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# Macroeconomic Variables and Profitability of Deposit Money Banks Listed in Nigeria

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***Abstract:***
*Deposit money banks will for long remain a dominant institution in the Nigeria economy because of the vital positions they play in the allocation of the country resources. In addition, a bank must be profitable in other to carry out all of its duties effectively but the inconsistency in the fluctuation of macroeconomic indicators such as the Inflation Rate, Monetary Policy Rate and Exchange Rate still threatens the day to day activities of deposit money banks operating in Nigeria as at today. This paper investigated macroeconomic variables and profitability of deposit money banks listed in Nigeria. The paper employed ex-post facto research design. The Fully Modified Ordinary Least Square (FMOLS) model was used to investigate the relationship between macroeconomic and banks profitability. The population was 15 deposit money banks in Nigeria. The sample size focused on 10 leading listed deposit money banks on the Nigeria Stock Exchange for a period of 10-years (2009 - 2018). Data was obtained from the published abstract of statistics, statistical bulletin and published annual reports of the selected financial institutions, validated by certification of external auditors and CAMA. The study adopted the use of panel data analysis. The paper indicated heterogeneous effects exist between macroeconomic variables and profitability of deposit money banks listed in Nigeria. ROA, ROE was not really affected by the macroeconomic variables but PBT was affected by INFR and MPR. PBT (F-stat =43.00972, Adj.$R^2$= 0.250093, p= 0.000). The paper concluded that there was a negative significant effect of these macroeconomic variables on the profitability of listed deposit money banks in Nigeria. The paper therefore recommended that government and other regulatory bodies should put in measures to ensure a decrease in macroeconomic variables.*

***Keywords****: Deposit money banks, exchange rate, inflation rate, macroeconomic variables, monetary policy rate, profit before tax*

## 1. Introduction

Banking is one of the most profitable and effective industry in every economy because of the features and special privileges the sector possesses which gives it high potentials for profitability. Banks also grant loans and advances to individuals to assist them in their businesses. The effect of macroeconomic variables on banking profitability cannot be overlooked because from previous economy challenges and reviews carried out, it has been the primary concern of investors, shareholders and lenders as well as managers in planning their programmes or future activities for greater efficiency and benefits. However, it seems that the functionality of deposit money banks is been threatened by macroeconomic factors.

Globally, profitability within the banking sector has been extensively examined in developed countries particularly in North America and Europe. It's argued that bank profitability and stability in monetary establishments may be a growing concern for regulators and bank supervisors. This problem has gained important attention among the researchers post 2007/2008 monetary crisis. The controversy on world monetary crisis accounts massive banks for the crisis that influenced considerably to the numerous economies (Adusei, 2015).

In line with, Vickers Report (2011), policymakers within the USA (US) are concerned about bank performance as well as the liquidity and capital. This strenuous effort by regulators follows Basel-III demand and imposing restrictions on banks to take a position in taking risk. Adusei (2015) characterized this argument in two manners that are the restrictions on larger banks below capital surcharges and the therefore the reduction in too-big-to-fail subsidies by the policymakers.

In Africa, Nigeria is the second largest economy with regards to gross domestic product (GDP) and second to South Africa. Since 2003, gross domestic product growth has averaged 6 to 7 percent. Gross domestic product per capita has geared up from below $700 in 2004 to $1,418 in December 2009 showing economic progress. Notwithstanding,

wealth distribution is heavily lopsided with 54 percent of the whole population classified as featured below the poverty level (CBN Annual Report, 2013).

Owing to the tight monetary policy since 2011, an objective of single digit inflation has been focused on. In December 2011, inflation rate declined to 10.3% and jumped to 12.6% in January 2012. This was as a result of the partial removal of fuel subsidy. Three different measures were put in place in January 2012 in other to scale back inflationary pressure. Cash reserve requirement (CRR) was raised from 1.0% to 8.0%, monetary policy rate (MPR) was raised from 6.25% to 12.0% and therefore the Liquidity Ratio (LR) was raised from 25.0% to 50.0%. (CBN, Annual Report, 2012) shows that movement in funds has been sluggish. The high rate of interest is as a result of the relatively high inflation within the economy. Deposit money banks in Nigeria increased their maximum lending rates from 22% - 33% to 25% - 27% in May 2012, resulting in high operating costs followed by decaying infrastructure.

Oyakhilomen and Rekwot (2014) concluded that all the macroeconomic variables history like inflation in Nigerian up to 1960s when 'Cheap money policy' was adopted by the government to stimulate development once independence is attained. The military government introduced inflation induces policies that sought after to place funds within the pocket of people following the oil boom of early 1970s. The inflationary pressure was augmented by high demand for foreign products and services since the worth of Nigerian monetary unit created such foreign goods rather cheaper than native products. The government of Buhari in 1984 introduced economic policies targeted at reducing the inflation exerted by Shagari administration. During the last half of 1999 commercial enterprise discipline was restored within the country which moderated the domestic costs in Nigeria and the official exchange rate.

The Central Bank of Nigeria (CBN) held its financial policy rate at 13.5% throughout September, 2019 meeting, as widely expected, as inflation remains persistently higher than the Bank's practice range of 6-9% and economic progress remains sluggish. Emefiele (2019) mentioned in a press conference that tightening rates may constrain growth whereas loosening it may permit inflation to rise, and that holding rates steady would allow the bank to appraise the impact of current policies, like changes to the loan to deposit ratios at banks, that comes into force at the end of September 2019, aiming to increase lending and foster growth. Interest Rate in Nigeria averaged 11.08% from 2007 until 2019, reaching an all-time high of 14% in July of 2016 and a record low of 6% in July of 2009 (CBN, 2019). Despite varied efforts by the government of the Federal Republic of Nigeria to keep up a stable exchange rate, the naira had increased from ₦8.0378-N85.98 in a progressive order from the year 1990 to the year 1999 and has continued to depreciate from ₦151.51 in 2010 to ₦162.30 in 2011 to ₦156.15 in 2012 all against one US dollar. Continuously, the naira depreciated at ₦158.05 in 2013, ₦175.85 in 2014, and ₦232.40 in 2015 and on 31st December, 2016, the exchange rate appreciated to ₦300.757 as at the time of writing this paper it is already at ₦365 per dollar. Also, as in May 2017, the average exchange of one dollar to naira (CBN rate) is N390 (Okika, Christian, Udeh & Okoye, 2018).

The issue of macroeconomic variables and profitability had received very little or no attention, attributed to the fact that much of the literature existing then on economic analysis has been developed in more advanced nations of the world where the rates are comparatively small. In recent time the need has risen for a more precise analysis because even in some of the advanced economies, the impact of macroeconomic variables and their means of profit can no longer be overlooked. This provokes this research interest for 'Macroeconomic variables and profitability of deposit money banks listed in Nigeria'.

## 2. Literature Review

### *2.1. Theoretical Review*

#### 2.1.1. Quantity Theory of Money by Friedman

Owing to the criticism that bedevilled the Keynesian theory, the economist theory was propounded by Milton Friedman in 1956. The role of financial policy that is in fact influencing the amount, price and direction of cash provided was effectively conversed by Friedman in 1968, whose position is that inflation is in everyplace a financial phenomenon. He recognizes that in the short run increase in cash supply can reduce unemployment but can also create inflation and so the financial authorities should increase cash supply with caution (Onyemaechi, 2005). The economist adopted Fisher's equation of exchange to explain their theory, as a theory of demand for cash and not a theory of output, price and cash income, by making a functional relationship between the quantities of real balances demanded a limited number of variables Monetarists like Friedman (1956-1963) emphasized cash supply as the key issue dominating the wellbeing of the economy. Thus, in order to promote steady of growth rate, the cash supply should grow at a fixed rate, instead of being regulated and altered by the monetary authority. Friedman equally argued that since money supply is substitutive not just for bonds but also for many goods and services, changes in money supply will therefore have both direct and indirect effects on spending and investment respectively.

The monetarist introduces an additional factor in the determination of interest rate, which is price expectation; an increase in supply of money has a liquidity effect on income effect and price effect. Also in the monetarist thinking, is that they felt it more important of money in explaining macro-economic behaviour monetarist important of money and therefore monetary policy was given attention in the neoclassical school as stated in the works of (Onouorah, Shaib, Oyathelemi, and Friday (2011) argued and said an expansive open market operation by the Central Bank, increases stock of money, which also leads to an increase in commercial bank reserves and ability to create credit and hence increase money supply through the multiplier effect. In order to reduce the quantity of money in their portfolios, the bank and non-bank organizations purchase securities with characteristics of the type sold by the Central Bank, thus stimulating activities in the real sector.

This read is supported by Tobin (1978) who examines transmission impact in terms of assets portfolio choice in that financial policy triggers asset change between equity, bonds, cash equivalent and bank deposits. He says that tight financial policy affects liquidity and banks' ability to lend that so restricts loan to prime borrowers and business companies to the exclusion of mortgages and consumption disbursement thereby catching effective demand and investment.

Conversely, the Keynesians posit a modification in money stock facilitates, activities in the financial market affecting interest rate, investment, output and employment Keynes (1930). Modigliani and Millar (1963) supports this view but however introduced the idea of capital rationing and said willingness of banks to lend affects monetary policy transmission. In their analysis of use of bank and non-bank funds in response to tight monetary policy, Oliner and Rudebush (1995) observe that there's no vital modification within the use of either however rather larger companies force out small companies in such times and in like manner.

Gertler and Gilchrist (1991) supports the view that small businesses expertise declines in loan facilities throughout tight financial policy and that they are affected more adversely by changes in bank related aggregates like broad money supply. Further investigation by Borio (1995) who investigated the structure of credit to non-government borrowers in fourteen industrial countries observe that it's been influenced by factors like terms of loan as interest rates, collateral demand and temperament to lend. This theory is vital as a result of it focus on monetary policy which is of course influencing the quantity, cost and direction of cash flow.

*2.2. Empirical Review*

In any country, the banking industry operates in the macroeconomic environment, whose dynamics are defined by prevailing macroeconomic variables in the country. Therefore, the profitability of the industry is affected by the prevailing macroeconomic variables. Available literature suggests that some empirical research efforts have been expanded at investigating and quantifying the direction and magnitude of the effects and, thus, seem to constitute a source of primary concern to financial portfolio investors and policy makers. Therefore, how macroeconomic variables affect banks' profitability has stimulated research interests among researchers in both developed and developing countries.

According to these researchers, they looked at the positive effects in both developed and developing countries. A study by Demirguc-Kunt and Huizinga (1999) found a positive but insignificant impact of macroeconomic factors on banks' profitability in European Countries. But a study by Athanasoglou, Brissimis & Delis (2008) showed significant positive effects of macroeconomic variables on profitability of Greek banks. The literature indicates that some recent studies found empirical results that support the positive and significant effects of macroeconomics variables and banks' profitability in European Union (Goddard *et al*., 2004), Great Britain, France, Italy and Switzerland (Gugler & Peev, 2018). In economies like Turkey, Alper and Anbar (2011) showed a positive and significant effect of macroeconomic variables on bank profitability. In the developing economies, Muhammad & Sara (2013) found that macroeconomic variables have insignificant positive effects on banks' profitability in Pakistan. Similarly, Simiyu & Ngile (2015) showed a positive but insignificant effect of macroeconomic variables on profitability of Kenyan banks.

But some other studies found that macroeconomic variables have negative effects on banks' profitability in India (Al-Homaidi, 2012; Mosab, Najib, Faozi, 2018). (Abreu & Mendes, 2002; Ayadi & Boujelbene, 2012; Ameur & Mhiri, 2013 ;) established a significant negative relationship between macroeconomic variables and profitability in Tunisia while (Zeitun, Tian& Keen; 2007), revealed an insignificant negative relationship between macroeconomic variable and profitability in Jordan. In economies like Indonesia (Syafri, 2012) found a significant negative effect on commercial banks profitability. In Kenya, Kanwal & Nadeem (2013) also found a negative and insignificant effect on macroeconomic variables and profitability. Some empirical studies in Nigeria found that macroeconomic variables have significant positive effect on banks' profitability (Aburime, 2008; Udeh, 2015), while others showed significant negative effect (Ogunbiyi & Ihejirika, 2014; Combey & Togbenou, 2017) found that macroeconomic variables exert significant negative effect on banks' profitability in Nigeria.

Some researchers also considered the mixed effects, In Jordan, Khrawish (2011) found significant and positive relationship between macroeconomic variables and profitability and also significant and negative relationship between profitability and macroeconomic variables.

Gulf Cooperation Council countries (Zeitun, 2012). The result showed a positive significance but some macroeconomic variables were negatively significant with banks' profitability in Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman. Evans (2014), showed a positive insignificant effects and negative insignificant effects of macroeconomic variables on banks profitability in Kenya. Osamwonyi & Chijuka (2014) found a positive significant impact on profitability but some variables indicated, no significant relationship or positive impact on profitability in Nigeria.

Johannes & Sheefeni (2015) had both positive and negative significant influence on commercial bank's profitability in Namibia. Zampara, Giannopoulos & Koufopoulos (2017) analysis revealed that both macroeconomic forces and industry related factors affects bank profitability, some factors showed a negative impact, whereas some have a positive impact on bank profitability in Greek. In Indonesia a study by Dewi, Soei & Surjoko (2019) showed both positive and negative significant influence on profitability.

However, the motivation for this study is to make contribution to existing debates among macroeconomic variables (inflation, exchange rate and monetary policy rate) and profitability (profit before tax, return on assets and return on equity) as a result of the mixed findings from existing literatures.

## 3. Methodology

The research design adopted for this paper is *ex-post facto.* The population of this study is 15 deposit money banks in Nigeria based from 2009 to 2018. A sample size of 10 listed deposit money banks on was selected for this paper. To achieve the stated objective of this paper, both the descriptive and inferential statistics is employed. The descriptive statistics examined the means, maximum, minimum and standard deviation parameters of the variables. The regression analysis is used to analyse the data from the annual reports and will show the extent of the causal relationship of the two variables (independent and dependent).

### *3.1. Model Specification*

This paper employed the linear regression models to investigate the issue of bank profitability as used by (Al-Homaidi, Mosab, Nijib & Faozi, 2018). Specifically, the deposit money banks profitability variables will be defined as Profit before Tax, Return on Assets, and Return on Equity while Macroeconomic Variables is captured by Inflation rate (INFR), Monetary Policy Rate (MPR) and Exchange Rate (EXR). Taking cognizance of existing models by this study will be coined and modified in respect to the objectives of the study and giving as:

The functional form of the models is as follows:

$PBT_{i,t}= f(INFR_{i,t}MPR_{i,t}EXR_{i,t})$ (1)

$ROA_{i,t}= f(INFR_{i,t}MPR_{i,t}EXR_{i,t})$ (2)

$ROE_{i,t}= f(INFR_{i,t}MPR_{i,t}EXR_{i,t})$ (3)

According to the econometic models, the regression analysis is stated below as:

$PBT_{i,t} = \alpha_1 INFR_{i,t} + \alpha_2 MPR_{i,t} + \alpha_3 EXR_{i,t} + \mu_{i,t}$

$ROA_{i,t} = \beta_1 INFR_{i,t} + \beta_2 MPR_{i,t} + \beta_3 EXR_{i,t} + \mu_{i,t}$

$ROE_{i,t} = \Theta_1 INFR_{i,t} + \Theta_2 MPR_{i,t} + \Theta_3 EXR_{i,t} + \mu_{i,t}$

Where;

$PBT_{i,t}$ = Profit before Tax of the deposit money banks in Nigeria

$ROA_{i,t}$= Return on Assets of deposit money banks in Nigeria

$ROE_{i,t}$ = Return on Equity of deposit money banks in Nigeria

$INFR_{i,t}$ = inflation rate in Nigeria

$MPR_{i,t}$ = Monetary policy rate in Nigeria

$EXR_{i,t}$ = Exchange rate of the currency in Nigeria

$_i$ = each of the banks in the cross section

$_t$ = denotes the point in time at which values of the variables was considered

$\mu_t$ = error term. It is included in the models to accommodate the influence of other variables on PBT,ROA,ROE that are not directly included in the model.

$\alpha_1$, $\beta_1$, and$\Theta_1$ (i = 1,2,3) = are coefficient of macroeconomic variables and relevant financial variables.

$\alpha_1$, $\beta_1$, and $\Theta_1$ = are the coefficient of inflation rate, and each measures the effect of a given change in inflation rate on PBT, ROA, ROE, either positively or negatively.

$\alpha_2$, $\beta_2$, and $\Theta_2$, = are the coefficient of monetary policy rate, and each measures the effect of a given change in monetary policy rate on PBT, ROA, ROE, either positively or negatively.

$\alpha_3$, $\beta_3$, and $\Theta_3$, = are the coefficient of exchange rate, and each measures the effect of a given change in exchange rate on PBT, ROA, ROE, either positively or negatively.

## 4. Results and Discussions

Results of the analysis are presented and discussed in this section; in the categories of descriptive statistics and unit root test results.

### *4.1. Descriptive Statistics and Results of Unit Root Test*

Results of the descriptive statistical analysis are shown in Table 1.

| | BPT | ROE | ROA | MPR | INF | EXR |
|---|---|---|---|---|---|---|
| Mean | 109345.8 | 0.309517 | 0.028908 | 11.00000 | 12.08344 | 185.0339 |
| Maximum | 128007.0 | 0.527881 | 0.045391 | 14.00000 | 16.60000 | 307.0900 |
| Minimum | 93849.00 | 0.214789 | 0.021137 | 6.000000 | 7.956881 | 118.5669 |
| Std. Dev | 8122.995 | 0.104581 | 0.008589 | 2.736307 | 3.004236 | 63.15665 |
| Observation | 100 | 100 | 100 | 100 | 100 | 100 |

*Table 1: Descriptive Statistics*

*Source: Authors' Computation (2020), Based on Data from Annual Reports of Selected Banks Listed on Nigerian Stock Exchange (NSE). Note: *, **, *** Is 10%, 5% and 1% Significant Level, Respectively.*

The banks' Profitability has a mean value of 109345.8 along with the maximum value 128007.0, a minimum value of 93849.00 and a standard deviation of 8122.995.

The Return on Equity posits a mean value of 0.309, a minimum value of 0.214789 and a standard deviation of 0.105, while the maximum is 0.527881.

The Return on Assets gives a maximum value of 0.045391, a mean value of 0.029, a minimum value of 0.021137 and a standard deviation of 0.009 respectively.

The Monetary Policy Rate posits a mean value of 11.000, a standard deviation of 2.736, and a maximum of 14.00000. This showed that that there is high variation among the data sets giving the value above 1.

Inflation Rate with a mean value of 12.083 and a standard deviation of 3.004 respectively depicts that there is high variation among the data sets giving the value above 1. The maximum value showed 16.60000.

Exchange Rate gives a mean value of 185.039, a maximum value of 307.0900 and a standard deviation of 63.157 respectively depicts that there is high variation among the data sets giving the value above 1.

*4.2. Unit Root Test*

Unit root tests were carried out to ascertain the time series properties of the variables in the models. Results of the test are presented in table 2.

| Variables | Level & (P-values) | First Diff (P-values) | Order of Integration |
|---|---|---|---|
| ROA | 1.08938<br>(0.8620) | -1.80900**<br>(0.0352) | I(1) |
| ROE | 3.73291<br>(0.9999) | -2.22267**<br>(0.0131) | I(1) |
| LBPT | -1.17369*<br>(0.0302) | -6.87452***<br>(0.0000) | I(1) |
| EXR | 4.92864<br>(1.0000) | -2.74837***<br>(0.0030) | I(1) |
| INF | 1.03582<br>(0.8499) | -2.13198**<br>(0.0165) | I(1) |
| MPR | 2.08368<br>(0.9814) | -8.34184***<br>(0.0000) | I(1) |

*Table 2: Phillip-Peron – Choi Z-stat Unit Root Test Results*
*Source: Authors' Computation (2020)*

The table 2 presents the Phillips-Perronpanel unit root tests using Choi-Z-stat test. The results showed that the null hypothesis of the unit roots for ROA, ROE, LBPT, EXR, INF and MPR is rejected at level. However, this hypothesis was accepted when the series are in their first differences. The results indicated that the series are not stationary at their level but became stationary at their first differences. Hence, the results showed that the appropriate estimation technique was fully modified ordinary least squares (FMOLS).

*4.3. Regression Analysis*

The results of models 1 to 3 regression analysis are presented in Table 3, Table 4 and Table 5 respectively.

| Dependent Variable: PBT | | | | |
|---|---|---|---|---|
| Method: Panel Fully Modified Least Squares (FMOLS) | | | | |
| **Variables** | **Coefficients** | **Std. Error** | **t-statistic** | **Prob. (p-value)** |
| INF | -0.008169 | 0.002110 | -3.871146 | 0.0002 |
| MPR | -0.004276 | 0.001860 | -2.298485 | 0.0242 |
| EXR | 0.000923 | 0.000125 | 7.413815 | 0.0000 |
| Adjusted R-squared | 0.250093 | F-statistic | 43.00972*** | 0.0000 |

*Table 3: Model 1 Regression Analysis Result*
*Source: Authors' Computation (2020)*

From table 3, The effect of INFR on PBT is negative and statistically significant. ($\beta$ = -0.008169, $t$ = -3.871146, $p$ = 0.0002), while for MPR there was a negative and statistical significant effect on PBT ($\beta$ = -0.004276, $t$ = -2.298485, $p$ = 0.0242) and lastly EXR showed a positive and statistical siginficant effect on PBT ($\beta$ = 0,000923, $t$ = 7.413815, $p$ = 0.0000).

| **Dependent Variable: ROA** | | | | |
|---|---|---|---|---|
| **Method: Panel Fully Modified Least Squares (FMOLS)** | | | | |
| **Variables** | **Coefficients** | **Std. Error** | **t-statistic** | **Prob.(p-value)** |
| EXR | 0.000144 | 7.80E-06 | 18.40791*** | 0.0000 |
| INF | -0.000399 | 0.000132 | -3.018663*** | 0.0034 |
| MPR | 7.96E-05 | 0.000117 | 0.683429 | 0.4964 |
| Adjusted R-squared | 0.945601 | F-statistic | 621.1181*** | 0.0000 |

*Table 4: Model 2 Regression Analysis Results*
*Source: Authors' Computation (2020)*

From table 4, INFR has a negative and statistical siginficant effect on ROA ($\beta$ = -0.000399, $t$ = -3.018663, $p$ = 0.0034), while for MPR there was a positive and statistical significant effect on ROA ($\beta$ = 7.96, $t$ = 0.683429, $p$ = 0.4964) and lastly EXR showed a positive and statistical siginficant effect on ROA ($\beta$ = 0.000144, $t$ = 18.40791, $p$ = 0.0000).

| **Dependent Variable: ROE** | | | | |
|---|---|---|---|---|
| **Method: Panel Fully Modified Least Squares (FMOLS)** | | | | |
| **Variables** | **Coefficients** | **Std. Error** | **t-statistic** | **Prob.(p-value)** |
| EXR | 0.001698 | 0.000123 | 13.76037 | 0.0000 |
| INF | -0.007850 | 0.002091 | -3.753883 | 0.0003 |
| MPR | 0.002587 | 0.001844 | 1.403213 | 0.1646 |
| Adjusted R-squared | 0.896656 | F-statistic | 329.7002 | 0.0000 |
| Adjusted R-squared | 0.945601 | F-statistic | 621.1181*** | 0.0000 |

*Table 5: Model 3 Regression Analysis Results*
*Source: Authors' Computation (2020)*

From table 5, INFR has a negative and statistical siginficant effect on ROE ($\beta$ = -0.007850, $t$ = -3.753883, $p$ = 0.0003), while for MPR there was a positive and statistical significant effect on ROE ($\beta$ = 0.002587, $t$ = 1.403213, $p$ = 0.1646) and lastly EXR showed a positive and statistical siginficant effect on ROE ($\beta$ = 0.001698, $t$ = 13.76037, $p$ = 0.0000).

*4.4. Discussion of Findings*

On the inferential justification, the results showed that rate of inflation and monetary policy have negative effects on deposit money banks whereas exchange rate posits a positive effect on deposit money banks profitability. The study was in line with the prevailing work of Nouaili, Abaoub and Ochi (2018) who contends that the business cycle, measured by the growth of the gross domestic product is supposed to be favourable to the improvement of the performance of the banks and negative relationship was found with inflation rate. Those variables have to be compelled to arouse the interest of the decision-makers of economic and restructuring policies to direct their methods and aiming corrective actions to push the performance of banking and financial systems.

The results additionally showed that monetary policy is negative and has an insignificant effect on return on assets while inflation rate is negative but significantly explained return on assets, however, exchange rate is positively and significantly explained return on assets. The study of Udeh (2015) additionally found positioning within the study findings. His study discovered that cash reserve ratio, liquidity ratio and interest rate did not have significant impact on the profit before tax. However, minimum rediscount rate was found to have significant effects on the profit before tax of the banks.

Aremu, Ekpo and Mustapha (2013). The empirical results indicated amongst others, that inflation has significant positive effects on bank profitability and insignificant positive effects on profitability in the country.

Contrarily, the study doesn't align well with the already existing study of Ishfaq and Khan (2015) who investigated the impacts of internal and external factors and macroeconomic variables on profitability on commercial banks analysis confirms that the bank size, capitalization, labour productivity, concentration and inflation had significant impact on the bank profitability in Pakistan. This is also usually accompanied by higher interest rates resulting into a positive relationship between inflation and performance of banks. Similarly, the study doesn't align with the conclusions of Aburime (2008) results, disclosed that real interest rate, inflation, monetary policy and foreign exchange regime are positively associated with banks' profitability.

## 5. Conclusion and Recommendations

In general, the study concludes that heterogeneous effects exist between macroeconomic variables and profitability of deposit money banks listed in Nigeria. Majorly the ROA and ROE weren't really affected by the macroeconomic variables but PBT was affected by INFR and MPR which the study concluded by saying there was a negative significant effect of these variables on the profitability of deposit money banks in Nigeria. Based on the findings and conclusion, this paper recommends that the Central bank of Nigeria should reduce monetary policy rate, which is the benchmark rate that determines the rate at which the deposit money banks make funds available to their customers, investors, borrowers or community. At higher interest rate, the lending rates of deposit money banks will reduce, borrowing will be discouraged and profit of the bank will be negatively affected. Therefore, to make sure that the banks are able to lend money at a good rate, the monetary policy rate (MPR) should be reduced. Since INFR has a negative effect on profit, which means that if inflation rate is increasing, and manifests in declining profit of the banks, the government and other regulatory bodies should measure in place to stimulate decreases in the rate of inflation.

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