Monetary Policy and Portfolio Credit Risk in Nigeria

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Abstract
The objective of this study is to empirically investigate monetary policy indicators and portfolio credit risk in Nigeria within the period spanning from 2015Q1 to 2016Q4. Using ARDL bound co-integration, the result of the study reveal that a long run relationship between monetary policy variables and Portfolio Credit Risk. We recommend that the central Bank of Nigeria should pursue and sustain a single digit monetary policy rate, as this will possibly stern escalation of profit credit default.

Keywords: *Monetary Policy Indicators, ARDL, Portfolio Credit Risk*

1.0 Introduction

The global recession and the subsequent financial institutions failures had a severe negative impact on credit default in developing countries. Credit defaults/risk is one of the major issues encountered by banks as they provide loans and credits to customers for investment purposes. According to Jakubik (2007) and Fraser et al (2001) alluded to the fact that portfolio credit default propels bank failures and to a greater extent, a major risk faced by financial institutions. For this reason, in attempt to avoiding failures arising from credit defaults, financial institutions are advised to develop a credit risk model that is quantitatively expressed as prescribed by the Basel II. In addition to minimizing default rate, it's important we encourage policies formulated to regulate the volume, cost, availability and direction of money and credit in the economy to achieve macro-economic objectives. Monetary policies pronounced by the central banks are meant to propel financial institutions comply with prescribed policies (monetary policy rate, prime lending rate, loan-to-deposit ratio, etc) aimed at enhancing market transparency between financial institutions and customers. Monetary policy and default risk have a causal relationship. Many scholars such as Allen & Gale (2000), Allen & Gale (2004), Allen & Gale (2007), Bhamra, Fisher & Kuhen (2010) have supported the view that monetary policies help in reducing credit defaults while a host of Others established that banks with higher default risk had granted fewer loans during eras of rising interest rates, Foley-Fisher and Guimaraes (2013) and Eijffinger and Karatas (2013). According to the CBN 2008-2011 Monetary Policy Performance Report, Since the 2018 financial meltdown, the monetary policy is crafted to propel growth of money supply I consonance with the total GDP growth rate, also to ensure financial stability, maintain a stable and competitive exchange rate and as well as attain positive real interest rates. Throughout the global financial crisis the monetary policy was greatly influenced. It further brought about liquidity crisis in both global and Nigerian banking system. Therefore, to cushion the effects, the following cushioning measures were adopted by the CBN which entails: steady reduction of monetary policy rates from

10.25 to 6.0%; reduction of cash reserve ratio from 4.0 to 2.0% and 1.0%; reduction of liquidity ratio from 40.0 to 30.0 and 25.0%; further introduced the expanded discounts window to increase access of deposit money banks to facilities which was latter replaced in July 2019 with CBN guarantee of interbank transactions; injection of 620billion as tier 2 capital in 8 troubled banks, position of Net Open Position (NOP) limit of deposit money banks from 20% to 10% and 1.0%.

In the post-global financial meltdown era, precisely from September 2010, to help restore stability the CBN adopts a lightening stance. The easing monetary policy measures, in addition to the heavy fiscal expansion, a lot of pressures were placed on inflation, exchange rate and external reserves with the view to reducing the threats. The CBN changed from monetary policy easing to tightening around September 2010 to December 2011 through the following: increasing the liquidity ration from 25 to 30%; increasing the CRR from 1 to 2% and 2% to 4% and 8%; steady increase of the MPR from 6% to 12%; resumption of active open market operations for the sole aim of targeted liquidity management; increase of Net Foreign Exchange Position (NOP) of deposit money banks from 1.00 to 5.00%, later brought down to 3%. Meanwhile, in 2016, the bank's monetary policy has been focused on restoring economic growth, curtailing inflation, reducing unemployment rate, and boosting external reserves to stabilize exchange rate and moderating, liquidity levels in the banking system.

Pertaining to the problem statement, we hold that the increasing manner of loans and advances as recorded in the statement of financial position of Nigerian banks is alarming. This has prompted the apex regulatory, Central Bank of Nigeria in its 2016 report to state that non-performing loans of banks went high by 78% year-on-year to N649, 63billion in 2015, which is far beyond the global average of 5% annual increase of non-performing loans, and increasingly alarming, as a result credit rating agencies to downgrade ratings of some Nigerian banks.
The purpose of this research is to model the effects of selected monetary policy indicators on portfolio credit risk in the Nigerian banking industry. While, the following research questions were addressed in this study: What significance relationship exist between portfolio credit risk and monetary policy rate?; What significance relationship exist between portfolio credit risk and cash reserve ratio?; In addition what significance relationship exist between portfolio credit risk and minimum liquidity ratio?; While the study hypothesis will be crafted to determine if there exist a significant relationship between the dependent and independent variables. The study will help financial practitioners and regulators on how better to precisely estimate and analyze default of credit portfolios with the application of ARDL co-integration technique. The study period is 2005Q1 to 2016Q4. The period is peculiar as it represents pre and post eras of the global financial crisis. Essentially, the other part of the paper organization holds the theoretical foundation, empirical literature review, analysis of data, discussion of results, conclusion and recommendations for policy implication.

2.0 Theoretical Foundation

This research work is premised on the Options Pricing Theory and the Cash Flow Theory of Default. The theoretical foundations of the study is derived from the Options Pricing Theory, amplified by the works of Black and Scholes (1973) and Merton (1974) opines that default

probabilities are assessed from the structural relationship between equity, debt and asset value, default is considered as an event after which a firm could not fulfill its commitment as a result of financial loses of security holders. The Cash Flow Theory of default which incorporates systematic factors in capturing the economy, and is based on the intuition that default event occurs when the borrower incurs negative cash flows; Kim (2005); Scott (1981) ; Zeitun, Tian & Keen (2007) applied this theory in investigating the effect of cash flow on corporate default.

3.0 Empirical Evidence

Monetary policies pronounced by the central bank are meant to propel or compel commercial banks/financial institutions to comply with prescribed requirements and guidelines aimed at enhancing market transparency between financial institutions and customers (corporate/individual) whom they do business with.

Monetary policies pronouncement fall under banking regulation, and is therefore vital in corporate defaults and capital structure judgments bearing in mind its effects on inflation.

According to Allen and Gale (2000, 2004 and 2007), that appear a causal relationship existing between monetary policy and default risk. In order words, lower monetary policy rates can escalate financial institutions appetite to grant credit as well as the associated liquidity risk due moral hazard impediments. They further argue that at the fullness of moral hazards, expansive monetary policy may trigger lending risk.

Maddaloni & Peydro (2013) claim in their study of monetary, macro prudential and banking stability policies of European countries using the bank lending survey around the 2008 crisis period. They found that low monetary policy rates soften lending conditions which were later made stringent to avoid bank capital and liquidity constraints regarding corporate loans.

Bhamra, Fisher & Kuehn (2010) hold the view that monetary policy is essential for corporate loan and default in a structured economy. They further claim that monetary policies can enhance corporate capital structure decisions as it pertains to default and pricing of debt bearing in mind anticipated inflation. The monetary policy channel thrives in an economy of perfect and flexible price settings.

Evidently, the works of Kashyap & Stein (2010); Adrain & Shin (2016) share the same view that monetary policy has a dominant impact on the supply of credit that is far above borrowers' quality and risk.

On the other hand, interest rates reductions are accompanied by worsening lending standards as well as heightened lending volumes which may escalate default rate. Similarly, Madaloni & Peydro (2011); Jimenez et al (2012) and Loannidou et al (2009) as cited in Gonzalez-Aguedo & Suarez (2012) are of the opinion interest policies actions that constitute endogenous reactions to the real and financial for new investment exculpates firms' leverage ratio, which can be moderated by retained earnings. Jacobson et al (2011) assert that short-term interest ratio significantly affects credit default of Swedish corporations, particularly in sectors with high leverage.

Foley-Fisher & Guimaraes (2013) investigated the impact of United States interest rate on default risk with data from emerging economics. The study adopts the technique of identification through heteroskedasticity and concludes that real interest rate in the United State starkly increases risk due to default.

Eijffinger & Karatas (2013) studied on the inter-linkage between sovereign debt, currency and banking crises using panel data (binary choice) model on a sample of 20 emerging economics from 1985-2007. The study documents that debts, currency and banking crisis secure simultaneously. The authors noted that during period of currency crisis the probability of default (sovereign) appreciated real-exchange rate also, economics with high short term debt, the presence of crisis in the banking sector increases debt probability.

4. Research Methodology

We adopted the Quasi-experimental research design. According to White and Subarwal (2014); David & Lemieux (2009), Experimental designs tests casual hypothesis. Its encompass choosing groups based on certain characteristics/traits and testing of variables without any randomization and selection process. The different groups are analyzed and compared to in regards to independent and dependent variables as assignment of variables is based on the interest of the researcher. The study relied hugely on secondary data gotten from CBN Statistical Bulletins and Nigeria Deposit and insurance Corporation (NDIC) for the period covering 2005Q1 to 2016Q4. In determining the existence of the long run relationship of the study variables, use is made of the ARDL model approach to co-integration adopted by Nkoro and Uko (2016) as given below:

$$\Delta X_t = \delta o_i + \sum_{i=1}^{k} ai\Delta X + \sum_{i=1}^{k} a_2 \Delta Y_{t-1} + \delta_1 X_{t-1} + \delta_2 Y_{t-1} + V_{it} \quad (1)$$

$$\Delta Y_t = \delta o_i + \sum_{i=1}^{k} ai\Delta Y_{t-1} + \sum_{i=1}^{k} a_2 \Delta X_{t-1} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + V_{it} \quad (2)$$

Where, K represent ARDL model max. lag order

We specify the model of this study in a functional form using the selected variables as:

$$CR = f(MPR, CRR, MLR) \quad (3)$$

This equation is linearly expressed in the econometric form as:

$$CR_t = \beta_0 + \beta_1 MPR_t + \beta_2 CRR_t + \beta_3 MLR_t + \mu_t \quad (4)$$

Where: CR is the Default Rate; while MPR is Monetary Policy Rate; CRR is Cash Reserve Ratio; and MLR as the Minimum Liquidity Ratio.

Unit Root

To check just in case the time series is stationary or non-stationary stochastic process, we applied the ADF unit root test. The universal model for Augmented Dickey-Fuller (ADF) test is thus:

$$\Delta\frac{1}{t} = a_o + P_1 Y_{t-1} + \sum_{i=1}^{k} a\Delta Y_{t-1} + u_t \quad (5)$$

$$\Delta\frac{1}{t} = a_o + P_1 Y_{t-1} + a_2 T + \sum_{i=1}^{k} ai\, \Delta Y_{t-1} + u_t \quad (6)$$

Where U_t is a pure white noise error term and

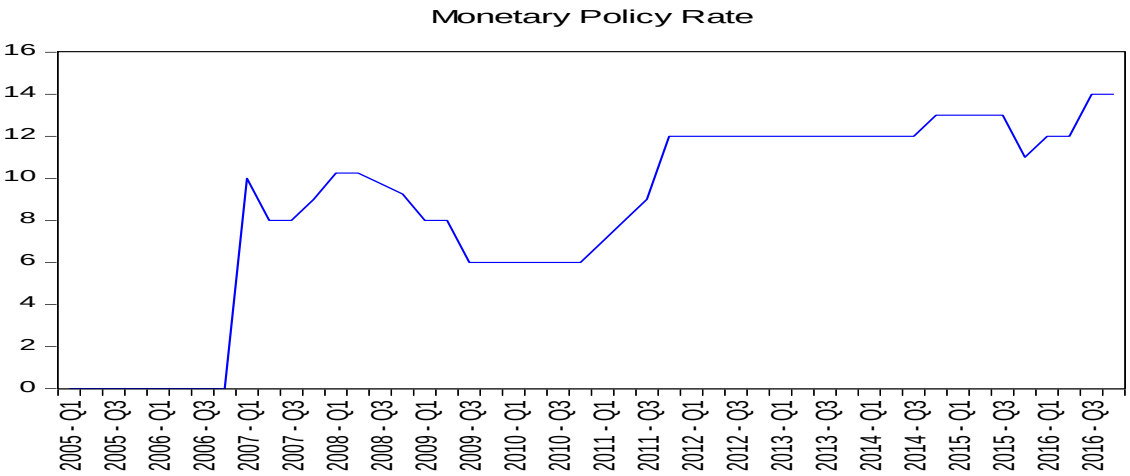
$\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-l} = (Y_{t-1} - Y_{t-2})$

5. Analysis of Monetary Policy Variables

Portfolio credit risk (Default Rate)

On Default Rate, the data table reveals that the banking sector experienced a rise in default rate from 2008, it was highly escalated in 2010 to 15.04%. Later, It was drastically reduced from 2011 Q1 and sustained minimal rising trend to 2015, and still taking a rising drive, but did not surpass

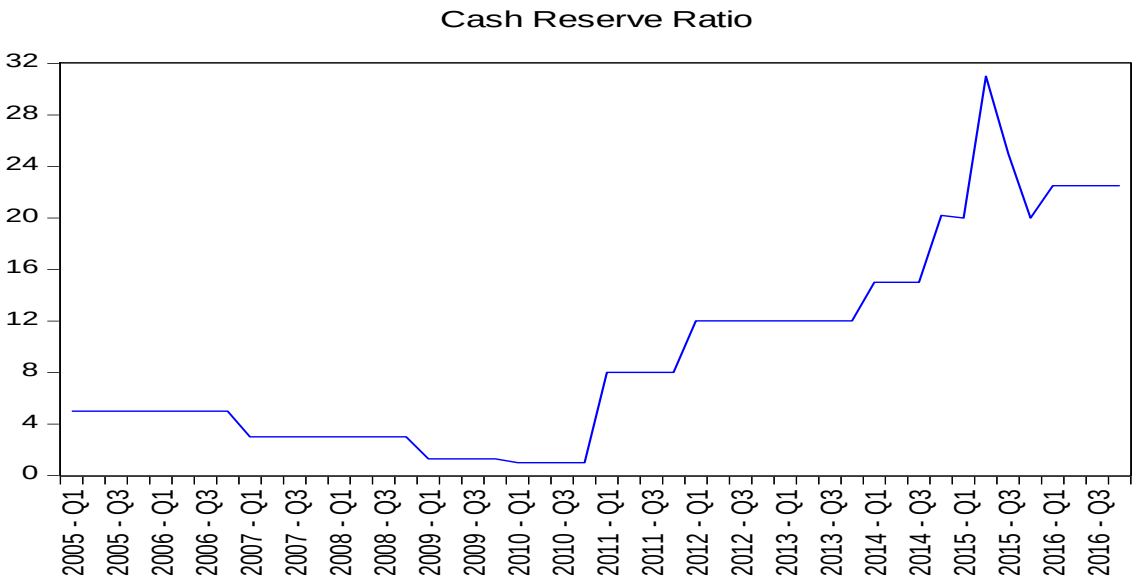
the global standard 5% annual benchmark of non-performing loans. The deterioration in asset quality was largely attributed to the global economic shocks, weakening economic conditions, which has caused low decline in companies' profitability. The poor liquidity in the economy and the inability of business to meet up there loan obligations no doubt have propelled the rise of non-performing and bad loans. However, asset quality improved during periods of favourable economic conditions from 2005-2007.



***Source**: E-view 10 Output.*

Figure 1: Movement of Monetary Policy Rate

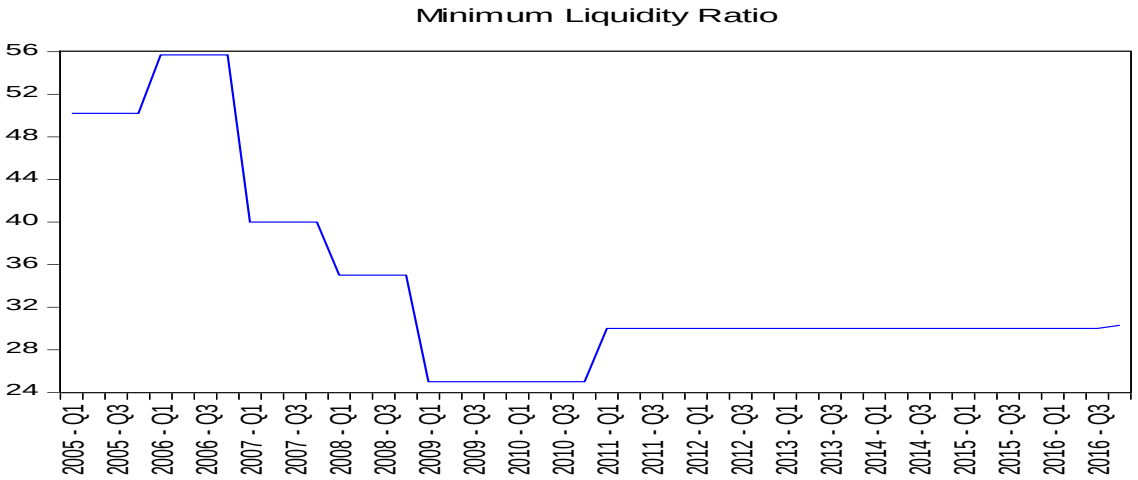
The MPR is a crucial monetary policy variable. It was 10% in 2007Q1 and rose to 12% in 2012Q1. Thereafter, it was fluctuating around 11%, 12%, 13% and 14% but did not exceed 14%.The increasing turbulence of the global economic environment such as the declining commodity prices at the international oil market and as well as declining foreign reserves, increased demand for foreign exchange, fiscal dominance and capital flow reversals, inflationary pressures propelled CBN to jack up the MPR, to help check growth. This will be reduced during favourable economic conditions.



***Source**: E-view 10 Output.*

Figure 2: Movement of Cash Reserve Ratio

The CRR grew from 5% in 2005 to 8% in 2011. This further reveal a season of downwards trend of CRR rate, not exceeding a single digit, 8%, as it dropped to 1.30% in 2009 and 1.00% in 2010. It became high in 2012 at 12% and thereafter assumed a rising trend that peaked in 2015Q3 at 31% and took a downwards turn that ended at 22% in 2016. As a precautionary action, at the sight of worrisome developments at both the domestic and global economic environments, the Central Bank of Nigeria increases the rate of CRR to mitigate likely negative impacts on the nation's economy. Really, the periods of lower CRR affords banks the opportunity to manage their portfolios effectively.



Source: *E-view 10 Output.*

Figure 3: Trend Analysis of Minimum Liquidity Ratio

Liquidity Ratio data revealed that in 2005 and 2006 it was 50.20% and 55.70% respectively, it dropped to 25% from 2008 to 2010. Further, it got to 30% and remained so till 2016. Liquidity ratio is additional crucial monetary policy variable as it is a category of financial metrics used in the determination of a bank's capacity to pay off its short term debts obligations. The larger the value of the ratio, the better the margin of safety. At higher ratio banks are unwilling to lend.

6. Results

Table 1: Descriptive Statistics Results

	DR	MPR	CRR	MLR
Mean	3.020792	8.531250	9.425000	34.24792
Median	2.985000	9.875000	6.500000	30.00000
Maximum	15.04000	14.00000	31.00000	55.70000
Minimum	0.072000	0.000000	1.000000	25.00000
Std. Dev.	3.809178	4.493975	7.883365	9.349092
Skewness	2.134368	-0.893123	0.863282	1.271867
Kurtosis	7.072431	2.562681	2.748092	3.346974
Jarque-Bera	69.61362	6.763843	6.088960	13.18195
Probability	0.000000	0.033982	0.047621	0.001373
Sum	144.9980	409.5000	452.4000	1643.900
Sum Sq. Dev.	681.9623	949.2031	2920.930	4108.060
Observations	48	48	48	48

Source: E-view 9 output, 2019

The result of the descriptive statistics shows that all the variables: Default Rate, Monetary Policy Rate, Cash Reserve Ratio and Minimum Liquidity Ratio are significant at 5% level judging from their probabilities. Furthermore, the Jarque-Bera attests to the fact that variables are normally distributed.

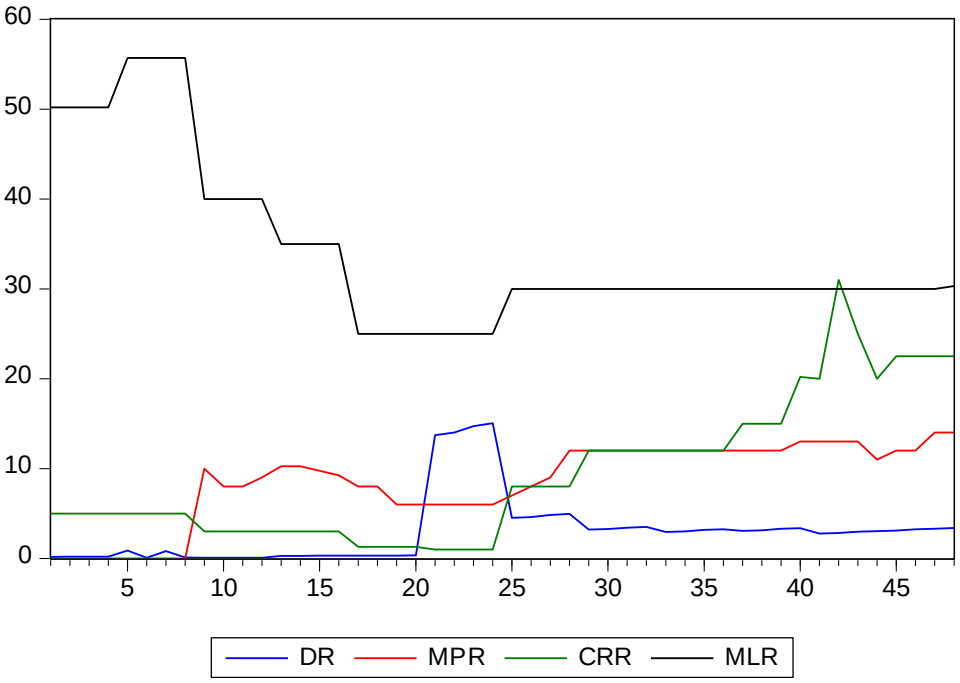


Figure 4: Graphical relations between Credit Risk & Monetary policy variables

Table 2: Unit Root Test Result

Variables	*ADF Statistic*	*5% Critical Value*	*Prob. Value*	*Decision*
DR	-6.684240	-2.926622	0.0000	1(1)
MPR	-7.690231	-2.926622	0.0000	1(1)
CRR	-8.137702	-2.926622	0.0000	1(1)
MLR	-3.168892	-2.931404	0.0289	1(1)

Source:E-view 9 output, 2019

According to Nwani and Orie (2016)' and Nwani et al. (2016)' the study use the Autoregressive Distributed Lag (ARDL-Bounds) testing approach to co-integration put forward by Pesaran et al (2001)[1]. The ARDL approach has certain statistical advantages in excess of other co-integration techniques. Most of the co-integration methods need all the variables to be integrated of the same order, ARDL test technique provides justifiable results whether the variables are I(0) or I(1) or mutually co-integrated and this offer efficient and consistent test results in both small and large sample sizes Pesaran et al (2001).

This study began with the test of unit root or structural breaks to establish the stationarity of all the employed variables using the Augmented Dickey Fuller (ADF) unit root test. The Table above showing CR, MPR, CRR and MLR were integrated of order one 1(1), stationary at first difference i.e. this implies that there is no presence of unit root in the time series.

Co-Integration Analysis

This test is predominantly use for F-test and to identify joint significance of coefficients of the lagged variables aimed at confirming the present of long run relationship in the series. The null hypothesis of no long-run relationship found between the variables (Ho: $\beta1 = \beta2 = \beta3 = 0$) is conducted using Pesaran et al. (2001). The criteria to reject and accept Ho is on the conditions that if F-value > upper bound, then reject Ho and the variables are co-integrated, if F-value < lower bound, then accept Ho and the variables are not co-integrated, but if F-value ≥ lower bound and ≤ upper bound, then the decision is inconclusive.

ARDL Bounds Test
Date: 09/06/19 Time: 15:11
Sample: 2 48
Included observations: 47
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	6.685333	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Source: E-view 9 output, 2019

Since the calculated F-statistics (6.68) is greater than the upper bound (5.73) at 5% level of significance, we reject the null hypothesis. We therefore accept the existence of long run relationship amid the variables tested.
From the result F-statistic is greater than the upper critical bound at 5% significance level. Therefore rejects the null hypothesis of no co-integration. This revealed the present of long-run causal relationship among the existing credit risk and the selected monetary policy indicators.

7. Conclusion

The results indicate an existing long run relationship between credit risk and monetary policy variables tested. The study results are intandem with that of Allen and Gale (2000, 2004 and 2007) they assert that there is a causal relationship existing between monetary policy rate and credit risk.

They hold that a reduction in monetary policy rates can escalate financial institutions appetite to grant credit. This is also justified by the works of Bhamra, Fisher and Kuehn (2010), portraying that monetary policy might hamper corporate capital structure decisions and default, and that monetary policy is relevant in modelling corporate debt and default in a calibrated economy. A further justification is evidence in the works of Kashyap and Stein (2010); Adrain and Shin (2016) said that monetary policy has a dominant effect on the supply of credit that is far above borrowers quality and risk.

Consequently, the study result in agreement with banking theory. This is because, Central Bank of Nigeria regulations are geared towards financial system stability, hence financial institutions are meant to comply with the aim of promoting market transparency between financial institutions and customers. The study fundamentally holds and confirms existing long term relationship between credit risk and monetary policy variables. Therefore monetary policy should be properly managed to reducing portfolio credit default pursuant to achieve sustained economic growth. This study recommends that the central Bank of Nigeria should maintain a single digit monetary policy rate, as this will possibly stern escalation of profit credit default.

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Appendix

First Difference -= Unit Root Test

Null Hypothesis: D(DR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.684240	0.0000
Test critical values: 1% level	-3.581152	

	5% level	-2.926622
	10% level	-2.601424

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DR,2)
Method: Least Squares
Date: 09/03/19 Time: 21:14
Sample (adjusted): 3 48
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DR(-1))	-1.007652	0.150750	-6.684240	0.0000
C	0.070522	0.383257	0.184008	0.8549

R-squared	0.503829	Mean dependent var	0.001739
Adjusted R-squared	0.492552	S.D. dependent var	3.647678
S.E. of regression	2.598437	Akaike info criterion	4.790202
Sum squared resid	297.0826	Schwarz criterion	4.869708
Log likelihood	-108.1747	Hannan-Quinn criter.	4.819986
F-statistic	44.67906	Durbin-Watson stat	2.000032
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MPR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.690231	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(MPR,2)
Method: Least Squares
Date: 09/03/19 Time: 21:17
Sample (adjusted): 3 48
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPR(-1))	-1.146788	0.149123	-7.690231	0.0000
C	0.349022	0.255110	1.368125	0.1782

R-squared	0.573394	Mean dependent var	0.000000
Adjusted R-squared	0.563698	S.D. dependent var	2.577682
S.E. of regression	1.702640	Akaike info criterion	3.944742
Sum squared resid	127.5552	Schwarz criterion	4.024248
Log likelihood	-88.72906	Hannan-Quinn criter.	3.974525
F-statistic	59.13965	Durbin-Watson stat	2.000636
Prob(F-statistic)	0.000000		

Null Hypothesis: D(CRR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.137702	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CRR,2)
Method: Least Squares
Date: 09/03/19 Time: 21:18
Sample (adjusted): 3 48
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CRR(-1))	-1.201613	0.147660	-8.137702	0.0000
C	0.457135	0.374763	1.219798	0.2290

R-squared	0.600806	Mean dependent var	0.000000
Adjusted R-squared	0.591734	S.D. dependent var	3.933051
S.E. of regression	2.513051	Akaike info criterion	4.723377
Sum squared resid	277.8787	Schwarz criterion	4.802883
Log likelihood	-106.6377	Hannan-Quinn criter.	4.753160
F-statistic	66.22220	Durbin-Watson stat	2.043578
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MLR) has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.168892	0.0289
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MLR,2)
Method: Least Squares
Date: 09/03/19 Time: 21:19
Sample (adjusted): 6 48
Included observations: 43 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MLR(-1))	-1.014348	0.320096	-3.168892	0.0030
D(MLR(-1),2)	-0.013932	0.274111	-0.050825	0.9597
D(MLR(-2),2)	-0.042212	0.221251	-0.190787	0.8497
D(MLR(-3),2)	-0.070492	0.154617	-0.455913	0.6510
C	-0.597438	0.504193	-1.184938	0.2434

R-squared	0.540005	Mean dependent var	-0.120930
Adjusted R-squared	0.491584	S.D. dependent var	4.425820
S.E. of regression	3.155754	Akaike info criterion	5.245276
Sum squared resid	378.4338	Schwarz criterion	5.450067
Log likelihood	-107.7734	Hannan-Quinn criter.	5.320797
F-statistic	11.15240	Durbin-Watson stat	2.016586

Prob(F-statistic)	0.000004

Quarterly Data for Default Rate, Selected Monetary Variables from 2005-2016

Period	OBS	Default Rate (%)	Monetary Policy Rate (%)	Cash Reserve Ratio %	Minimum Liquidity Ratio %
2005	Q1	0.17	0.00	5.00	50.20
2005	Q2	0.18	0.00	5.00	50.20
2005	Q3	0.18	0.00	5.00	50.20
2005	Q4	0.19	0.00	5.00	50.20
2006	Q1	0.88	0.00	5.00	55.70
2006	Q2	0.08	0.00	5.00	55.70
2006	Q3	0.82	0.00	5.00	55.70
2006	Q4	0.09	0.00	5.00	55.70
2007	Q1	0.07	10.00	3.00	40.00
2007	Q2	0.07	8.00	3.00	40.00
2007	Q3	0.08	8.00	3.00	40.00
2007	Q4	0.08	9.00	3.00	40.00
2008	Q1	0.29	10.25	3.00	35.00
2008	Q2	0.29	10.25	3.00	35.00
2008	Q3	0.31	9.75	3.00	35.00
2008	Q4	0.32	9.25	3.00	35.00
2009	Q1	0.30	8.00	1.30	25.00
2009	Q2	0.31	8.00	1.30	25.00
2009	Q3	0.32	6.00	1.30	25.00
2009	Q4	0.33	6.00	1.30	25.00
2010	Q1	13.72	6.00	1.00	25.00
2010	Q2	14.00	6.00	1.00	25.00
2010	Q3	14.73	6.00	1.00	25.00
2010	Q4	15.04	6.00	1.00	25.00
2011	Q1	4.50	7.00	8.00	30.00
2011	Q2	4.61	8.00	8.00	30.00
2011	Q3	4.85	9.00	8.00	30.00
2011	Q4	4.95	12.00	8.00	30.00
2012	Q1	3.20	12.00	12.00	30.00
2012	Q2	3.26	12.00	12.00	30.00
2012	Q3	3.43	12.00	12.00	30.00
2012	Q4	3.51	12.00	12.00	30.00
2013	Q1	2.95	12.00	12.00	30.00
2013	Q2	3.00	12.00	12.00	30.00

2013	Q3	3.17	12.00	12.00	30.00
2013	Q4	3.23	12.00	12.00	30.00
2014	Q1	3.07	12.00	15.00	30.00
2014	Q2	3.13	12.00	15.00	30.00
2014	Q3	3.29	12.00	15.00	30.00
2014	Q4	3.36	13.00	20.20	30.00
2015	Q1	2.77	13.00	20.00	30.00
2015	Q2	2.83	13.00	31.00	30.00
2015	Q3	2.97	13.00	25.00	30.00
2015	Q4	3.04	11.00	20.00	30.00
2016	Q1	3.08	12.00	22.50	30.00
2016	Q2	3.23	12.00	22.50	30.00
2016	Q3	3.31	14.00	22.50	30.00
2016	Q4	3.40	14.00	22.50	30.30

Source:
CBN Statistical Bulletin of various years
NDIC Annual Report & Statements of Accounts of various years.