RESEARCH ARTICLE

The Effect of Deposit Money Banks (DMBS) Performance on Interest Rates: Evidence from Nigeria

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This study examined the impact of interest rate on deposit money banks performance in Nigeria for the period of 2010-2019. The interest rate was proxied by the monetary policy rate of the CBN while bank performance was proxied by row assets, total liabilities and total deposits of deposit money banks in Nigeria. Ordinary Least Square (OLS) simple regression technique was employed to analyze the data in order to determine the impact of the independent variable on the various dependent variables. Findings showed that Monetary Policy Rate had a positive and significant impact to the total asset i.e., t statistic (20.79420) and p-value of (0.040) and total liabilities i.e., t-statistics (20.79420) and the p-value (0.0402) of deposit money banks in Nigeria economy but has a negative and insignificant impact to total deposit i.e. t-statistics (-1.943590) was negatively signed and the p-value (0.3556) was insignificant. The study concluded that monetary policy rate has significant relationship on deposit money bank performance in Nigeria. The researcher recommended that well-structured monetary policy rate by the CBN will enhance the performance of Deposit Money Banks in Nigeria.

ABSTRACT

Keywords: *Deposit Money Banks, Row Assets, Monetary Policy Rate; Interest Rates*

Introduction

Banking is an economic activity, which deals with the intermediation of funds between the surplus units and the deficit units of an economy and the channeling of such resources to profitable investments. Banks also facilitate the provision of an efficient payment system. A sound, profitable, efficient and well managed banking system contributes to the stability of the financial system and protects a country from any undesirable crisis (Athanasoglu et. al. 2005; Aburime, 2008; and Ramlall 2009). Alper and Anbar (2011) posit that an efficient banking sector can promote economic growth, while credit insolvencies could result in systematic crisis. In Nigeria, banks are regarded as dominant financial institution thus, their health condition is crucial to the general health of the economy (Suffian, 2009).

Deposit Money banks play an important function in the development and growth of a nation, the principal role carried out by deposit money banks is to ensure there is adequate flow of money to service deficit sectors of the economy and facilitate the movement of funds amongst economic units. This movement referred to as financial intermediation is usually from units of surplus to units of deficit/needs (Ufot, 2004). Supply of finance can retard economic development if it is repressed or stimulate it if it is liberalized.

Interest is the reward that accrues to people who provide the fund with which capital goods are bought (Soyibo & Adekanye, 1992). Interest can also be defined as the payment made to a lender by a borrower for the use of a sum of money for certain period of time.

Financial institution facilitates mobilization of savings, diversification and pooling of risk and allocation of resources. However, since the receipts for deposits and loans are not synchronized, intermediaries like banks incur certain costs (Ngugi, 2001). They charge a price for the intermediation services, offered under uncertainty and set the interest rate levels for deposits and loans. The difference between the gross costs of borrowing and the net return of lending defines the intermediary cost (information cost, transportation cost, administrative cost, default costs and operation costs).

The term interest rate/s can be quite conflicting to those unfamiliar with the financial markets. There are many different interest rates; a few examples: call deposit rates, term deposit rates, repurchase agreement (repo) rates, base rates, policy rates, bank rates, government bond rates, corporate bond rates, negotiable certificates of deposit (NCD) rates, Treasury bill (TB) rates, corporate/commercial paper (CP) rates, fixed interest rates, floating interest rates, discount rates, coupon rates, real rates, nominal rates effective rates, risk-free rates, and so on.

Interest rate can be categorized as nominal or real. "Nominal interest rate is said to be the observed rate of interest incorporating monetary effects while the real interest rate is said to be arrived by considering the implication of inflation on nominal interest rate (Uchendu, 1993; Essia, 2005)

Interest rate spread is defined as the difference between the lending rate and deposit rate. Interest rate spread is determined by market microstructure characteristics of the banking sector and the policy environment. Risk-averse banks operate with a smaller spread than risk neutral banks since aversion raises the bank's optimal interest rate and reduces the amount of credit supplied, actual spread which incorporates the pure spread is influenced by macroeconomic variables including monetary and fiscal policy activities (Emmanuelle, 2003). The interest rate spread is traced using the variation in loan rate. The magnitude of interest rate spread varies across the world. It is inverse to the degree of efficiency of financial sectors environment. The nature and efficiency of the financial sectors have been found to be the major reasons behind differences in spread in countries across the world.

2. Literature Review

Empirical Review

Quite a number of empirical studies have been carried out by different scholars on the relationship between interest rate and performance of deposit money banks; some of these studies are reviewed below.

A study by Okoye and Richard (2013) examined the impact of bank lending rate on the performance of Nigerian Deposit Money Banks between 2000 and 2010. The study 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. It utilized secondary data econometrics in a regression, where time-series and quantitative design were combined and estimated. The result confirmed that the lending rate and monetary policy rate has significant and positive effects on the performance of Nigerian deposit money banks. The implication of these is that lending rate and monetary policy rate are true parameter of measuring bank performance. They therefore recommend that government should adopt policies that will help Nigerian deposit money banks to improve on their performance and that there is need to strengthen bank lending rate policy through effective and efficient regulation and supervisory framework.

Similarly, a study by Lending Rate and Monetary Policy Rate (2012) also looked at the Impact of Interest Rate Policy on Performance of Deposit Money Banks in Nigerian. The study observed that the current credit crisis and the transatlantic mortgage financial turmoil have questioned the effectiveness of bank consolidation Programme as a remedy for financial stability and monetary policy in correcting the defects in the financial sector for sustainable development. Many banks consolidation had taken place in Europe, America and Asia in the last two decades without any solutions in sight to bank failures and crisis. The study attempts to examine the performances of banks and macro-economic performance in Nigeria based on the interest rate policies of the banks. The study analyses published audited accounts of twenty (20) out of twenty-five (25) banks that emerged from the consolidation exercise and data from the Central Banks of Nigeria (CBN). It denoted year 2004 as the pre-consolidation and 2005 and 2006 as post-consolidation periods for our analysis. The study noticed that the interest rate policies have not improved the overall performances of banks significantly and also have contributed marginally to the growth of the economy for sustainable development.

Jelilov (2015) in his study on the impact of interest rate and economic growth in Nigeria from posited that the Nigerian economy faced' numerous challenges which impacted on the overall economic activity and has witnessed crises with devastating consequences on world commodity prices as a result of global economic. This subsequently created structural imbalances occasioned by the collapse of oil prices which adversely affected the Nation's revenue. Study examined the impact of interest rate on economic growth in Nigeria from 1990 to 2013. The result found that the interest rate has a slight impact on growth; however, the growth can be improved by lowering the interest rate which will increase the investment. As a result of study was found out that Nigerian authorities should set interest rate policies that will boost the economic growth. Therefore, proper measure should be taken in order to have a more rapid economic growth.

A study by Anthony (2012) investigated the determinants of bank savings in Nigeria as well as examined the impact of bank savings and bank credits on Nigeria's economic growth from 1970- 2006. The study adopted two impact models; Distributed Lag-Error Correction Model (DL-. ECM) and Distributed Model. The empirical results showed a positive influence of values of GDP per capita (PCY), Financial Deepening (FSD), Interest Rate Spread (IRS) and negative influence of Real Interest Rate (RIR) and Inflation Rate (INFR) on the size of private domestic savings. Also, a positive relationship exists between the lagged values of total private savings, private sector credit, public sector credit, interest rate spread, exchange rates and economic growth. The study therefore recommends, among others, that government's effort should be geared towards improving per capita income by reducing the unemployment rate in the country in a bid to accelerate growth through enhanced savings.

Nabar (2011) assesses how interest rate affects household savings in Chinese 31 provincial level administrative units between 1996 and 2009. A strong positive correlation between household savings and interest rates was established; suggesting that Chinese save to meet a number of needs e.g., retirement consumption and durables purchases. As such high savings rates enable them to meet their target savings.

Laurenceson (2004) drawing on a panel data of 101 countries between 1994 and 2001 examined the relationship between bank franchise values and deposit mobilization. Results showed a negative relationship between franchise value and a decrease in deposits; suggesting that increased competition leads to improvements in service quality which tempts households to raise their holdings of savings deposits. In this regard it can be argued that high interest rate on deposits leads to higher deposits (ceteris paribus).

Akabom-Ita (2012) examined the impact of interest rate on net assets of multinational companies in Nigeria from 1995 - 2010. The regression analysis showed that an increase in interest rate results in reduction in net assets.

Ogunlewe (2001) in a study of the monetary policy influence of bank's profitability, using data from Nigerian banks found the determinants of bank profitability to include reserve ratio, permissible credit growth, stabilization securities and exchange rate. The study also found determinants of banks' profitability to include total deposits, Treasury bill rates and lending rates. Uchendu (1995) investigated the effect of monetary policies on the performance of Nigerian commercial banks. He found that the dominant factors influencing bank profitability are interest rates, exchange rate, bank reserves, banking structure and unit labour costs, particularly when return on capital is used as measure of profitability. He concluded that stable and realistic monetary and banking policies are important for the profitability of commercial banking business in Nigeria.

3. Methodology

Research methodology adequately provides detailed accounts of the method used in collecting and analyzing data. (Akuezilo, 2007) defined research methodology as a systematic and objective analysis of controlled observations that may lead to the development of generalization, principles, or theories resulting in prediction and possibly ultimate control of event.

Research design means the structuring of investigation aimed at identifying variables and their relationships to one another (Asika, 1991). It is a blue print that serves as a useful guide to the researcher in his or her efforts to generate data for the research work (Onwumere, 2009). It is used for the purpose of obtaining data to enable the researcher test hypotheses or answer research questions. An. ex post facto research design was adopted in this study. The researcher adopted multiple regression analysis based on the classical linear regression model, otherwise known as Ordinary Least Square (OLS) technique, causality test and correlation test etc.

Secondary data refers to data collected by someone other than the user (Economic and social research, 2016). It was used in this study because it provided a larger and higher-quality database having been subjected to series of tests before being published which would be unfeasible for any individual researcher to collect on their own. In addition, analysts of social and economic change considered secondary data essential, since it is impossible to conduct a new survey that can adequately capture past change and/or developments (Kamau, 2015). For this research study, secondary data was appropriate because of the macroeconomic variables involved. The data employed for this as time series which are secondary in nature. They are annualized time series data which cover 2010 - 2019, they are drawn from the Statistical Bulletins of Central Bank of Nigeria.

Koutsoyiannis (2003) recommended that the first and most important step the econometrician has to take in attempting the study of any relationship between variables is to express this relationship in mathematical form. The mode of our analysis followed a linear combination of explanatory time series variables and the dependent variable using the Autoregressive Distributed Lag Model. Monetary Policy rate was used as the independent variable while Bank Performance Indicators (Total Assets- TA; Total Liabilities- TL; Total Deposit Liabilities- TDL) was used as the dependent variable. The econometric model below was used for empirical analysis and investigates the impact of monetary policy rate on deposit money banks in Nigeria.

Hypothesis One

$$TA_t = \delta_0 + \sum_{k=j}^{n=i} \partial_1 TA_{t-1} + \sum_{k=j}^{n=i} \delta_2 MPR_{t-1} + \varepsilon_t$$

Where:

TA =Total Assets

MPR = Monetary Policy Rate

ii = Constant term or the intercept

= Coefficients of the explanatory variables E = Error term

Hypothesis Two

$$TL_t = \delta_0 + \sum_{k=j}^{n=i} \partial_1 TL_{t-1} + \sum_{k=j}^{n=i} \delta_2 MPR_{t-1} + \varepsilon_t$$

Where:

TL =Total Liabilities

MPR = Monetary Policy Rate

∂ = Constant term or the intercept

δ_2 δ_2 = Coefficients of the explanatory variables

ε = Error term

Hypothesis Three

$$TDEP_t = \delta_0 + \sum_{k=j}^{n=i} \partial_1 TDEP_{t-1} + \sum_{k=j}^{n=i} \delta_2 MPR_{t-1} + \varepsilon_t$$

Where:

TDEP =Total Deposit

MPR = Monetary Policy Rate

∂ = Constant term or the intercept

δ_2 δ_2 = Coefficients of the explanatory variables

ε = Error term

Result and Discussion

Presentation of Data

Table 1 Data were presented below the table namely Interest Rate and Selected Performance Indicators of Deposit Money Banks

YEAR	MPR	TOTAL DEP	TOTAL LIABILITIES	TOTAL ASSETS	LOAN AND ADVANCE
2010	6.25	9,784.54	17,331.56	17,331.56	7,706.43
2011	12.00	11,452.76	19,396.63	19,396.63	7,312.73
2012	12.00	13,135.89	21,303.95	21,303.95	8,150.03
2013	12.00	13,825.19	24,468.37	24,468.37	10,005.59
2014	13.00	17,258.58	27,690.11	27,690.11	12,889.42
2015	11.00	17,343.99	28,369.03	28,369.03	13,086.20
2016	14.00	18,521.91	32,130.45	32,130.45	16,117.20
2017	14.00	19,384.72	35,146.84	35,146.84	15,740.59
2018	14.00	22,040.37	38,690.64	38,690.64	15,134.20
2019	13.50	24,417.20	43,531.67	43,531.67	17,187.77

Source: Central Bank of Nigeria from various years

Basic Descriptive Statistics

Table 2: Summary of Basic Descriptive Statistics

	LADV	MPR	TDEP	TA	TL
Mean	12333.02	12.17500	16716.52	28805.93	28805.93
Median	12987.81	12.50000	17301.28	28029.57	28029.57
Maximum	17187.77	14.00000	24417.20	3531.67	3531.67
Minimum	7312.726	6.250000	0.784.542	17331.56	17331.56
Std. Dev.	3767.502	2.333482	662.503	579.955	8579.955
Skewness	-0.176536	-1.737687	0.096856	0.297001	0.297001
Kurtosis	1.462237	5.292854	2.009564	1.982058	1.982058
Jarque-Bera	1.037240	7.223086	0.4243 70	0.578768	0.578768
Probability	0.595342	0.027010	0.808815	0.748725	0.748725
Observations	10	10	10	10	10

Source: Author's Computation from E-views 10.00

Table 2 explains the statistical descriptions of the variables in our model. Our results revealed that MPR averaged 12.18 and ranged between 6.25 and 14.00 between 2010 and 2019.The mean of TDEP, TA and TL were 16716.52, 28805.93 and 28805.93, respectively. The maximum TDEP was 24417.20 and the lowest at 9784. 542.TA and TA also ranged between 17331.56 and 43531.67, and TL ranged between 17331.56 and 43531.67 over the coverage period. The results also showed TDEP, TA and TL are normally distributed, which is indicated by the p-value of the Jarque-Bera (J.B) statistics, all of which are greater than 0.05 level of significance. MPR did not provide evidence of normal distribution, with the p-value of J.B statistics being less than 0.05 level of significance.

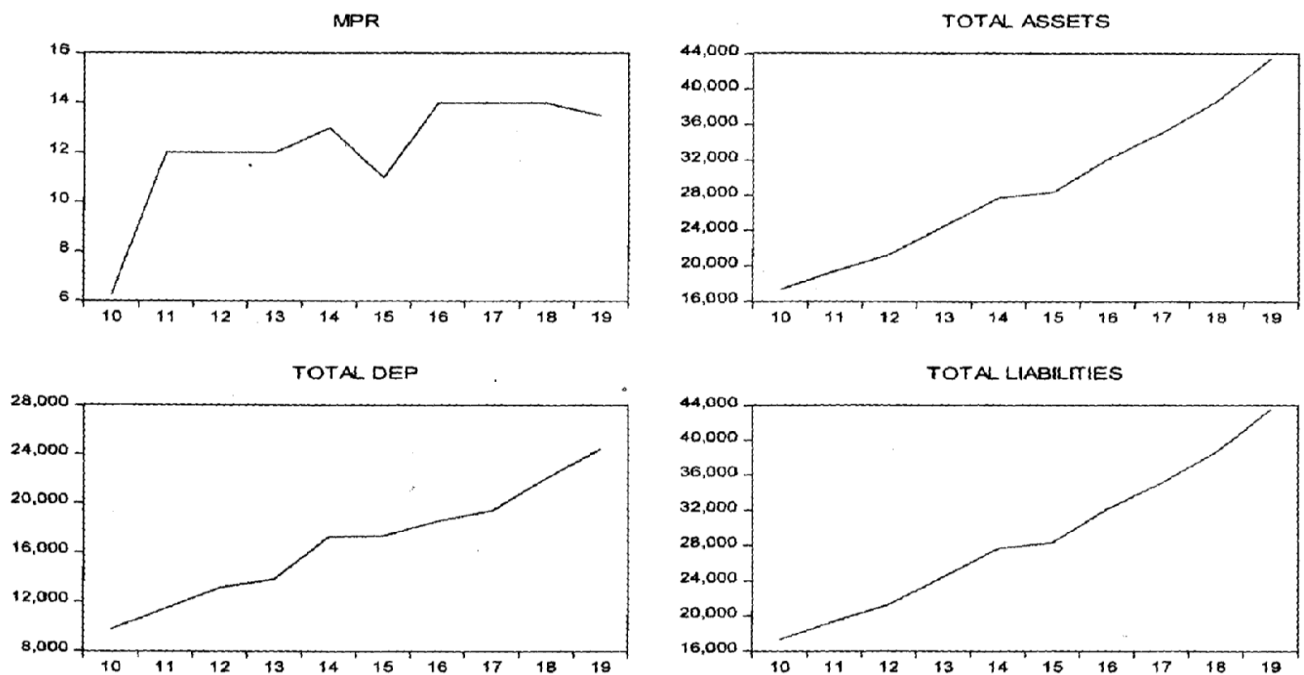**Fig. 1: Graph Presentation of Test of Linear Association**

Table 3 Correlation Matrix

correlation-Statistic Probability	LADV	MPR	TDEP	TA	TL
MPR	0.678366	1.000000			
	2.611471	………..			
	0.0311	……………			
TDEP	0.943745	0.724267	1.000000		
	8.072336	2.970965	---------		
	0.0000	0.0178	---------		
TA	0.942570	0.701966	0.990278	1.000000	
	7.981787	2.787742	20.13604	--------	
	0.0000	0.0236	0.0000	--------	
TL	0.942570	0.701966	0.990278	1.000000	1.000000
	1.981787	2.787742	20.13604	NA	-------
	0.0000	0.0236	0.0000	NA	--------

Source: Author's Computation from E-views 10.00

From the result, it can be deduced that a positive linear association exists between Monetary Policy Rate and bank performance indicators; (69%, t=2.61 and p-value 0.03), TDEP and LADV (94%, t8.072 and p-value 0.000), TDEP and MPR (72%, t=2.97 and 0.0178), TA and LADV (94%, t=7.98 and p-value of 0.0000), TA and MPR (70%, t=2.78 with p-value of 0.0236), TA and TDEP (99%, t-20.13 with p-value of 0.0000), TL and LADV (94%, t=7.98 with p-value of 0.0000), TL and MPR (70%, t 2.78 with of p-value 0.036), TL and TDEP (99%, t20.13 with p-value of 0.0000), all share positive and significant correlation with Monetary Policy Rate related variables. This however is not the major estimation technique, given that correlation does not suggest impact or causation.

Table 4: Hypothesis One

Variable	Coefficient	Std. Error	t-statistic	Prob.*
LOG(TA(1)	0.908607	0.043695	0.7942O	0.0000
LOG(MPR)	0.352042	0.135003	0.607655	0.0402
C	0.135242	0.349946	0.386464	0.7125
R-Squared	99%			
Adj-R-Squared	99%			
F-Stat	423.8(0.0000)			
DW-Stat	1.86			

Source: Author's Computation from E-views 10.00

From the result, LOG (MPR) coefficient of (0.352042), Std. error (0.135003), t-statistic (20.79420) and p-value of (0.040). It was established that the coefficient of MPR was positively signed and the p-value was significant showing that MPR positively and significantly impacted on TA. It was also established that the model has goodness of fit as the R-squared suggests. This shows that 99% of the variation in the dependent variable is accounted for by the independent variables, with an unexplained variation of about 1%. The results further indicated that the F-Statistics show the overall statistically significant of the regression/model. The Durbin Watson Stat is also approximately 2.0 indicating that there is no existence autocorrelation

Step Three: The decision involving the rejection or acceptance of the null hypothesis based on the decision criterion of the techniques of analysis is made thus:

Given the coefficient value of MPR (0.352042) and the probability of t-statistics 0.04<0.05 being significant, we reject the null hypothesis and conclude that MPR positively and significantly impact on GDP.

Table 5: Hypothesis Two

Variable	Coefficient	Std. Error	t-statistic	Prob.*
LOG(TA(1)	0.908607	0.043695	20.79420	0.0000
LOG(MPR)	0.35242	0.135003	2.607655	0.0402
C	0.135242	0.349946	0.386464	0.7125
R-squared	0.992972			
Adjusted R-squared	0.990629			
F-statistic	423.8394			
Prob (F-statistic)	0.000000			
Durbin-Watson stat	1.862863			

Source: Author's Computation from E-views 10.00

The result revealed that MPR was positively signed (0.352042) and the p-value (0.0402) was significant. It was also established that, the model has goodness of fit as the R-squared suggests.

This shows that 99% of the variation in the dependent variable is accounted for by the independent variables, with an unexplained variation of about 1%. The Durbin Watson stat is approximately 2.0, thereby indicating that there is no existence of autocorrelation.

Step Three: The decision involving the rejection or acceptance of the null hypothesis based on the decision criterion of the techniques of analysis is made thus:

Given the coefficient value of MPR (0.352042) and the probability of t-statistics 0.04<0.05 being significant, we reject the null hypothesis and conclude that MPR positively and significantly impact on total

Table 6: Hypothesis Three

Variable	Coefficient	Std. Error	t-statistic	Prob.*
LOG(TA(1)	-0.784306	0.403535	-1.943590	13025
LOG(MPR)	-0.464137	0.290069	-1.600094	0.3556
LOG (MPR(1)	-0.888867	0.261209	-3.402900	11820
LOG(MPR (-2)	-0.086617	0.054434	-1.591232	0.3572
LOG (TA)	0.699033	0.435699	1.604397	0.3548
LOG (TA(-1)	2.103624	0.687623	3.059269	0.2011
LOG(TA(-2))	-0.758691	0.464908	-1.631918	0.3500
R-squared	0.997742			
Adjusted R-squared	0.984196			
Durbin-Watson stat	2.368397			

Source: Author's Computation from E-views 10.00

From the result, it was established that the coefficient of MPR (-0.464137) was negatively signed and the p-value (0.3556) was insignificant. It was also established, that the model has goodness of fit as the R-squared suggests. This shows that 99% of the variation in the dependent variable is accounted for by the independent variables; with an unexplained variation of about 1 %. The Durbin Watson statistic is also approximately 2.0, thereby indicating that there is no existence of autocorrelation.

Conclusion and Recommendation

The impact of Monetary Policy rate on Deposit money banks performance in Nigeria for the period 2010 to 2019 has been examined. The study empirically and theoretically investigated how monetary policy rate (MPR) have impact on deposit money bank performance. The research work used yearly data, beginning from 2010- 2019. Then ARDL Model and Linear Regression Analysis Method were used to estimate the model, where the result revealed how MPR has positive and significant impact to total asset, total loan in Nigeria and a negatively and insignificantly impact on total deposit expenditure. The scatter plot (graph) was equally used to show the positive and negative relationship between the dependent variable and the independent variables. The descriptive statistics was equally

used to show the total number of observations, and how close these observations are to themselves like median, mean, measures of spread and variations like minimum, maximum and standard deviation. It also measures the level of skewness and kurtosis. The study concludes that, MPR has significant impact on total assets, total loan of DMBs in Nigeria and a negative insignificant impact on total deposit expenditure.

Recommendations

The following recommendations are put forward

1. Monetary authorities should engage in frequent periodic reviews of interest rate policies considering current realities. The interest rate should be moderately regulated downward to a competitive level that would enhance investment activities in the banking sector.
2. The monetary authorities should continually evolve and adopt measures to effectively fight against high inflation rate, exchange rate volatility and other macroeconomic variables that acts as constraints to the performance of deposit money banks in Nigeria.
3. Furthermore, there should be adequate monitoring and feed-back mechanism to ensure that relevant policies on interest rates are implemented faithfully by all stakeholders. Appropriate sanctions should be imposed and enforced in all cases of non-compliance.
4. Nigerian deposit money banks should ensure good planning which encompasses budgeting, reviews and incentives. They should formulate critical, realistic and comprehensive strategic and financial plans. This will help them be better positioned to enjoy the positive effects of macroeconomic factors such as change in gross domestic product and foreign exchange in a volatile environment such as Nigerian economy.
5. Banks should try as much as possible to strike a balance in their loan pricing decisions. This will help them to be able to cover cost associated with lending and at the same time maintain good banking relationship with their borrowers.
6. It is essential for deposit money banks to build system and skills in liquidity management, asset and liability management and foreign exchange management. This will help to improve their performance.
7. There should be closer consultation and cooperation between commercial banks and the regulatory authorities so that the effect of regulatory measure on commercial banks will be taken into account at the stage of policy formulation.

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