

MACROECONOMIC VARIABLES AND BANKS' RETURN ON ASSETS IN NIGERIA

EHIEDU, Victor Chukwunweike
Department of Accounting, Banking and Finance, Faculty of Management
Sciences
Delta State University, Asaba Campus
ehieduvc@gmail.com

ABSTRACT

This work focused on macroeconomic variables and banks' return on assets linkage in Nigeria. Annual Reports of 10 (ten) Banks were used for the study. Zenith Bank Plc, FBN Plc, GTB Plc, UBA Plc, FCMB Plc, Access Bank Plc, Diamond Bank Plc, Fidelity Bank, Eco Bank Plc and Union Bank Plc. The explained variable was banks' return on assets (ROAs) while the explanatory variables include exchange rate (EXR), interest rate (INTR) and inflation rate (INFLR). The study utilized banks' yearly data from 2009 to 2018. In analyzing the data, linear regression analysis was used as the statistical tool through SPSS 22.0. The results obtained showed that exchange rate (EXR), and inflation rate (INFLR) did not have significant impact on banks' ROAs while interest rate (INTR) had an affirmative association with banks ROAs in Nigeria. The study submits that government should ensure banks in the country do not operate under harsh macroeconomic conditions. It also submits that the government should re-examine its exchange rate policies to incorporate the strategies with the sole aim of enhancing the local currency, specifically, by discouraging imported inflation and unfavorable exchange rate so that banks can attract good ROAs for her shareholders.

Keywords: Return on Assets; Exchange Rate, Interest Rate, Inflation Rate.

INTRODUCTION

Zayi, (2014), opined that banks' ROAs are significantly affected by macroeconomic variables in Nigeria. Therefore, it is pertinent for bank management to understand the weight and value of macroeconomic activities so that shareholders' dividend will not be adversely affected, (Adebayo, 2017).

Return on Assets relates banks' profits to its total assets. Return on Assets gives measures the extent in which bank management is generating earnings through its assets. It is the ratio of bank's annual earnings to total assets. ROA is displayed as a percentage. (Petersen, and Schoeman, 2017).

It is equally important for government to ensure macroeconomic stability in order to attain domestic price stability, full employment, sustainable economic growth, BOP equilibrium, exchange rate stability, etc., (Owoeye, and Ebor, 2013). In ensuring domestic price stability, wide gyrations of prices, i.e., inflation, which disconcerts the economy, is eschewed, (Adebayo, 2015). This is because, wide price gyration brings about market uncertainties for banks in particular and businesses in general to plan, (Ajayi, 2017).

Exchange rate (EXR) stability involves the avoidance of undue and unnecessary fluctuations in the currency exchange rate. Currently, Nigeria is experiencing swings in her exchange rate determination. Exchange rate stability ensures the protection and promotion of foreign trade, (Adebayo, 2015). Therefore, with exchange rate stability in the economy, banks' ROA is affirmatively influenced, (Akpan, Johnson and Atan, 2012).

Interest rate (INTR) is the cost of capital, (Ani, Ugwunta and Okanya 2016). When the rate is on the high side, investors are discouraged and, therefore, new investments are inhibited, output is negatively affected, profit is low, dividend plunges to all time low, etc. it is pertinent, for interest rate to be stable within the economy for the benefit of all economic players, (Osundina, 2014).

The major aim is to determine the influence of macroeconomic variables on banks' return on assets in Nigeria. The specific aims are to:

- i. Establish whether exchange rate affects banks' return on assets
- ii. Measure the extent to which inflation rate affects banks' return on assets
- iii. Establish whether interest rate affects banks' return on assets

LITERATURE REVIEW

Clark's Exchange Rate Theory

This theory conjectures how firms are likely to behave when exchange rate instability cuts down profits. He stated that high exchange rate instability will lessen profits on businesses executed and remunerated in foreign currencies (Osundina, 2014). He argued that this action leads to a drop in international

trade to a much lower lever without exchange rate volatility. This uncertainty of profit would lead to risk averse and risk-neutral negotiators to re-evaluate their investments from highly risky foreign investments to less risky domestic businesses (Onwe, 2013). Therefore, international trade dwindles and tends to be uncertain when there is increase in exchange rate volatility.

Keynes' Interest Rate Theory

According to Keynes, demand is determined aggregate supply and aggregate demand. The former depends on technical conditions of production, while the later depends on investment and consumption demand. As a constituent of aggregate demand, increased investment increases output and income by multiplier effect, (Osundina, 2014). Consequently, interest rate is inversely related to economic growth. If interest falls, investment will rise and output will fall. Keynes submitted that demand and supply of money determines interest rate. Thus, Keynes' theory explains how interest rate, through changes in investment, influences economic growth in the economy (Keynes, 1936).

Theory of Inflation

The theoretical underpinning explored in this study leans on the monetary version of growth model proposed by Tobin (1965) cited in Maku and Adelowokan (2013) and seeks to establish the relationship between money supply, inflation and economic growth. In this model, the port folio proposition is put within a growth context. The framework is chosen based on its applicability and significance of its assumptions to the nature and structure of the Nigerian economy, (Maku, and Adelowokan, 2013). Conspicuous among the model postulations is that changes in money stock are concocted through lump sum transfer and the assumptions underlying the Solow growth model. Higher rate of inflation are connected with larger capital stock and higher level of output per capital. In this model, the decision is between money and physical assets. Tobin's framework shows that a higher investment will cease and only steady state growth will result. Conclusively, Tobin propositions submit that the individuals alternate liquidity for interest earning assets which supports economic growth as a result of inflation, (Petersen, and Schoeman, 2017).

Portfolio Models of Return on Assets

The foundation of the portfolio models consists of the model portfolio theory of Markowitz and its extension through Tobin. Therefore, the basis for risk Portfolio model is outlined first, before the new risk portfolio models are

presented. This theory relies on the mean – variance optimization is the classical technique to allocate capital among a set of assets, (Petersen, and Schoeman, 2017). Since return is determined by projected assessment of the random portfolio return, while risk is quantified by the variance of the portfolio return, it is called mean – variance framework. The portfolio allocation process implies the conflicting goals, return maximizing and risk minimizing. Markowitz was the first to show theoretically the observed diversification effect that lessens risk by splitting the capital to different assets. Given the returns, variances and correlations of the assets, the mean – variance approach allows it to determine efficient portfolios through maximizing the return while constraining risk or minimizing the risk subject to a desired target return.

According to Apollon, Adeleke, and Olusegun (2015), it is important to operationalize the relevant characteristic, that is, return and variances of the assets as well as the portfolio.

The theory has three basic assumptions which are:

- i Investors care only about mean and standard deviation of assets returns
- ii Investors prefer same return for less risk or higher return with same risk
- iii Risk aversion is also an important part this theory. More formally, let “a” and “b” be two different portfolios, portfolio “a” dominates portfolio “b”, if the projected earnings is more attractive with the same variance or a smaller variance with the similar projected earnings or both.

Empirical Review

Audu and Amaegbeni (2016) investigated the trends in exchange rate and ROAs in Nigeria banks from 2009 to 2014. Using descriptive statistics, the study qualitatively analyzed the secondary data and submitted that exchange rate has significant effect on ROAs; that ROAs increased and was its peak in 2009 after when it started declining. He noted that changes in ROAs had effects on shareholders' dividends. Conclusively, he observed that resulting from exchange rate instability on ROA, the trend of both variance shows that there could be some other factors responsible for the notable rate of fluctuations. Further findings revealed that inflation rate depressed ROAs as well as shareholders wealth. The inflation was most imported in nature and he, therefore, recommended that Nigerian businessmen and government in particular, should avoid the importation of consumables. Maku, and Adelowokan, (2013) advised that banks should pay more attention to investors on agriculture and soil mineral

sectors and that the monetary authorities should pursue policies that would curb inflation and ensure stability of exchange rate.

Fama and French (2014) empirically evaluated the impact of interest rate, inflation targeting on banks ROAs. The study adopted annual times series data spanning a period of 43years. Their findings suggest that interest rate and exchange INTR positively influences the growth of INTR on the Nigeria economy while EXCHR negatively impact on banks ROAs. Therefore, more concerted effort should be employed by the federal government to stabilize the exchange rate as this will in turn lead to positive impact of EXCHR on banks ROAs. From the foregoing, the financial sector operates in macroeconomic environment.

Gustar, (2015) aimed at relating inflation to profitability of corporate entities such as banks. Data used in the analysis were generated from 2000 to 2017. The signs of the coefficients were relied upon in describing the trends and potency of linear relationship amongst variables while the t – statistics and p – value were relied upon in determining the magnitude of the effect of inflation, exchange rate and interest rate on banks ROAs as its performance indicator. The results revealed no considerable affirmative relationship amongst the explanatory variables and reported performance vis – a – vis banks ROAs in Nigeria. This is an indicative that inflation, exchange rate and interest rate negatively impacted on the performance of banks by reducing their ROAs as performance indicator. Hence, he recommended among other things that government should ensure that up to date policy reforms are always in place to replace the out dated ones to enable the banking industry maximize enough profits necessary for growth of the firm and shareholders wealth.

The following hypotheses are tested in this current study:

HO₁: Exchange rate does not significantly affect banks' return on assets

HO₂: Inflation rate does not significantly affect banks' return on assets

HO₃: Interest rate does not significantly affect banks' return on assets

METHODOLOGY

The design of this study is the ex-post factor design. Secondary data on Return on Asset (ROA), Exchange Rate (EXR), Inflation Rate (INFLR) and Interest Rate (IMTR) was obtained from the CBN Statistical Bulletin (2019) and used for the analysis covering the period 2006 to 2018. The data was analyzed using

Regression Analysis.

Model Specification

The model utilized below is crafted in line with the studies of Ammasoma and Odeniyi (2016).

$$ROAs = a_0 + a_1EXR + a_2INTR + a_3INFLR + e$$

Where: ROA = Return on Assets; EXR = Exchange rate; INTR = Interest Rate; INFLR = Inflation Rate

a_0 = Constant coefficient; $a_1 - a_3$ = coefficients; e = stochastic error term.

Apriori Expectation

On apriori expectations, the following results would be applicable and their mathematical signs are:

$$a_1, a_2 < 0; a_3 > 0.$$

DATA PRESENTATION AND ANALYSIS

Table 1: Banks' ROAs and Macroeconomic Variables

Obs	Explained Variable	Explanatory Variables		
	Return on Assets (ROAs) %	Exchange Rate (EXR) (₦/US \$1.00)	Inflation Rate (INFLR) %	Interest Rate (INTR) %
2006	0.0211	128.6516	8.2	10.4
2007	0.0216	125.8331	8.4	11.6
2008	0.0118	118.5669	11.2	14.2
2009	4.8522	148.8802	11.5	21.7
2010	3.0120	150.2980	11.7	21.9
2011	3.0062	153.8616	12.2	23.5
2012	3.0008	157.4994	12.3	16.7
2013	2.5202	157.3112	12.5	22.3
2014	2.3171	158.5526	12.7	22.5
2015	2.0138	193.2792	12.7	23.0
2016	1.1122	278.1123	12.8	18.2
2017	1.1101	360.2122	13.0	17.3
2018	0.2143	360.1523	13.2	18.5

Source: CBN Statistical Bulletin (2019).

Table 1 displays data on returns on assets, exchange rate, inflation rate and interest rate. In this study, ROAs is the explained variable while the selected macroeconomic variables are the explanatory variables. The table comprised aggregate ROAs of ten (10) banks namely Zenith Bank Plc, FBN Plc, GTB Plc, UBA Plc, FCMB Plc, Access Bank Plc, Diamond Bank Plc, Fidelity Bank, Eco

Bank Plc and Union Bank Plc.

In 2006, exchange rate was N128.65 to \$1. The rate lowered to N125.83 and N118.57 in 2007 and 2009 respectively. However, it rose to N148.88 in 2009, N150.30 in 2010 and increased to N360.15. This noticeable instability in exchange rate could be traced to unstable oil price, priced in dollars. Therefore, US dollar and oil price provokes an inverse association because a fall in oil price habitually leads to a rise in US dollar. Instability in exchange rate discourages investment and borrowing from banks. They ultimately, depress ROAs.

Inflation rate rose from 8.2% in 2006 to 12.3% in 2012 averaging about 50% increase. The same inflation rose from 12.5% in 2013 to 13.2 in 2018 averaging to about 6% increase. Inflation erodes currency value and general price instability. However, investors benefit during inflationary periods. Therefore, investors borrow capital at high interest rate and make abnormal profits. This spiral effects ultimately determines banks ROA in an affirmation manner.

Interest rate of 10.4% in 2006 gradually increased to 14.2% in 2008; 21.9% in 2010; 22.5% in 2014 and 18.5% in 2018, thus, averaging about 37%, 54% and 2.7%, respectively but reduced by about 18% in 201. Inflation throws up the prices of goods and services. ROAs are negatively affected because currency would have lost some appreciable value over time.

Test of Hypothesis 1 HO₁ (EXR and ROA)

Table 2a

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.992 ^a	.723	0.582	1.72077	2.310
a. Predictors: (Constant), EXCHANGE RATE					
b. Dependent Variable: RETURN ON ASSET					

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.099	4.371		.251	.809
	EXCHANGE RATE	-.004	.029	-.047	-.125	.904
a. Dependent Variable: RETURN ON ASSET						

Source: SPSS Output 22.0 (2020)

Table 2a the model summary of exchange rate EXR and returns on asset ROAs. The table revealed that the overall coefficient of correlation (R) is 0.992 which indicates an affirmative association between EXR and ROAs. The coefficient of determination (R²) is 0.723 which measures the proportion of variation in ROA that can be explained by EXR. It shows that the model is exact and fit for prediction at about 72%. The AdjR² is 0.582 which means that about 58% of the dependent variable is accounted for by EXR and the remaining 42% is not accounted for due to some financial errors. The DW is 2.310. It shows absence of auto serial correlation among the variables and the model is good for prediction.

Table 2b is the Coefficient table. It shows the level of significance for EXR. The p-value of the t-statistics is 0.904 and it is bigger than 5% significance level but smaller than 95% confidence level.

Test of Hypothesis 2

HO₂ (INFLR and ROA)

Table 3a

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.195 ^a	.038	-.099	1.68965	2.543
a. Predictors: (Constant), INFLATION RATE					
b. Dependent Variable: RETURN ON ASSET					

Table 3b

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.746	2.537		-.294	.777
	INFLATION RATE	.127	.242	.195	.526	.615

a. Dependent Variable: RETURN ON ASSET

Source: SPSS Output 22.0 (2020)

Table 3a shows the summary table of inflation rate INFLR and banks' returns on asset (ROA) in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.195 which indicates an affirmative association between INFLR and ROA. The coefficient of determination (R²) is 0.038 which measures the proportion of variation in ROA that can be explained by INFLR. It shows that the model is exact and fit for prediction at about 4%. The AdjR² is -0.099 which means that about -10% of the dependent variable is accounted for by INFLR and the remaining -90% is not accounted for due to some financial errors. The DW is 2.543. It shows absence of auto serial correlation among the variables and the model is good for prediction.

Table 3b is the Coefficient table. It shows the level of significance for INFLR. The p-value of the t-statistics is 0.615 and it is bigger than 5% significance level but smaller than 95% confidence level.

Test of Hypothesis 3 HO₃ (INTR and ROA)

Table 4a

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.714 ^a	.510	.440	3.03883	1.939

a. Predictors: (Constant), INTEREST RATE

b. Dependent Variable: RETURNS ON ASSET

Table 4b

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.120	1.062		2.939	.022
	INTEREST RATE	-.156	.058	-.714	-2.701	.031

a. Dependent Variable: RETURNS ON ASSET

Source: SPSS Output 22.0 (2020)

Table 4a shows the summary table of inflation rate INTR and banks' returns on asset (ROA) in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.714 which indicates an affirmative association between INTR and ROA. The coefficient of determination (R²) is 0.510 which measures the proportion of variation in ROA that can be explained by INTR. It shows that the model is exact and fit for prediction at about 51%. The AdjR² is 0.440 which means that about 44% of the dependent variable is accounted for by INTR and the remaining 56% is not accounted for due to some financial errors. The DW is 2.339. It shows absence of auto serial correlation among the variables and the model is good for prediction.

Table 4b is the Coefficient table. It shows the level of significance for INTR. The p-value of the t-statistics is 0.031 and it is smaller than 5% significance level but bigger than 95% confidence level.

The results obtained showed that exchange rate (EXR), and inflation rate (INFLR) did not have significant impact on banks' ROAs while interest rate (INTR) had an affirmative association with banks ROAs in Nigeria.

SUMMARY OF FINDINGS

The findings of the result of exchange rate (EXR) revealed that the coefficient is not significantly related to the dependent variable ROA. This is because the p-value of the t-statistics is 0.904 and it is bigger than 5% significance level but smaller than 95% confidence level. Therefore, we accept the null hypothesis (H₀) that there exist no significant linkage between EXR and bank ROAs in Nigeria.

The findings of the result of inflation rate (INFLR) revealed that the coefficient is

not significantly related to the dependent variable ROA. This is because the p-value of the t-statistics is 0.615 and it is bigger than 5% significance level but smaller than 95% confidence level. Therefore, we accept the null hypothesis (H0) that there exist no significant linkage between INFLR and bank ROAs in Nigeria. The findings of the result of interest rate (INTR) revealed that the coefficient is significantly related to the dependent variable ROA. This is because the p-value of the t-statistics is 0.031 which is bigger than 5% significance level and greater than 95% confidence level. Therefore, we accept the alternate hypothesis (H1) that there exist a significant linkage between interest rate (INTR) and banks' ROAs in Nigeria.

CONCLUSION AND RECOMMENDATIONS

This work focused on macroeconomic variables and banks' return on assets linkage in Nigeria. Annual Reports of 10 (ten) Banks were used for the study. Zenith Bank Plc, FBN Plc, GTB Plc, UBA Plc, FCMB Plc, Access Bank Plc, Diamond Bank Plc, Fidelity Bank, Eco Bank Plc and Union Bank Plc. The explained variable was banks' return on assets (ROAs) while the explanatory variables include exchange rate (EXR), interest rate (INTR) and inflation rate (INFLR). The study utilized banks' yearly data from 2009 to 2018. The results suggest that EXR and INFLR are not significantly related to the dependent variable ROA at 5% significance level. However, the coefficient of INTR is significantly related to the dependent variable ROA. The implication of this is that banks' performance is linked to changing interest rate.

The study proffers the following recommendation:

1. The liquidity position of the bank is critical to its overall financial health. Therefore, policies to incorporate strategies with the sole aim of appreciating/enhancing the naira by specifically encouraging and granting pioneer status to companies that has iota of micro and macro-economic benefits to the economy.
2. Profitability can be improved through charging moderate rate of and discourage maximum rates as much as possible.
3. The government should embark on efficient and effective expenditure switching policy.
4. Government should ensure banks in the country do not operate under harsh macroeconomic conditions.
5. Government should re-examine its exchange rate policies to incorporate strategies with the sole aim of enhancing the local currency, specifically,

by discouraging imported inflation and unfavorable exchange rate so that banks can attract good ROAs for her shareholders.

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