

BANK REGULATORY INSTRUMENTS AND PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The study was conducted to examine the effect of regulatory instruments (cash reserve ratio, loan provision ratio and bank rate) on bank performance of commercial banks in Nigeria. To this end, the research has considered all commercial banks in captured in the CBN bulletin over the sampled period. The study used secondary sources of data collected from CBN Bulletin over the period 2006-2015. Regression analysis was used to analyze the data and the variables showed a significant relationship between Bank regulatory tools and bank Performance. The finding of this study shows that regulatory instruments have an insignificant effect on Bank Performance. The instruments are usually persuasive as a result most banks will blatantly flout the regulations and prefer to pay penalty if the returns from the violations of the regulatory instrument is higher than the penalty. Based on the result of the analysis the study recommends that the regulatory body should be strict on the enforcement of regulatory instrument rather than the persuasion and moral suasion that allows the DMBs to twist rates that have been set by the regulation.

Key words: *Loan Portfolio, cash reserve ratio, loan provision, bank rate and bank performance*

Introduction

There are two major control mechanisms of monetary policy used to by Central Banks at any point in time and these control mechanisms are usually referred to as tools/instruments of monetary policy and they have effects on the proximate targets. Monetary instruments can be direct or indirect. the direct instruments include aggregate credit ceilings, deposit ceiling, exchange control, restriction on the placement of public deposit, special deposits and

stabilization securities while indirect instruments include Open Market Operation (OMO), cash reserve requirement, liquidity ratio, minimum discount rate and selective credit policies. Monetary policy has vital roles in the short-run i.e. it is used for counter-cyclical output stabilization, while in the long run; it is used to achieve the macro-economic goals of full employment, price stability, rapid economic growth and balance of payments equilibrium.

Van den Heuvel (2000) argued that monetary policy affects bank lending through two channels. He argued that by lowering reserves, contractionary monetary policy reduces the extent to which banks can accept deposits if reserve requirements are binding. The increase in reserve requirements will in turn lead banks to reduce lending if they cannot easily switch to alternative forms of finance or liquidate assets other than loan. This situation is more prevalent with the use of indirect regulatory instruments which are variables the research has employee in the study.

Younus and Aklita (2009) examined the significance of Statutory Liquidity Requirement (SLR) as a monetary policy instrument in Bangladesh. Using descriptive analysis techniques like trend analysis and summary statistics they found that statutory liquidity requirement has experienced frequent changes and past evidence has shown that reduction in SLR produced positive impact on bank credit and investment especially prior to the 1990's. SLR and cash reserve requirement (CRR) were found to be significant tools of reducing inflation and both are scheduled for banks to use only in situation of drastic imbalance resulting from major shocks. They posited that Bangladesh bank has used open market operation (OMO's) more frequently than changes in the bank rate and SLR as instruments of monetary policy in line with its market orientation approach. This gives credence to the fact that even developing economies are not left out in the wave of regulating financial institutions within their geographical space hence the need for these regulations in Nigeria.

There are several empirical studies on the link between monetary policy instrument and deposit money banks performance. These studies included various monetary tools or instruments in analyzing the impacts of macroeconomic stability in banks' lending activities. In Nigeria, regulatory decisions are taken by the Central Bank of Nigeria and it is reported by same to all commercial banks. The regulation is set independently by the Central

Bank, depending on its forecast of the future economic variables like inflation and estimate of growth of real economic activity to influence the performance level of commercial banks so as to foster stability and a sound financial system but whether this has been achieved is still a debate among scholars. The magnitude and direction of the relationship between regulatory instruments and DMBs performance has been mixed. Oladejo (2010), Ndugbu and Okere (2015) found a negative relationship between regulatory tools and bank performance whereas Naceur Kandil (2016) found a contrary result. Since the impact of regulatory changes on the commercial banks profitability seems unclear and the extent of speed at which the change have on short and long term period of banks performance and also the speed and flexibility side with which the bank can amend its revenue sources and cost of funds to match up to the change are yet to be defined.

In the light of the above the study is to assess the impact of bank rate regulatory on the Deposit Money Banks in Nigeria and to consider the hypothesis that has been formulated.

H_{01} : There is no significant relationship between Bank regulatory instruments and performance of DMBs in Nigeria.

In order to archive the objective of the study the paper is divided into four sections apart from introductory sections, section 2 discusses the literate review, section 3 describes the methodology adopted for the study, section four presents the analysis and discusses the results and finding while section five contains conclusion and recommendation.

Literature Review

Concept of Bank Regulatory Instruments

The banking regulatory instruments are those devices which are used by monetary authorities to influence the supply, allocation and cost of credit to the economy. These instruments are used to influence the behavior of commercial banks so as to induce particular patterns of behavior which will generate the desired results with respect to policy objectives.

According to Ajayi and Atanda (2012) Bank Rate is the rate of interest the Central Bank charges commercial banks and other financial institutions for discounting their bills. If the Central Bank feels like curtailing the lending powers of commercial banks and other financial institutions, it will raise its discount rate, which will force other rates to rise. If the rate of interest charged

by commercial banks and other financial institutions is high because that of the Central Bank is also high, it will make borrowing very exorbitant and will scare people away, and the rate of lending will reduce. This will make borrowing cheaper and people will be attracted to borrowing. Interest rate determines the amount or stock of money available in the economy. The money supply is dependent on the monetary policy pursued by the Central Bank. Typically, the Central Bank through the use of bank rate can exert profound influence on the volume of currency in the economy (Bourke, 1989). Ndugbu and Okere (2015) notes that Cash reserve ratio specifies the required ratio of certain selected assets and securities to the deposit liabilities of commercial banks. The assets which are usually used are short-term government securities e.g. treasury bills and treasury certificates. The commercial banks are required by law to keep a certain percentage of their total cash or liquid assets in the form of cash either in their vaults or with the central bank. In Nigeria for example, the liquidity ratio is 25% and the commercial banks can give out the remaining 75% in form of loans, thereby creating deposits or money. The Central Bank uses this cash ratio which it fixes, to increase or decrease the volume of money in circulation in the country. If the central bank wants to increase the amount of money supplied to the public especially in a period of deflation and thereby expand credits, it will lower the cash ratio of the commercial banks. On the other hand, if it (the Central Bank) wants to decrease the amount of money supplied especially in a period of inflation and thereby contract credit, it will raise the cash ratio of the commercial banks. Therefore, the higher the cash ratio, the lesser the power of commercial banks to grant credit, hence; limiting wealth creation and vice versa.

Capital adequacy is the capital expected to maintain balance with the risks exposure of the financial institution such as credit risk, market risk and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder. Meeting statutory minimum capital requirement is the key factor in deciding the capital adequacy, and maintaining an adequate level of capital is a critical element in the performance of DMBs.

The imposition by regulators of minimum capital ratio on financial institution is one important development in the 21st century. Most banks regulators see capital adequacy regulation as a means of strengthening the safety and soundness of the banking industry. There are three arguments for capital

adequacy regulation. The first is that capital adequacy regulation is needed for prudential reasons, but most advocates of this position take the argument further to explain why prudential need is there in the first place (Sanzher,2013). The second argument is that capital adequacy regulation is needed to counter moral hazard problems created by the regulator themselves (Mangani, 2011). The third and final argument is that capital adequacy regulation is needed to protect small depositors (Deccan, 2004). Capital adequacy by definition is seen as a quantum of fund, which a financial institution should have and plan to maintain in order to conduct its business in a prudent manner (Nwankwo, 1989). Adequate capital is regarded as the amount of capital that can effectively discharge the primary function of preventing banking industries failure by absorbing losses. It is seen as a way of providing the ultimate protection against insolvency arising from the risk in banking sector. It is the least amount necessary to inspire and sustain confidence in the banks, keep it open and operating so that time and earnings can absorb losses without being forced into costly liquidation and enable insurance industry to take full advantage of its profitable growth opportunities (Nwankwo, 1989).

According to Grier (2007) poor asset quality is the major cause of most bank failures. A most important asset category is the loan portfolio, the greatest risk facing the bank is the risk of loan losses derived from the delinquent loans. The credit analyst should carry out the asset quality assessment by performing the credit risk management and evaluating the quality of loan portfolio using trend analysis and peer comparison. Measuring the asset quality is difficult because it is mostly derived from the analyst's subjectivity.

Frost (2004) stresses that the asset quality indicators highlight the use of Non-Performing Loans Ratios (NPLs) which are the proxy of asset quality, and the allowance or provision to loan losses reserve. As defined in usual classification system, loans include five categories: standard, special mention, substandard, doubtful and loss. NPLs are regarded as the three lowest categories which are past due or for which interest has not been paid for international norm of 90 days. In some countries regulators allow a longer period, typically 180 days. The bank is regulated to back up the bad debts by providing adequate provisions to the loan loss reserve account. The allowance for loan loss to total loans and the provision for loan loss to total loans should also be taken into account to estimate thoroughly the quality of loan portfolio.

Loan loss reserve is the money put aside to pay off loan defaults and serve as an insurance to absorb potential losses caused by risky assets (*Otuori, 2013*).

Concept of Bank Performance

The Return on Asset (ROA) and the Return on Equity (ROE) have been used extensively as measures of bank performance. ROA indicates how effectively a bank is managing its assets to generate income. ROA is the income earned on each unit of asset usually expressed as percentage. The problem with ROA is that it excludes from the total assets off-balance sheet items (for instance, assets acquired through a lease) thereby understating the value of assets. This can eventually create a positive bias where ROA is overstated in the evaluation of bank performance. Nevertheless, Golin (2001), and Rose (2005) have argued that ROA is one of the most important measures of performance in recent banking literature. The studies of Haron (2004), Hasan and Bashir (2003), Bashir (2001), Demirguc-Kunt and Detragiache (1998), Naceur (2003), Alkassim (2005), and Alrashdan (2002) have all adopted ROA as a measure of performance. As an alternative measure of performance the Return on Equity (ROE) is computed by dividing net income by equity. It measures the income earned on each unit of shareholders capital. The shortfall of this measure is that banks with high financial leverage tend to generate a higher ratio. Banks with high financial leverage may be associated with a higher degree of risk although these banks may register high ROE. Thus ROE may sometimes fall short in exposing the true financial health of banks. Another challenge with using ROE is that it is affected by regulation. However, ROE is commonly used in conjunction with ROA.

To evaluate the performance of banks in this study, the Return on Assets (ROA) would be used as measures of performance. In most research papers relating to this study the performance is measured in the form of ratios which are normally reported by commercial banks in their annual reports. According to Rasiah (2010) for one to realize how well a bank is performing it is much more useful to consider return on assets (ROA) and return on equity (ROE).

Return on assets (ROA) is the ratio of Net Income after Taxes divided by Total Assets. The ROA signifies managerial efficiency in other words it depicts how effective and efficient the management of banks has been as they seek to transform assets into earnings. And the higher ratio indicates the higher performance of the banks. It is a useful tool for comparing performance of one

bank with other or the whole commercial banking system. Moreover, the ROE is said to measure the rate of return on the bank's shareholders equity and it is calculated by dividing banks net income after taxes by total equity capital which includes common and preferred stock, surplus, undivided profits, and capital reserves (Bourke, 1989 and Molyneux and Thornton, 1992). This measure of performance gives an indication of what the banks earns on the shareholders' investment (Rasiah, 2010). According to Karkrah and Ameyaw (2010) many researchers have presented ROA as an appropriate measure of bank performance. Among them are Rivard and Thomas (1997) who argue that bank performance is best measured by ROA in the sense that, ROA cannot be distorted by high equity multiplier. However, Hassan and Bashir (2003) also claim that as ROA tend to be lower for financial intermediaries, most banks heavily utilized financial leverage to increase their ROE to competitive levels.

Empirical Studies on Bank Regulatory Instruments and Bank Performance

There are several empirical studies on the link between monetary policy instrument and deposit money banks performance. These studies included various monetary tools or instruments in analyzing the impacts of macroeconomic stability in bank's lending activities some of these studies are reviewed in this section.

Punita and Somaiya (2006) investigate the impact of monetary policy on the profitability of banks in India between 1995 and 2000. The monetary variables are bank rate, lending rates, cash reserve ratio and statutory ratio, and each regressed on banks profitability independently. Lending rate was found to exact positive and significant influence on banks profitability, which indicates a fall in lending rates will reduce the profitability of the banks. Also bank cash reserve ratio and statutory ratio were found to have significantly affected profitability of banks negatively. Their findings were the same when lending rate, bank cash reserve ratio and statutory ratio were pooled to explain the relationship between bank profitability and monetary policy instrument in the private sector.

Ajayi and Felix (1992) investigate the effect of monetary policy instruments on banks performance between 1980 and 2008. The study revealed that monetary policies adopted during the period under review have been effective

in contributing the volume of the economy. The multiple regression analysis result reveals that the monetary policies do have significant effects on the performance of banks. The study reveals the negative influence of liquidity ratio; interest rate and money supply are positively related. Based on their findings the study reveals the liquidity ratio and interest rate causes the economy ineffectiveness. Investors did not have access to the cash in order to increase their productivity due to high interest rate.

Okoye and Eze (2013) examined the impact of bank lending rate on the performance of Nigerian Deposit Money Banks between 2000 and 2010. It specifically determined the effects of lending rate and monetary policy rate on the performance of Nigerian Deposit Money Banks and analyzed how bank lending rate policy affects the performance of Nigerian deposit money banks. The result confirmed that the lending rate and monetary policy rate have significant and positive effects on the performance of Nigerian deposit money banks. The implication of this is that lending rate and monetary policy rate are true parameter of measuring bank performance.

Gambacorta and Lannotti (2005) investigated the velocity and asymmetry in response of bank interest rates (lending, deposit, and inter-bank) to monetary policy changes from 1985-2002 using an Auto-regressive Vector Correction Model (AVECM) that allows for different behaviors in both the short-run and long run. The study shows that the speed of adjustment of bank interest rate to monetary policy changes increased significantly after the introduction of the 1993 Banking Law, interest rate adjustment in response to positive and negative shocks is asymmetric in the short run, with the idea that in the long-run the equilibrium is restored. They also found that banks adjust their loan (deposit) prices at a faster rate during period of monetary tightening in Italy.

Olweny and Chiluwe (2012) explores the relationship between monetary policy and private sector investment in Kenya by tracing the effects of monetary policy through the transmission mechanism to explain how investment responded to changes in monetary policy. The study utilize quarterly macroeconomic data from 1996 to 2009 and the methodology drawn upon unit roots and co-integration testing using a vector error correction model to explore the dynamic relationship of short-run and long-run effects of the variables due to an exogenous shock. The study showed that monetary policy variables of government domestic debt and Treasury bill rate are inversely related to private sector investment, while money supply and

domestic savings have positive relationship with private sector investment consistent with the IS-LM model. Based on the empirical results the study suggests that tightening of monetary policy by 1% has the effect of reducing investment by 2.63% while the opposite loose monetary policy tends to increase investment by 2.63%.

Oladejo (2010) explores various implications of capital regulation on the performance of the Nigeria banks with a view to proffer solutions to problems. The study adopts largely an exploratory methodology and submitted that though reforms of banks becomes necessary, there is a limit to which banks should be regulated on the issue of capital adequacy. The paper argued that consolidation arising from the recapitalization of banks brought about lots of problems that may mar the aim of the reform if not properly approached.

In the view of Oladejo (2010) the banking reforms of the early 2000s concerning bank recapitalization were in good spirit however some faults were identified from some of the players (financial institutions). All the same, some of the financial institutions are stable after recapitalization till date. This study therefore is concern with the application of regulatory instruments on a continuous basis as monitoring tools and their effect on the general performance of the DMBs.

Ikpefan and Kazeem (2013) study the effect of regulation on deposit money banks performance in the Nigerian Banking industry. The objective of their study was to give insight into the effectiveness of regulation in the Nigerian banking industry. The study examines the impacts of merger on deposit money banks performance in Nigeria between 2000 and 2009. The period was characterized by financial deregulation, the Global economic crisis, and bank restructuring programs. The panel data ordinary least squares approach is the methodology employed to investigate if there is any significant effect on the performance of banks from the pre to the post merger periods, in order to detect whether bank mergers produce any performance gains in the Nigerian banking industry. The evidence shows that merger created synergy as indicated by the statistically significant increasing post-merger financial performances although banks should not jump at any merging opportunity that offers itself because the exercise is not an opportunistic one.

It could be recalled the Central Bank of Nigeria (CBN) gave financial institutions a deadline to recapitalize themselves mergers and acquisition became the orders of the day, but unfortunately, some mergers failed to produce desired results. This calls to question the role of regulatory tools and their efficacy. A study on how regulatory tools impact on the performance of the DMBs has therefore become necessary to ascertain the militating factors against the efficient performance of banks in Nigeria.

Soyemi, Akinpelu and Ogunleye (2013) examine factors influencing profitability among Deposits Money Banks (DMBs) in Nigeria. Five internal determinants were identified and deployed, three of these variables were found to contribute to variation of bank profitability: bank size which is measured by log of total assets is negative and significantly related to profitability of bank; capital adequacy ratio is also negatively related to and statistically significant to variation in bank profitability. The external determinants of financial structure and macroeconomic variables adopted depict no significant influence on profitability. Our findings suggest that some banks in Nigeria may be suffering from diseconomy of scale which is as result of inefficiencies that may be associated with large complex organizations. This study also shows that management expenses, current and saving deposit accounts variables does not have any effects on bank profitability variation. Such factors as exchange rates, inflation interstaters and several others drastically affect the profitability of banks and obviously their performance alike.

Research Methodology

The study adopts analytical research design using time series data of 10 years (2006 - 2015) collected from CBN statistical bulletin for analysis. This is the most recent data available on the banking sector immediate after the major reform in the Nigeria banking sector. The population of the study comprises all DMBs licensed by CBN at that time covered by the study. The main instrument of data analysis used is multiple regression model. The analysis was carried out with the aid of E-view version 8 to determine the value of coefficient of independent variable which is bank regulatory instruments proxied as cash reserve ratio, loan provision capital adequacy ratio and bank rate whereas bank performance is proxied as ROA of the DMB. The data was first tested for stationarity using the Augmented Dickey Fuller (ADF) test. (See Appendix ii)

Model Specification

For analytical analysis the regression model is specified as:

$$BP = \hat{\alpha}_0 + \hat{\alpha}_1 (CRR) + \hat{\alpha}_2 (LLP) + \hat{\alpha}_3 (BR) + \hat{\alpha}_4 (CAR) + e$$

where;

BP = Bank Performance

CRR = cash reserve ratio,

LLP = Loan Loss provision

BR = bank Rate

CAR= Capital Adequacy Ratio

$\hat{\alpha}_0$ = the constant

$\hat{\alpha}_1, \hat{\alpha}_2, \hat{\alpha}_3, \hat{\alpha}_4$ = the parameters to be estimated

and e = the residual error of regression

RESULTS AND DISCUSSION

Result of Unit Root Test for Order of Integration of the Variables

ADF UNIT ROOT TEST RESULT

VARIABLES	ADFESSION/ALBES	CRITICALVALLEAT5%	ADFESSION/ALBES	CRITICALVALLEAT5%	ORDER OF INTEGRATION
BA NK RA TE	-1.3703	-3.2598	-2.6861**	-1.9959	1 (1)
LOANPROVISION	-2.2673	-3.2598	-3.3870**	-1.9959	1 (1)
C A R	-2.6900	-3.3209	-2.7406**	-2.0063	1 (1)
C R R	-0.5039	-3.2598	-2.5484**	-1.9959	1 (1)
R O A	-3.5814*	-3.2598	-5.6558	-1.9959	1 (0)
LOANPORTFOLIO	-0.7347	-3.3209	-2.7113**	2.006	1 (1)
LIQUIDTYRATE	-2.1609	-3.2598	-3.0223**	-1.9959	1 (1)

Source: E-View 8.0 output

*at 1% level of significance, ** at 5% level of significance, *** at 10% level of significance

From the result of unit root (with constant and trend) above, all the variables (bank rate, loan provision, CAR,CRR, Loan portfolio and Liquidity rate) are integrated at the first difference i.e. 1(1). Except for the variable ROA that was at levels i.e. 1(0).

Ho: There is no significant relationship between bank regulatory instruments and DMBs performance in Nigeria.

Dependent Variable: ROA
 Method: Least Squares Date:
 07/02/17 Time: 16:36
 Sample: 2006 2015
 Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2712.492	7873.116	0.344526	0.7445
CRR	292.4356	161.3551	1.812372	0.1297
LOAN_LOSS_PROVISION__B	1.960653	2.900392	0.675996	0.5290
CAR	-216.2747	203.9959	-1.060191	0.3376
BANK_RATE	544.4447	697.0044	0.781121	0.4701
R-squared	0.731931	Mean dependent var		8115.516
Adjusted R-squared	0.517477	S.D. dependent var		3017.900
S.E. of regression	2096.351	Akaike info criterion		18.44064
Sum squared resid	21973439	Schwarz criterion		18.59193
Log likelihood	-87.20318	Hannan-Quinn crite r.		18.27467
F-statistic	3.412986	Durbin-Watson stat		1.960820
Prob(F-statistic)	0.105287			

Source: Eview 8.0 output (2017)

The Eview regression result based on the table for the hypothesis above shows that the coefficients for $\hat{\alpha}_1, \hat{\alpha}_2$ and $\hat{\alpha}_4$ are positive which means a significant relationship exist between the variables and bank performance. The coefficient for $\hat{\alpha}_3$ shows a negative sign thereby signifying an inverse effect on bank performance. The of the constant has revealed that, if all the other variables are held constant, bank performance will increase by 2712.49 units. From the results it shows that a unit increase in cash reserve ratio (CRR) will result to 292.4 unit increase in bank performance. Similarly, a unit increase in loan loss provision and bank rate will result in 1.96 and 544.4 units' changes in bank performance respectively. On the contrary, a unit change in cash adequacy ratio will lead to a 216.27 units decrease in bank performance.

The R square value of 0.73 indicates a strong relationship amongst the four determinants and bank performance. This explains that, the variables cash reserve ratio, loan loss provision capital adequacy ratio and bank rate have strong influence on bank performance in Nigeria. The regression result showing R square value of 0.73 clearly indicates that about 73% of the variations in bank performance accounted for by the changes in the four explanatory variables put together. This demonstrates the significance of the

model in explaining the effects of the predictor variables on the criterion factor which is confirmed by the moderated adjusted R square value of 0.52. This value suggests that the variation in the explanatory variables predicts most of the changes in the dependent variable.

In terms of the overall model fitness and robustness all the parameters shows that the model fits the data well. The R square and adjusted R square are 73% and 51% respectively. This suggests that, over 50% variations in bank performance are explained jointly by independent variables captured in the model.

The table also indicates that CRR is insignificant in achieving bank performance based on the fact that the t-statistics value of 1.812372 and p-value which is more than 5% level of significant. The loan loss provision also indicates insignificant relationship with bank performance by showing a t-statistics value of 0.675996 at p-value of 0.5290. the CAR indicates insignificant relationship with bank performance by indicating a statistical value of -1.060191 at p-value of 0.4701 which implies that there is insignificant relationship between bank rate and bank performance in Nigeria. However, the f-statistics value which measures the overall significance level of the variables shows that f-statistics value of 3.412986 at p-value of 0.105 is insignificant which implies that bank regulatory instrument is insignificant to the performance of deposit bank in Nigeria.

Conclusion and Recommendations

The essence of this study is to examine the effect of regulatory instrument on the performance of deposit Money banks in Nigeria. Based on the data analyses, the findings show that all the regulatory tools adopted by the regulatory authority depict an insignificant influence on the overall performance of deposit money banks. By examining the performance of DMBs, it is true that the banks in Nigeria have been experiencing profitability over the period of the study but not due to the effectiveness of the regulatory instruments. The instruments are usually persuasive as a result most banks will blatantly flout the regulations and prefer to pay penalty if the returns from the violations of the regulatory instrument is higher than the penalty.

Based on the result of the analysis the study recommends that the regulatory body should be strict on the enforcement of regulatory instrument rather than the persuasion and moral suasion that allows the DMBs to twist rates that have been set by the regulation.

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Appendix I

DATA ON REGULATORY TOOLS AND AGGREGATES OF DOMESTIC FINANCIAL INDICATOR								
YEAR	CRR	CAR	Bank Rate	liquidity rate	LIQUIDITY	ROA	LOAN PORTFOLIO	loan loss provision %
2006	4.2	22.57	10	55.7	7,945	1.61	2524.3	1.609
2007	7.92	23	9.5	48.8	8,469	3.89	4813.5	2.809
2008	3	21.91	9.75	44.3	10,424.20	3.95	7799.4	2.729
2009	1.3	4.1	6	30.7	9,138.30	-8.9	8912.1	19.775
2010	1	4.32	6.25	30.4	10,468	3.9	7706.4	9.301
2011	8	17.71	12	42	15,975.80	-0.04	7312.7	2.677
2012	10	18.07	12	48.25	19,082.10	2.62	7800.9	2.348
2013	12	17.18	12	63.2	21,673.07	2.15	9112.2	2.666
2014	12.5	18.43	12.25	38.3	23,970.12	3.78	11475.16	3.155
2015	24	18.90	12	39.55	27,926.20	3.82	13222.65	4.243

Appendix II

ADF TEST RESULTS

1. ADF TEST RESULT FOR BANK RATE AT LEVELS

Null Hypothesis: BANK_RATE has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.370390	0.5477
Test critical values:		
1% level	-4.420595	
5% level	-3.259808	
10% level	-2.77129	

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

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 9

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BANK_RATE)

Method: Least Squares

Date: 07/01/17 Time: 10:48

Sample (adjusted): 20072015

2. ADF TEST RESULT FOR BANK RATE AT FIRST DIFFERENCE

Null Hypothesis: D(BANK_RATE) has a unit root

Exogenous: None

Lag Length: 0 (Automatic based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.686050	0.0143
Test critical values:		
1% level	-2.886101	
5% level	-1.995865	
10% level	-1.599088	

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

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BANK_RATE,2)

Method: Least Squares

Date: 07/01/17 Time: 10:50

Sample (adjusted): 20082015

3. ADF TEST RESULT FOR LOAN PROVISSION AT LEVEL

Null Hypothesis: LOAN_LOSS_PROVISION_B has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.267287	0.1992
Test critical values:		
1% level	-4.420595	
5% level	-3.259808	
10% level	-2.771129	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 9

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LOAN_LOSS_PROVISION_B)
 Method: Least Squares
 Date: 07/01/17 Time: 10:54
 Sample (adjusted): 2007 2015
 Included observations: 9 after adjustments

4. ADF TEST RESULT FOR LOAN PROVISSION AT FIRST DIFFERENCE

Null Hypothesis: D(LOAN_LOSS_PROVISION_B) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.387041	0.0042
Test critical values:		
1% level	-2.886101	
5% level	-1.995865	
10% level	-1.599088	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LOAN_LOSS_PROVISION_B,2)
 Method: Least Squares
 Date: 07/01/17 Time: 10:56
 Sample (adjusted): 2008 2015
 Included observations: 8 after adjustments

5. ADF TEST RESULT FOR CAR AT LEVEL

Null Hypothesis: CAR has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.690074	0.1161
Test critical values:		
1% level	-4.582648	
5% level	-3.320969	
10% level	-2.801384	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(CAR)
 Method: Least Squares Date:
 07/01/17 Time: 10:58
 Sample (adjusted): 2008 2015
 Included observations: 8 after adjustments

6. ADF TEST RESULT FOR CAR AT FIRST DIFFERENCE

Null Hypothesis: D(CAR) has a unit root
 Exogenous: None
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.740557	0.0139
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 7

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(CAR,2)
 Method: Least Squares
 Date: 07/01/17 Time: 11:00
 Sample (adjusted): 2009 2015
 Included observations: 7 after adjustments

7. ADF TEST RESULT FOR CRR AT LEVEL

Null Hypothesis: CRR has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
<u>Augmented Dickey-Fuller test statistic</u>	0.503919	0.9748
Test critical values:		
1% level	-4.420595	
5% level	-3.259808	
10% level	-2.771129	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 9

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(CRR)
 Method: Least Squares Date:
 07/01/17 Time: 11:02
 Sample (adjusted): 2007 2015
 Included observations: 9 after adjustments

8. ADF TEST RESULT FOR CRR AT FIRST DIFFERENCE

Null Hypothesis: D(CRR) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
<u>Augmented Dickey-Fuller test statistic</u>	-2.548434	0.1092
Test critical values:		
1% level	-2.886101	
5% level	-1.995865	
10% level	-1.599088	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(CRR,2)
 Method: Least Squares
 Date: 07/01/17 Time: 11:04
 Sample (adjusted): 2008 2015
 Included observations: 8 after adjustments

9. ADF TEST RESULT FOR LOAN PORTFOLIO AT LEVEL

Null Hypothesis: LOAN_PORTFOLIO has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.734729	0.7810
Test critical values:		
1% level	-4.582648	
5% level	-3.320969	
10% level	-2.801384	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LOAN_PORTFOLIO)
 Method: Least Squares
 Date: 07/01/17 Time: 11:12
 Sample (adjusted): 2008 2015
 Included observations: 8 after adjustments

10. ADF TEST RESULT FOR LOAN PORTFOLIO AT FIRST DIFFERENCE

Null Hypothesis: D(LOAN_PORTFOLIO) has a unit root
 Exogenous: None
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.711325	0.0146
Test critical values:		
1% level	-2.937216	
5% level	-2.006292	
10% level	-1.598068	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 7