducted to investigate whether equilibrium long-run relationship exist among the variables (Engle & Granger, 1987). The Johansen Cointegration method is utilized, and the results are presented in Table 4 below.

Table 4 Unrestricted Cointegration Rank Test

Trace Test			Maximum Eigenvalue Test			
Null Hypothesis	Test Statistic	Critical Value	Null Hypothesis	Test Statistic	Critical Value	Hypothesized No of CE(s)
r = 0*	177.7	146.2	r = 0*	134.6	123.2	None**
r ≤ 1 *	148.2	122.1	r = 1*	110.4	102.3	At most 1**
r ≤ 2*	116.3	97.1	r = 2*	88.2	78.3	At most 2**
r ≤ 3*	89.2	71.3	r = 3*	63.8	56.6	At most 3**
r ≤ 4*	66.4	51.6	r = 4*	48.7	30.2	At most 4**
r ≤ 5*	32.1	25.2	r = 5*	22.8	16.02	At most 5**
r ≤ 6*	10.01	8.02	r = 6*	8.01	6.02	At most 6**
r ≤ 7*	0.01	0.03	r = 7*	0.01	0.03	At most 6

*Note: ** denotes rejection of the hypothesis of no cointegration at 5% significance level.*

The results of the cointegration test as shown in the table above indicate that both the λ-max and the trace test statistics have at least, seven significant cointegrating vectors (indicated by r), among the variables, as the hypothesis of no cointegrating vector (r=0) is be rejected. A significant long-run equilibrium relationship therefore, exists among the series.

Results of the FMOLS

The result of the FMOLS is presented in Table 5. Lagged credit intermediation is negative and fails the significance test. Thus, past levels of credit intermediation does not significantly influence current or future levels of credit. Accordingly, credit intermediation, in response to monetary policy changes is not persistent in Nigeria

Table 5: Estimates of Credit Intermediation Model

Variable	FMOLS
CR(-1)	-0.023
	(-1.162)
MP	-0.152**
	(-2.15)
MS	0.231***
	(2.872)
CAR	0.115**
	(2.21)
GGDP	0.828**
	(2.24)
INF	-0.071*
	(-1.881)
INSTQ	0.063
	(1.224)
FDEV	0.168
	(1.404)
Adjusted R^2	0.94
Long run variance	0.02

 *** Statistical significance at the 1% level: ** Statistical significance at the 5 % level; * Statistical significance at the 10% level;   T-ratios in Parenthesis

Monetary policy rate is negatively related to credit intermediation and statistically significant at the 5 percent level. Thus, a tightening of the policy rate leads to lower levels of commercial bank reserves, and accordingly, lower capacity of banks to grant credit to customers. The result is consistent with the findings

of Borio and Gambacorta (2017) and Abuka et al (2019) and at variance with Amidu (2006), Saxegaard (2009). A 1% increase in the policy rate causes a decline in the level of credit intermediation by 0.15%.

Money supply is positively related to credit intermediation and statistically significant at the 1 percent level. Accordingly, an expansionary monetary policy that induces money growth leads to greater bank lending, and hence, increased credit intermediation. The finding corroborates the results of Amidu (2006) and Ozekhome (2022). A 1% increase in money growth induces greater credit intermediation by banks by 0.23%.

Capital adequacy ratio (i.e. capital to risk-weighted asset ratio) is positively related to credit intermediation and statistically significant at the 5 percent level. Thus, wel- capitalized banks have greater capacity to grant credit to individuals and firms, since they are more financially strong and stable with sufficient buffers to extend loans. Such ability to extend more loans also imply greater capacity to absorb to risks and the inherent shocks from bad loans. The result supports the findings of Jiménez et al (2012), Borio and Gambacorta (2017) and Abuka et al (2019). A 1% increase in capital adequacy ratio engenders greater credit intermediation by 0.12%.

GDP growth rate and inflation rate are in accord with prior expectation and statistically significant at the 5 percent and 10 percent level, respectively. Thus, increased economic activities engenders greater credit intermediation, while rising rate of inflation decreases lending capacity since it induces uncertainty syndrome in the lending channel. The results are in are in accord with Abuka et al (2019). A 1% percent rise the growth rate of the economy increases bank lending by 0.8%, while that of inflation decreases bank lending by 0.0%. The institutional quality variable is positively signed but fails the significance test; implying a weak institutional environment in Nigeria. Financial development is positively related to credit supply but the impact is weak, due to weak level of financial development in Nigeria. Although, sweeping financial reforms aimed at developing the financial sector have been embarked upon in recent times.

Conclusions and Recommendations

Some crucial policy implications can be inferred from the empirical findings. First, an expansionary monetary policy leads to increased credit intermediation, whereas a restrictive monetary policy decreases bank lending. Monetary authority should therefore articulate and implement the right policy framework that is compatible with the level of output to encourage credit intermediation for real sector growth in Nigeria.

Second, the higher the capital adequacy ratio, the greater the capacity of banks to grant credit since adequately capitalized banks tend to be more financial stable, virile and less vulnerable to the detrimental effect of credit risks. Apparently, banks with huge financial strength in terms of capital to risk-weighted assets ratio are more financially equipped and in better standing to extend greater credit. The degree of financial development influences the level of credit intermediation, albeit mildly, given that the financial system in Nigeria is relatively weak in terms of depth, access, efficiency and stability. By implication, continuous financial sector reforms to drive the development of the sector towards greater credit intermediation is important.

Fourth, increased economic activities tend to call forth greater bank lending in order to support real sector activity. Banks with larger pool of resources accordingly, tend to extend greater loans to the borrowing public with the expectation of a concomitant growth in bank interest return. Fifth, accelerating inflation tends to be negatively associated with bank lending. Apparently, through the uncertainty syndrome it generates in the macroeconomic environment, high inflation rate reduces credit intermediation, as banks become sceptical and engage in credit rationing and discrimination on the basis of the ability of firms and economic agents to pay back. A sound and stable macroeconomic environment is therefore important to credit intermediation. Finally, institutional quality and financial development are positively connected to credit intermediation but not significant due to the weak institutional and macroeconomic environments in Nigeria. Measures to stabilize grow and stabilize the economy, in addition to institutional-strengthening capacities are therefore important.

The paper investigated the nexus between monetary policy and credit intermediation in Nigeria, bringing further evidence in to the literature. The evidence suggests that an expansionary monetary policy stimulates bank credit supply, while a contractionary policy reduces credit intermediation. Economic size and inflation rate are important factors that also influence the credit intermediation. Institutional quality and financial development are positively related to credit intermediation but not significant.

Based on the empirical findings, policy efforts to encourage credit intermediation through appropriate monetary policy framework is imperative. The central bank policy rate should be made to positively influence credit supply and reduce the refinancing costs of banks. This would provide a clear mechanism through which central banks can influence lending and financial stability. The harmonization of both

contractionary and expansionary monetary policies to reduce monetary policy rate differential between productive and unproductive credits is important in this regard. Continuous financial sector reform to drive the development of the financial sector are also crucial in this regard. Improved capital adequacy ratio as well as inflation-control measures are also important. Finally, the strengthening of the institutional framework is sacrosanct.

References

Abuka, C., Alinda, R. K., Minoiu, C**,** Peydró J-L. & Presbitero, A.F. (2019). Monetary policy and bank lending in developing countries: Loan applications, rates and real effects. *Journal of Development Economics*, ISSN 0304-3878, Elsevier, Amsterdam, *139*, 185- 2020. http://dx.doi.org/10.1016/j.deveco.2019.03.004.

Altunbas, Y. L., Gambacorta, L, & Marqués, D. (2014). Does monetary policy affect bank risk? *International Journal of Central Banking*, *10* (1), 95–135.

Amidu, M. (2006). The link between monetary policy and bank lending behaviour: The Ghanaian case. *Banks and Banks System*, *1*(4), 38-48.

Barajas, A., Chami, R., Ebeke, C. & Oeking, A. (2018). What's different about monetary policy transmission in remittance-dependent countries. *Journal of Development Economic*s, *134*, 272-288.

Beck, T., & Levine, R. (2002). Industry growth and capital allocation: Does having a Market or Bank-based system matter? *Journal of Financial Economics*, *64,* 147 – 180.

Beck, T., & Levine, R. (2004). Stock markets, banks and growth: Panel evidence. *Journal of anking and Finance*, *28* (3), 423 – 442.

Beck, T., & Demirgüç-Kunt, A. (2006). Financial institutions and markets across countries and overtime: Data and analysis. *World Bank Working Paper* No. 4943, World Bank, Washington DC.

Beck, T., Demirguc-Kunt, A., Levine, R. & Maksimovic, V. (2000). Financial structure and economic development: Firm, Industry, and Country Evidence. *World Bank Policy Research Working Paper* No. 2423. Washington, DC: The World Bank.

Beck, T., Levine, R. & Loayza, N. (2000). Finance and the sources of growth. *Journal of Finance and Economics*, *58*(1), 261-300.

Berg, A., Charry, L., Portillo, R. & Vicek, J. (2019). The monetary transmission mechanism in the tropics. A case study approach. *Journal of African Economics*, *27*(6), 112-28.

Berger, A.N., Guedhami, O., Kim, H. H., & Li, X. (2018). Economic policy uncertainty and bank liquidity creation. Available at SSRN.

Berg, A., & Portillo, R. (2018). Monetary policy in Sub-Saharan Africa. Oxford University Press.

Bernado, M., Peydro, J., & Ruiz, C. (2015). The international bank lending channel of monetary policy rates and QE: Credit supply, reach-for-yield, and real effects. *FRB International Finance Discussion Paper* No. 1137

Bernanke, B., & Gertler, M. (1989). Inside the black box: The credit channel of monetary policy transmission. *American Economic Review*, 79 (1), 14–31.

Bernanke, B. (2007). The financial accelerator and the credit channel. Speech delivered at the Board of Governors of the US Federal System, Washington DC, June 15.

Bernanke, B., & Blinder, M. (1989). Money, credit and aggregate demand. *American Economic Review, 82,* 901-921.

Bernanke, B.S. & Blinder, A.S. (1992). The Federal funds rate and the channels of monetary transmission. *American Economic Review*, *34*, 901-21.

Borio, C., & Gambacorta, L. (2017). Monetary policy and bank lending in a low interest rate environment: Diminishing effectiveness? *BIS Working Paper*, No. 612, BIS.

Borio, C.., L Gambacorta and B Hofmann (2017): The effects of monetary policy on bank profitability. *BIS Working Papers*, No 514, October.

Buli, A., Vicek, J. (2015). Monetary transmission: Are emerging markets and low-income countries different? *IMF Working Paper 15/239*, International Monetary Fund, Washington DC.

De Santis, R. A., & Surico, P. (2013). Bank lending and monetary transmission in the Euro area. *Working Paper Series* No. 1568, European Central Bank.

Engle, R.F., & Granger, C.W.J. (1987). Cointegration and error-correction: representation, estimation and testing. *Econometrical, 55,* 251-276

Friedman, M. (1968). The role of monetary policy. *American Economic Review*, 58 1-17.

Gambacorta, L., & Shin, H.S. (2018). Why bank capital matters for monetary policy. Journal of Financial Intermediation, *35*, 17-29.

Gertler, M., & Gilchrist, S. (1993). The role of credit market imperfections in the monetary transmission mechanism: Arguments and evidence. *Scandinavian Journal of Economics*, *95* (1), 43-64.

Gianneti, M. (2003). Bank-firm relationships and contagious banking crises. *Journal of Money, Credit and Banking*, *35,* 239-261.

IMF (2015a). Evolving monetary policy frameworks in low-income and other developing countries. *Policy Paper, International Monetary Fund (IMF)*, Washington DC.

International Monetary Fund (IMF) (2015). Financial development, financial intermediation and growth. *IMF Working Papers 456/02*. IMF, Washington DC.

Jiménez, G., Mian, A.R., & Peydró, J. (2015). The real effects of the bank lending channel. *CREI Working Paper*. Center de Recerca en Economia Internacional.

Jiménez, G., Ongena, S., Peydró, J., & Saurina, J. (2014). Hazardous times for monetary policy: what do twenty-three million bank loans say about the effects of monetary policy on credit risk-taking?. *Econometric*a, 82 (2), 463–505.

Jiménez, G., Ongena, S., Peydró, J., & Saurina, J. (2012). Credit supply and monetary policy: Identifying the bank- balance sheet-channel with loan applications. *American Economic Review*, *102*(5), 2121-2165.

Kashyap, A.K., & Stein, J.C. (2000). What do a million observations on banks say about the transmission of monetary policy? *American Economic Review*, *90(*3), 407-428.

Keeton, W. (1979). Equilibrium Credit Rationing. New York: Garland Press.

Khwaja, A. I., & Mian, A. (2008). Tracing the impact of bank liquidity shocks: Evidence from an emerging market. *American Economic Review*, *98(*4), 1413-1442.

Le, H.V., & Pfau, W. D. (2009).VAR analysis of the monetary transmission mechanism in Vietnam. *Applied Econometrics and International Development, 9(1), 165-179.*

Levine, R. (1997). Financial development and economic growth: Views and Agenda. *Journal of Economic literature*, *35* (9), 688 − 726.

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and Causes. *Journal of Monetary Economics*, 46 (1), 31 − 77.

Mishkin, F. (1995). Symposium on the monetary transmission mechanism. *The Journal of Economic Perspectives*, *9*(4), 3-10.

Mishra, P., & Montiel, P., Pedroni, P., & Spilimbergo, A. (2014). Monetary policy and bank lending rates in low-income countries: Heterogenous panel estimates. *Journal of Development Economics ,111*, 117-131.

Mishra, P., & Montiel, P. (2013). How effective is monetary transmission in developing countries? A survey of the empirical evidence. *Economic Systems*, *37* (2), 187–216.

Mishra, P., Montiel, P., & Spilmbergo, A. (2012). Monetary policy and bank lending rates in low-income countries: Effectiveness and policy implications. *IMF Economic Review, 60*, 270-302.

Onyiewu, C. (2012). Monetary Policy and Economic Growth of Nigeria. Department of Economics, University of Lagos, Nigeria.

Owoye, O., & Onafowora, A. O. (2007). M2 Targeting, money demand and Real GDP Growth in Nigeria: Do Rules Apply? *Journal of Business and Public Affairs*, *1*(2), 25-34.

Ozekhome, H.O. (2022).   Monetary policy and bank lending nexus in developing countries: Does institutional framework matter? Forthcoming.

Ozekhome, H.O. (2018). Does money supply growth cause inflation in the West African Monetary Zone? *The West African Journal of Monetary and Economic Integration (WAJMEI)*, *17*(2), 57-90.

Ozekhome, H.O. (2017). The determinants of exchange rate regimes in WAMZ Countries: Implications for Monetary Union.? *West African Economic Review, 4*(2), 103-128.

Pedroni, P. (2004). Panel cointegration: Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Econometric Theory, 20* (3), 597-623.

Saxegaard, M. (2009). Excess liquidity and effectiveness of monetary policy: Evidence from Sub-Saharan Africa. *IMF Working Paper* 06/115, International Monetary Fund, Washington DC.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *American Economic Review*, 393-410.

Van de- Heuven, S. (2012). Banking conditions and the effects of monetary policy: Evidence from US States. *B.E.J. Macroeconomics*, *12*(2), 67-90

Willems, T. (2018). What do monetary contractions do? Evidence from an algorithmic identification procedure. *IMF Working Paper 18* /211, International Monetary Fund, Washington DC.