Macroeconomic Variables and Bank's Performance in Canada, Ghana and Nigeria: A Panel Data Analysis

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Abstract

Bank performance has been fluctuating over the years all over the world. Several attempts have been made to unravel possible causes and how they can be corrected. The aim of this study is to examine macroeconomic variables and bank performance of Nigerian, Ghana and Canadian quoted banks for a period of 2008 to 2017. The bank performance is measured by return on assets (ROA) and as a function of macroeconomic variables. This study adopted Ex-po factor research design and a panel data covering a total of 10 years period from 2008-2017 which were collated from published annual reports of banks. The population consists of 15 banks from 3 different countries with 5 banks from each country. The study employs the convenience sampling in selection of the sampling size. The results from the study showed that inflation rate and interest rate has an insignificant effect on Bank Performance of the sampled firms in Ghana, Nigeria and Canada while exchange rate has an insignificant effect on bank performance of the sampled firms in Canada and Ghana but has a significant effect on bank performance of sampled firms in Nigeria during the years understudied.

Keywords: Exchange rate, Inflation rate, Interest rate, Macroeconomic variables, Return on Asset, Bank performance

INTRODUCTION

Aside being the highest contributor to the market capitalization of the Nigerian stock exchange and smooth and stable income provision to money and capital market, banking industry is capable of attracting potential investors which is a source of every economic development. Financial institutions, banks in particular play a crucial role in the development process of mobilizing fund from the surplus sector of the economy to the deficit economy. Banks helps in increasing the quantum of national savings and investment. Banks enhance stable and smooth income to attract potential investors in line with Modigliani and Miller (1958) theory that investors generally have preference for smooth and stable income. Banking in its modern sense evolved in the 14th century in the prosperous cities of renaissance Italy but in many ways was a continuation of ideas and concepts of credit and lending that had their roots in the ancient world. The Nigerian banking sector over the past 20 to 25 years has experienced boom and bust in a cyclical pattern. After the implementation of the structural adjustment program(SAP) in 1986 and the deregulation of the financial sector, new banks emerged, mainly because of the attractive arbitrage opportunities in the foreign exchange market (Heiko 2007). Prior to the deregulated period, financial intermediation never took off and even declined in 1980s and 1990s (capirio and kligbiel 2003). The sector was highly oligopolistic with remarkable features of market concentration and leadership. Lemo (2005) noted that there are ten Nigerian banks that control more than 50% of the aggregate assets of the banking sector, more than 51% of the aggregate deposit liabilities and more than 45% of the aggregate credits.

In the 1980s and early 1990s a number of developed economies, developing countries, and economies in transition experienced severe banking crises. Such proliferation of large-scale banking sector problems has raised widespread concern, as banking crises disrupt the flow of credit to house holds and enterprises, reducing investment and consumption and possibly forcing viable firms into bankruptcy. Banking crises may also jeopardize the functioning of the payments system and, by undermining confidence in domestic financial institutions, they may cause a decline in domestic savings and/or a large-scale capital outflow. Finally, a systemic crisis may force sound banks to close their door. In most countries, policymakers have responded to banking crises with various interventions, ranging from loose monetary policy to the bailout

insolvent financial institutions with public funds. Even when they are carefully designed, however, rescue operations have several drawbacks: they are often very costly for the budget; they may allow inefficient banks to remain in business; and they are likely to create the expectation of future bailouts, thereby reducing incentives for adequate risk management by banks. Rescue operations may also weaken managerial incentives when, as is often the case, they force healthy banks to bear the losses of ailing institutions. Finally, loose monetary policy to prevent banking sector losses can be inflationary and, in countries with an exchange rate commitment, it may trigger a speculative attack against the currency.

Preventing the occurrence of systemic banking problems is undoubtedly a major concern of policymakers, and understanding the mechanisms that are behind the surge in banking crises in the last fifteen years is a first step in this direction. Recently, a number of studies have analyzed various episodes of banking sector distress in an effort to draw useful policy lessons, Most of this work consists of case studies, and econometric analyses are few. Gonzalez-Hermosillo, Pazarbalioglu, and Billings (1997) use an econometric model to predict bank failures using Mexican data for 1991-95. In a paper focused primarily on the connection between banking crises and balance of payments crises, Kaminsky and Reinhart (1996) examine the behavior of a number of macroeconomic variables in the months before and after a crisis in a sample of 20 countries; using a methodology developed for predicting the turning points of business cycles, they attempt to identify variables that act as "early warning signals" for crises. The problem simply includes such practices as fraudulent activities and mismanagement by bank officials, poor liquidity and unavailability of adequate credits to deserving customers. The phenomenon technically referred to as "Bank Distress" has become a regular feature in the Nigerian industry. It includes the washing away of the capital of organizations which is commonly traced to the indigenous banks. People and government set up these banks with the objective of meeting the business needs of fellow economic entities. In respect to all these problems, further deep enquiry is required to understand the influence of macro economic variables on bank performance in Canada, Ghana and Nigeria. The objectives of this study is to examine the selected macro economic variables(interest rate, exchange rate and inflation) on the performance of selected banks in Canada, Ghana and Nigeria using Return on Assets (ROA) as a measurement for bank performance. This research work covered fifteen banks over a period of ten years which is sufficiently wide enough to depict the effect of macro economic variables on bank performance.

LITERATURE REVIEW

Empirical Review

Inflation and Bank Performance

Gul *et al*. (2011) examine the relationship between bank specific and macroeconomic characteristics over bank profitability by using data of top fifteen Pakistani commercial banks over the period 2005-2009. They investigates the impact of assets, loans, equity, deposits, economic growth, inflation and market capitalization on major profitability indicators i.e., return on asset, return on equity, return on capital employed and net interest margin separately. The empirical results have found strong evidence that both internal and external factors have a strong influence on the profitability. Athanasoglou *et al*. (2006) examine the profitability behaviour of bank-specific, industryrelated and macroeconomic determinants, using an unbalanced panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. The estimation results indicate that, with the exception of liquidity, all bank-specific determinants significantly affect bank profitability in the anticipated way. The macroeconomic environment has a direct impact on the aggregate performance of the industry. Concentration is positively correlated with bank profitability. With respect to the macroeconomic variables, inflation has a strong effect on profitability. Sayilgan and Yildirim (2009) investigates the relationship between the return on assts and the return on equity ratio for a sample of Turkish banks for the 2002-2007 time period using monthly data. The profitability of the banking sector seems to have increased along with declining inflation rate, consistently increasing industrial production index and improving budget balance. It is found that profitability positively affected by capital adequacy and negatively by growing off-balance

sheet assets.Demirguc-Kunt and Huizinga (1999) Notice that banks in developing countries tend to be less profitable in inflationary environments, particularly when they have a high capital ratio. In these countries, bank costs actually increase faster than bank revenues.

Exchange Rate And Bank Performance

Osundina*et al.,* (2016) examines the effect of exchange rate on bank performance and concluded that exchange rate has no significant effect on bank performance using ROA as a measure while exchange rates fluctuation had a significant negative effect on bank liquidity using LDR as a measure. Lambe Isaac (2015) examines the effect of exchange rate on bank performance and indicated that there is a significant relationship between exchange rate management and financial institutions especially banks. Manyok, Andrew J (2016) examined the effects of exchange rate fluctuations on financial performance of commercial banks in south sudan and found out that exchange rate fluctuations and financial performance had a weak negative association.

Interest Rate and Bank Performance

Afanasieff *et al*. (2002) examines the determinants of banks interest spreads using macro and micro variables in Brazil and find that macroeconomic variables have the most impact on bank interest spread in Brazil. Naceur (2003) investigates the impact of banks characteristics, final structure and macroeconomic indicators on banks net interest margin and profitability in Tunisian Banking Industry for the 1983-2000 period. High net interest margin and profitability tend to be associated with banks that hold o relatively high amount of capital, and with large overheads. Molyneux and Thorton (1992) were the first to investigate a multi-country setting by examining the determinants of bank profitability for a panel of 18 European countries for the 1986-1989 time period. It is found that significant positive association between the return on equity and the level of interest rates in each country, bank concentration and government ownership. It is generally believed that a rising interest rate should lead to higher banking sector profitability by increasing the spread between the saving and the borrowing rates. Hanweck and Kilcollin (1984) find that this relationship is particularly apparent for smaller banks in the USA during the 1976-1984 period.They notice that falling interest rates during recession lead to slower growth in loans and increase in loan loss. Consequently, banks, particularly the small ones, may have difficulty in maintaining profit as market rate drops. Further studies by Demirguc-Kunt and Huizinga (1999), Staikouras and Wood (2003) and Cheang (2005) all notice a positive relationship between interest rates and bank profitability.

Theoretical Review

A lot of arguments have been made trying to figure out the relationship between macroeconomic variables and bank performance. The presently dominant financial intermediation theory holds that banks are merely financial intermediaries, not different from other non-bank financial institutions: they gather deposits and lend these out. In the words of recent authors, "Banks create liquidity by borrowing short and lending long" Dewatripont, Rochet, &Tirole (2010), meaning that banks borrow from depositors with short maturities and lend to borrowers at longer maturities. Banks benefit the economy by taking deposits and making loans. Of these two activities, deposit taking is unique to banks. Loans can also be made by any other institution that has the capacity to assess the loan applicants' creditworthiness and to monitor their performance. The concentration of banks on lending is due to ready availability of funds from deposit therefore banks make their profits by taking in deposits and lending the funds out at a higher rate of interest.

The fractional reserve theory of banking also argues that each bank is a financial intermediary. However, it disagrees with the former theory concerning the collective, macroeconomic role of banks: it argues that, together, the banking system creates money, through the process of 'multiple deposit expansion'. Thus when Gurley and Shaw (1955) argued that banks and non-bank financial institutions are largely similar in that they were both financial intermediaries able to 'create financial claims', they were challenged during

the 1950s and 1960s in influential journals by, among others, Culbertson (1958), Aschheim (1959), Warren Smith (1959), Solomon (1959), Paul Smith (1966) and Guttentag and Lindsay (1968), many of whom were supporters of the *fractional reserve theory*. Phillips' citation of the credit or money multiplier rendered him one of the earlier and most influential economists to formulate the mechanics of fractional reserve banking. According to Phillips: "What is true for the banking system as an aggregate is *not* true for an individual bank that constitutes only one of many units in that aggregate".

Kenyes stated " The relaxation or contraction of credit by the banking system does not operate merely through a change in the rate charged to borrowers; it also functions through a change in the abundance of credit. If the supply of credit were distributed in an absolutely free competitive market, these two conditions, quantity and price would be uniquely correlated with one another and we should not need to consider them separately. But in practice, the conditions of a free competitive market for bank-loans are imperfectly fulfilled. There is a habitual system of rationing in the attitude of banks to borrowers- the amount lent to any individual being governed not solely by the security and rate of interest offered but also by reference to the borrower's purposes and his standing with the bank as a valuable or influential client. Thus, there is normally a fringe of unsatisfied borrowers who are not considered to have the first claims on a bank's favors, but to whom the bank would be quite ready to lend if it were to find itself in a position to lend more. The existence of this unsatisfied fringe allows the banking system aa means of influencing the rate of investment supplementary to the mere changes in the short-term rate of interest.

METHODOLOGY

To achieve the objective of this research, the Ex post facto research design was adopted for this study. The study covered Nigerian, Ghana and Canadian quoted bank performance with time series i.e panel data rather than cross-sectional data being used. Data relating to macroeconomic variables and bank performance of the three countries will be collected for the years 2008-2017. The data on inflation rate of the countries under study, exchange rates of the countries, and interest rates of the countries and return on assets of the banks under study for the various years were extracted from the financial statements of the banks, budget Departments and Agencies in Nigeria, and reports of Federal Inland Revenue Service (FIRS).

Model Specification

In order to examine the impact of macroeconomic variables on Nigerian, Ghana and Canadian quoted banks at national levels, a multiple linear model is built. The model shows the impact of inflation, exchange rate and interest rate to bank performance. This is represented in the following function:
BP=f (I, ER, IR)
BP=f (I, ER, IR)
BP=f (I, ER, IR)
From the above function, the following model is derived
$BP_t = \alpha + \beta_1 I_t + \beta_2 ER_t + \beta_3 IR_t + \varepsilon$
Where BP is the bank performance
I: Inflation
ER: Exchange rate
IR: Interest rate
α is constant
β_1, β_2, β_3, are the coefficient of the parameter estimate
ε is the error term.

The research employs only quantitative method of data analysis and this was done in four folds: firstly, the descriptive analysis was performed using the mean, maximum, minimum, skewness, kurtosis and the probability of jarque-berra statistics. This is with the aim of describing the data set to determine the normality of the series. Thus, p-value of Jarque Berra statistics higher than the acceptable level of

significance of 5% implies that the series is normally distributed. Since normality of series is one of the fundamental assumptions of performing Ordinary Least Square (OLS) regression, all the series were tested, and if not normally distributed, the natural logarithm of the affected series were used in estimating Ordinary Least Square (OLS) regression. Secondly, trend analysis was carried out to determine the trend of each of independent variable on the dependent variable. Thirdly, the study examined the relationship between each of the measures of macroeconomic variables and bank performance through correlation analysis. Lastly, the study employed the simple linear regression analysis which was used to determine the extent to which each of independent variables contributes to the dependent variable and coefficient of determination (R^2) was employed to know the degree to which each of the independent variable explained the effect on bank performance in Nigeria, Ghana and Canada at national level. Furthermore, the adjusted R- square was used to explain the degree to which the independent variables combined affect the variations in capital expenditures for the period of study.

RESULT AND DISCUSSION

Descriptive Statistics

The result of the descriptive statistics is presented in Table 1..

Table 1: Descriptive statistics of the variables

Table 4.1   Descriptive Statistics for Canada

Variable	Obs	Mean	Std. Dev.	Min	Max
years	60	2011.5	3.481184	2006	2017
roa	60	2.45571	3.958134	.003	19.208
interestrate	60	3.325	.9739184	2.5	6.25
inflation	60	1.625	.4840419	.83	2.38
exchangerate	60	1.4425	.0824544	1.28	1.59
crossid	60	3	1.426148	1	5

Table 4.2   Descriptive Statistics for Nigeria

Variable	Obs	Mean	Std. Dev.	Min	Max
years	55	2012	3.191424	2007	2017
roa	55	4.997909	8.71393	.005	32.067
interestrate	55	16.56091	1.085071	14	18.36
inflation	55	11.18545	3.220318	5.38	16.5
exchangerate	55	179.7	67.13543	118.55	359.99
crossid	55	3	1.427248	1	5

Table 4.3   Descriptive Statistics for Ghana

Variable	Obs	Mean	Std. Dev.	Min	Max
years	55	2012	3.191424	2007	2017
roa	55	.0429455	.0939173	-.025	.718
interestrate	55	18	4.492793	12.5	26
inflation	55	13.57	3.557694	8.73	19.25
exchangerate	55	2.480445	1.247178	.9599	4.38
crossid	55	3	1.427248	1	5

The figures in the descriptive statistics above show that fluctuating pattern of the variables studied for the sampled companies in the sampled years. The positivity of the minimum value for Returns on Asset (ROA) in Canada and Nigeria indicates that none of the sampled companies in those countries made a loss during the period studied however, the negative in the minimum value of in Ghana indicates the presence of loss made amongst the companies sampled for the period in Ghana. The lowest interest in Canada for the sampled period is 2.5 while the maximum interest rate for the period covered by this study is 6.5. In Nigeria however, the minimum interest rate for the period cover by this study is 14 while the maximum is 18.36. The lowest interest rate in Ghana for the period is 12.5 and the maximum is 26. As regards inflation, Canada experienced the lowest inflation rate of 0.83 for the period covered by this study while Ghana recorded the highest inflation rate of 16.25 for the period covered by this study. In terms of exchange rate, Ghana has the lowest record of exchange rate of 0.9599 Ghana cedis to a dollar. This can be attributable to the revaluation of currency embarked upon by the Ghana in recent years. The lowest exchange rate for Canada is 1.28 whereas Nigeria's lowest exchange rate is N118 to a dollar. The maximum exchange rate for Ghana is 4.38, and Canada's maximum stood at 1.59 and Nigeria has the overall maximum of N360.

Regression Results and post estimation result

The regression and post estimation result is presented in Table 4.
Table 4.4:Regression and post estimation Results

	INTEREST RATE			INFLATION			EXCHANGE RATE		
	CANADA	NIGERIA	GHANA	CANADA	NIGERIA	GHANA	CANADA	NIGERIA	GHANA
ROA	-0.056 -0.056	-.4222 (0.520)	0.0014 (0.001)	0.476 (0.877)	-0.515 (0.360)	-.003 (.004)	3.355 (6.117)	-0.037 (0.014)	0.017 0.015
Wooldridge autocorrelation test	1.788	2.369	6.058*	1.841	4.173	2.293	1.694	2.638	3.635
Breusch-Pagan / Cook-Weisberg heteroskedasticity Test	5.27*	0.09	5.97*	1.33	5.99*	2.84*	0.26	11.47*	60.35

Source: Author's Computation using STATA13 (2019)

Table 4.4 shows the results of the diagnostic tests carried out to determine the choice and appropriateness of the estimation technique employed for this model as well as the regression output for the model. The Hausman test was carried out to determine whether fixed effect, random effect or pooled ordinary least square estimation technique is appropriate for the model. The hausman specification test has as its null hypothesis that the difference in coefficients of a model is not systematic and hence the random effect estimation technique is appropriate. The result of the hausman test showed that the data set for this model does not satisfy the assumptions of the hausman test hence, the pooled ordinary least square method is most appropriate for this model.

Also, the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was carried out to determine if the variance of the residual are constant. This test has a null hypothesis of constant variance of the residual, the result of the test showed a probability value greater than the 5% level of significance. This suggest that the study rejects the null hypothesis of constant variance, indicating that the variance of the residual is constant. In testing for autocorrelation in the panel data, the Wooldridge test was conducted. This test has a null hypothesis of no first-order autocorrelation and its result in this model showed a probability value greater than the 5% level of significance. This thus suggests that the study cannot rejects the null hypothesis hence, the absence of autocorrelation in the model. To jointly deal with these combinations of econometrics issues, the model was estimated with the command that gave a robust standard error.

Model 1:

$BP = \alpha + \beta_1 In_t + \varepsilon$
$BP = 1.59259 + 0.4760949 \ In_t + \varepsilon$ (Canada)
$BP = 10.759 - 0.5151 In_t + \varepsilon$ (Nigeria)
$BP = 0.0923 - 0.00312 In_t + \varepsilon$ (Ghana)

The regression analysis estimates on Table 4.4 showed that inflation rate hasanegative effect on Bank Performance of the sampled firms in Ghana and Nigeria and a positive effect for the sampled firms in Canada. This is indicated by the sign of the coefficients, that is $\beta_1 = 0.5151 < 0$ and $\beta_1 = 0.00312 < 0$ for sampled Nigerian and Ghana firms respectively while $\beta_1 = 0.47609 > 0$ for sampled Canada firms. This result is mixed with respect to a priori expectation as it was expected that interest ratewill have positive effect on Bank Performance. The probability of the f-statistics and t-statistics of 0.715, 0.15 and 0.72 for both the three countries respectivelyshow that the model is statistically insignificant at 5% level of significance, hence the model has no predictive value.

Decision: From the result of the regression analysis, inflation rate has an insignificant effect on return on asset in Nigeria, Canada and Ghana, Therefore, the null hypothesis (H_{01}), which says there is no significant relationship between inflation and return on assets (ROA) of Nigerian, Ghana and Canadian quoted banks is hereby accepted

Table 4.4 shows the results of the diagnostic tests carried out to determine the choice and appropriateness of the estimation technique employed for this model as well as the regression output for the model. The Hausman test was carried out to determine whether fixed effect, random effect or pooled ordinary least square estimation technique is appropriate for the model. The hausman specification test has as its null hypothesis that the difference in coefficients of a model is not systematic and hence the random effect estimation technique is appropriate. The result of the hausman test showed that the data set for this model does not satisfy the assumptions of the hausman test hence, the pooled ordinary least square method is most appropriate for this model. Also, the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was carried out to determine if the variance of the residual are constant. This test has a null hypothesis of constant variance of the residual, the result of the test showed a probability value greater than the 5% level of significance. This suggest that the study rejects the null hypothesis of constant variance, indicating that the variance of the residual is constant. In testing for autocorrelation in the panel data, the Wooldridge test was conducted. This test has a null hypothesis of no first-order autocorrelation and its result in this model showed a probability value greater than the 5% level of significance. This thus suggests that the study cannot rejects the null hypothesis hence, the absence of autocorrelation in the model. To jointly deal with these combination of econometrics issues, the model was estimated with the command that gave a robust standard error.

Model 2:

$BP = \alpha + \beta_1 E_t + \varepsilon$
$BP = -2.455 + 3.355 E_t + \varepsilon$ (Canada)
$BP = 11.711 - 0.0374 E_t + \varepsilon$ (Nigeria)
$BP = 0.0012 + 0.168 E_t + \varepsilon$ (Ghana)

Findings

The regression analysis estimates on Table 4.4 showed that exchange rate hasapositive effect on Bank Performance of the sampled firms in Ghana and Canada and a negative effect for the sampled firms in Nigeria. This is indicated by the sign of the coefficients, that is $\beta_1 = 3.355 > 0$ and $\beta_1 = 0.168 > 0$ for sampled Canada and Ghana firms respectively while $\beta_1 = 0.0374 < 0$ for sampled Nigeria firms. This result is mixed with respect to a priori expectation as it was expected that interest ratewill have positive effect on Bank Performance. The probability of the f-statistics and t-statistics of 0.86 and 0.28 for both Canada and Ghana respectivelyshow that the model is statistically insignificant at 5% level of significance, hence the

model has no predictive value. However, the probability of the f-statistics and t-statistics of 0.008 for Nigeriashow that the model is statistically significant at 5% level of significance, hence the model has a predictive value.

Decision: From the result of the regression analysis, exchange rate has an insignificant effect on return on asset in Canada and Ghana, Therefore, the null hypothesis (H_{02}), which says there is no significant relationship between exchange rate and return on assets (ROA) of quoted banks is hereby accepted for Canada and Ghana however, exchange rate has a significant effect on return on asset in Nigeria, therefore, the null hypothesis (H_{02}), which says there is no significant relationship between exchange rate and return on assets (ROA) of quoted banks is hereby rejected for Nigeria.

Table 4.4 shows the results of the diagnostic tests carried out to determine the choice and appropriateness of the estimation technique employed for this model as well as the regression output for the model. The Hausman test was carried out to determine whether fixed effect, random effect or pooled ordinary least square estimation technique is appropriate for the model. The hausman specification test has as its null hypothesis that the difference in coefficients of a model is not systematic and hence the random effect estimation technique is appropriate. The result of the hausman test showed that the data set for this model does not satisfy the assumptions of the hausman test hence, the pooled ordinary least square method is most appropriate for this model. Also, the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was carried out to determine if the variance of the residual are constant. This test has a null hypothesis of constant variance of the residual, the result of the test showed a probability value of 0.00 which is lower than the 5% level of significance. This suggest that the study rejects the null hypothesis of constant variance, indicating that the variance of the residual is not constant. In testing for autocorrelation in the panel data, the Wooldridge test was conducted. This test has a null hypothesis of no first-order autocorrelation and its result in this model showed a probability value greater than the 5% level of significance. This thus suggests that the study cannot reject the null hypothesis hence, the absence of autocorrelation in the model. To jointly deal with these combinations of econometrics issues, the model was estimated with the command that gave a robust standard error.

Model 3:

$BP=\alpha+\beta_1 I_t+\varepsilon$
$BP = 2.123069 - 0.0561586I_t + \varepsilon$ (Canada)
$BP = 12.80015 - 0.4222332I_t + \varepsilon$ (Nigeria)
$BP = 0.0168289 + 0.0014509I_t + \varepsilon$ (Ghana)

Findings

The regression analysis estimates on Table 4.4 showed that interest rate has anegative effect on Bank Performance of the sampled firms in Canada and Nigeria and a positive effect for the sampled firms in Ghana. This is indicated by the sign of the coefficients, that is $\beta_1 =0.0561<0$ and $\beta_1 =0.4222<0$ for sampled Canadian and Nigerian firms respectively while $\beta_1 =0.0014>0$ for sampled Ghana firms. This result is mixed with respect to a priori expectation as it was expected that interest rate will have positive effect on Bank Performance. The probability of the f-statistics and t-statistics of 0.715, 0.72 and 0.27 for both the three countries respectivelyshow that the model is statistically insignificant at 5% level of significance, hence the model has no predictive value.

Decision: From the result of the regression analysis, interest rate has an insignificant effect on return on asset in Nigeria, Canada and Ghana, Therefore, the null hypothesis (H_{03}), which says there is no significant relationship between interest and return on assets (ROA) of Nigerian, Ghana and Canadian quoted banks is hereby accepted
0.0014

Discussion of Findings

Macroeconomic Variables and Bank's Performance in Canada, Ghana and Nigeria: A Panel Data Analysis

This study was set out to examine the effect of macro economic variable on bank performance in Nigeria ,Canada and Ghana . The first part dealt with descriptive analysis in terms of numerical representation. The summary statistics of all the variables obtained from the sampled countries for the period under study show that ROA has the highest dispersion from its mean because its standard deviation is high compared with the measures of macroeconomic variables which are inflation, interest rate and exchange rate respectively. This implies that the economic values of sampled countries had been fluctuating over the period of time. Also, the negative value of inflation, exchange rate and interest rate of the countries show that the country's economic situation were worst during the period under study, while some sampled countries for the period under review did not decline interest rate and exchange rate as depicted by the negative minimum value of ROA. The second section focused on testing the hypotheses previously stipulated through the use of regression analysis. The regression estimate of model 1 showed that inflation, interest rate and exchange rate have positive effects on return on asset (ROA). This result is consistent with *a priori* expectation as it was expected that inflation, interest rate and exchange rate will have positive effect on return on asset of the selected countries (Nigeria, Canada and Ghana). Furthermore, the probability of the f-statistics of 0.0011 shows that the model is statistically significant at 5% level of significance.

Furthermore, regression analysis was performed to examine the effect of macroeconomic variables on bank performance of the selected countries for the period under study. The error term was derived which represented the portion of variations in bank performance not caused by the macro economic variables under study, Therefore, the null hypotheses that there is no significant different between return on asset and the macro economic variables (inflation, exchange rate and interest rate) of the selected countries are not accepted. Thus, there is significant difference between the economic value and bank performance in Nigeria, Canada and Ghana. This finding does not support the result of C Osundina et al., (2016) who examines the effect of exchange rate on bank performance and concluded that exchange rate has no significant effect on bank performance using ROA as a measure while exchange rates fluctuation had a significant negative effect on bank liquidity using LDR as a measure.

The first part dealt with descriptive analysis in terms of numerical representation. The summary statistics of all the variables obtained from the sampled countries for the period under study show that bank performance has the highest dispersion from its mean because its standard deviation is high compared with the measures of macro-economic variables of inflation, exchange rate and interest rate. This implies that the economic situation of the countries under study had been fluctuating over the period of study. Also, the negative minimum values of the of ROA shows that some financial institution in the countries under study are faced with unbalanced operational system in their respective countries. The second section focused on testing the hypotheses previously stipulated through the use of regression analysis. The regression estimate of model 1 showed that interest rate, exchange rate and inflation have positive effects on bank performance. This result is consistent with *a priori*expectation as it was expected that inflation, interest rate and exchange rate will have positive effect on return on asset of the selected banks in the identified countries. Furthermore, the probability of the f-statistics of 0.0011 shows that the model is statistically significant at 5% level of significance. Therefore, the null hypothesis (H_{01}) has no significant effect on bank performance in Nigeria, Ghana and Canada is hereby rejected. Osundina et al., (2016) examines the effect of exchange rate on bank performance and concluded that exchange rate has no significant effect on bank performance using ROA as a measure while exchange rates fluctuation had a significant negative effect on bank liquidity using LDR as a measure. Therefore, based on the above findings, it is therefore seen that from the statement of the Osundina et al., their study did not correlate with that which have been arrived at in this study.

CONCLUSION AND RECOMMENDATION

This study examined the effect of macroeconomic variables on bank performance in Nigeria, Ghana and Canada. Numerical description of all variables under study was captured to depict the movement of values and determine the fluctuations of each of the independent variables with the dependent variables. Findings of this study therefore provide insight into the effect of macro-economic variables measured by inflation, interest rate and exchange rate on bank performance in Nigeria, Ghana and Canada and also examined the moderating effect of adoption of this macro-economic on return on asset of quoted banks in Nigeria, Ghana and Canada for the period between 2008 and 2017. It

also provides an affirmation of the extent to which the variations in the dependent variable are caused by the independent variables covered in the models as depicted by the R-squared and adjusted R-squared. Thus, the study concluded that the macro economic variables became more value relevant to the bank performance in Nigeria, Ghana and Canada. Based on the findings and conclusions of this study, the following recommendations are made to researchers, the government and the general public which includes individuals, organization and the general public. The study therefore will aid; he future researchers to continue a further study on this broad subject and provide valuable contributions to the existing body of knowledge on this topic and serve as a basis for further research; the government to determine whether there is any significant effect of inflation, exchange rate, interest rate and bank performance and make possible adjustments where necessary; and Individuals, organizations and the general public on the impact and relationship between inflation, exchange rate, interest rate and bank performance of the countries under study.

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