Effect of Accounting Ratios on Investment Performance of Deposit Money Banks in Nigeria.

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ABSTRACT

This work examined the effect of accounting ratios on investment performance of deposit money banks in Nigeria. Five research objectives guided this study and they sought to: determine the effect of capitalization ratio on return on equity (ROE); determine the effect of credit risk ratio on return on equity (ROE); determine the effect of operating expenses ratio on return on equity (ROE); determine the effect of liquidity ratio on return on equity (ROE) of deposit money banks in Nigeria; and to determine the effect of bank size ratio on return on equity (ROE) of deposit money banks in Nigeria. This research was carried out using secondary data. Multiple regression analyses were used for testing the hypotheses. The result reveals that capitalization ratio had negative and insignificant effect on return on equity; credit risk ratio had positive and insignificant effect on return on equity; operating expenses ratio had insignificant and positive effect on return on equity; liquidity ratio had a negative and insignificant effect on return on equity; and that bank size had significant and negative effect on return on equity of deposit money banks. It was recommended, among other things, that the management of deposit money banks should put more attention on their liquidity in order to maintain an adequate liquidity as the study has empirically proved that higher liquidity signifies better performance, and that the management should reduce the amount held in cash as current asset and concentrate more in investing them, so that it could yield higher return rather than tie down the idle cash.

Key Word: Accounting Ratios, Investment Performance, and Multiple Regressions

INTRODUCTION

A financial ratio or accounting ratio is a relative magnitude of two selected numerical values taken from an enterprise's financial statements [1]. Often used in accounting, there are many standard ratios used to try to evaluate the overall financial condition of a corporation or other organization. Financial ratios may be used by managers within a firm, by current and potential shareholders (owners) of a firm, and by a firm's creditors. Financial analysts use financial ratios to compare the strengths and weaknesses in various companies [2]. If shares in a company are traded in a financial market, the market price of the shares is used in certain financial ratios.

Financial ratios are useful indicators of a firm's performance and financial situation. They are the most powerful of all the tools used in the analysis and interpretation of financial statements. Financial ratios can be used to analyze trends and to compare the firm's financial performance to those of other firms. In some cases, ratio analysis can be used to predict future trend [3].

However, the determination of appropriate standard against which a company's ratio may be compared is often a difficult problem for financial analyst [4]. To overcome this problem, a firm's financial ratio may be compared against the ratios of other firms in the same industry. Financial ratios serve as important tool of evaluating the performance and financial conditions of a business entity over a period of time , empirical studies like [5] and [6] demonstrated the usefulness of financial ratios in this regard. [5] captured the value of the accounting ratios when they averred that financially distressed firms can be separated from the non-failed firms in the years before the declaration of bankruptcy at an accurate rate of better than 90% by examining financial ratios.

Financial ratios are tools of financial analysis. In financial ratio evaluation is normally done using the financial information generated by the firm. However, financial ratios can be classified according to the information they provide. The frequently used ratios are Liquidity Ratio, Asset Turnover Ratio,

Financial Leverage Ratio, Profitability Ratio and Dividend Policy Ratios [7].

The profitability ratio which is the major ratio for analysis in this study as a measure of performance can assist in determining the different level of success of the firms at generating profit. It is against this backdrop that this work intends to measure the investment performance of deposit money banks in Nigeria using financial or accounting ratios.

STATEMENT OF PROBLEM

The financial sector consist of strings of financial activities whose major end is profit making, over the years the means and manner of measuring this financial performance remain issue of concern, the variables to use in the measurement of this performance is germane to growth and stability, the issue therefore is determining the variables to use in financial performance measurement and how well do these variables can measure the performance in the financial sector in the financial sector major identified measure of performance include size, capitalization, credit risk, operating expenses or liquidity as far as the banking sector is concern. The extent to wish each of these variables and indicators measure the performance over time is an issue of concern and factor to bed evaluated therefore it is the focus of the study to examine the extent and how effective these variables measure performance in the banking industry.

OBJECTIVES OF THE STUDY

The broad objective of this study is to examine the effect of accounting ratios on investment performance of deposit money banks in Nigeria. The specific objectives include:

(1)   To determine the effect of capitalization ratio on return on equity (ROE) of deposit money banks in Nigeria

(2)   To ascertain the effect of credit risk ratio on return on equity (ROE) of deposit money banks in Nigeria

(3)   To examine the effect of operating expenses ratio on return on equity (ROE) of deposit money banks in Nigeria

(4)   To evaluate the effect of liquidity ratio on return on equity (ROE) of

deposit money banks in Nigeria; and

(5) To assess the effect of bank size ratio on return on equity (ROE) of deposit money banks in Nigeria;

RESEARCH QUESTIONS

The following questions guided this study:

(1) What is the effect of capitalization ratio on return on equity (ROE) of deposit money banks in Nigeria?

(2) What is the effect of credit risk ratio on return on equity (ROE) of deposit money banks in Nigeria?

(3) What is the effect of operating expenses ratio on return on equity (ROE) of deposit money banks in Nigeria?

(4) What is the effect of liquidity ratio on return on equity (ROE) of deposit money banks in Nigeria?

(5) What is the effect of bank size ratio on return on equity (ROE) of deposit money banks in Nigeria?

STATEMENT OF HYPOTHESES

The study has formulated the following null hypotheses in order to bring about a logical conclusion to the subject matter of study:

(1) Capitalisation ratio has no significant effect on return on equity of deposit money banks

(2) Credit risk ratio has no significant effect on return on equity of deposit money banks

(3) Operating expenses ratio has no significant effect on return on equity of deposit money banks

(4) Liquidity ratio has no significant effect on return on equity of deposit money banks

(5) Bank size ratio has no significant effect on return on equity of deposit money banks

SIGNIFICANCE OF THE STUDY

Basically, this study will expatiate and in greater details, the benefits that can be

derived from the application of financial ratio analysis as tool for performance measurement.

It will help to highlight various areas of interest which includes profitability trends on one hand and capitalisation, liquidity, size and operating expenses on the other hand. It will help the organization in measuring performance in

the industry it operates. It will also help auditors and banks managers identify the ratios to emphasize in assessing their performance.

Moreso, members of the academia will benefit greatly from this study as it will serve as reference material for this and related subject matter.

SCOPE OF THE STUDY

This study expatriates the effect of financial ratios like liquidity, size, operating expenses, etc. on the return on investment (equity) of banks in Nigeria.

Zenith Bank Plc, First Bank Plc and Fidelity Bank Plc were the bank of study and data covering ten years period will be collected in this regard.

LIMITATION OF THE STUDY

In the course of this research work, the researcher encountered some bureaucratic problems which are very peculiar to Nigeria banking industry. Necessity calls for personal interaction with personnel of the bank under study, and the bureaucracy for booking and meeting an appointment such personnel was overwhelming.

The problem of bureaucracy became even more serious considering the short available for the completion of this study, which leads to the issue of limited time.

Furthermore, necessary data were not readily available. The annual reports of the bank were hard to come by, and they placed a grave financial burden on the researcher.

RESEARCH METHODOLOGY

Research Design

The project is an ex- post facto research design which provides a systematic and empirical solution to research problems, by using data which are already in existence.

Population of the Study

The population of the study is comprises of all deposit money banks quoted on the floor of the Nigeria Stock Exchange.

Sample Size of the Study

For the purpose of this study, three deposit money banks were selected. They include Zenith Bank Plc, First Bank Plc and Fidelity bank Plc were chosen for data analysis covering the period 2007 to 2016 (i.e. ten years period). These banking firms were selected because of their data are readily available and they are prominent firms in the Nigeria banking industry.

Sources of Data

Data for analysis on accounting ratios and financial performance of deposit banks in Nigeria were extracted from the quarterly reports and accounts of Zenith bank Plc, First Bank Plc and Fidelity Bank Plc. Data for analysis on captialisation ratio, credit risk ratio, operating expenses ratio, liquidity ratio and bank size were extracted from the banks' annual reports and accounts.

Model Specification

Multiple regression models were used to find the correlation between accounting ratios and profitability of banks; The base models took the following form:

$$ROE_{it} = \beta_0 + \beta_1 CAP_{it} + \beta_2 LQ_{it} + \beta_3 OER_{it}\, \beta_4 CR_{it} + \beta_5 SIZE_{it} + \mu_{it}$$

Where:

ROE is return on equity representing the the dependent variable.

β_0 is the intercept.

$\beta_1 - \beta_5$ are the slopes

CAP is capitalization ration (independent variable)

LQ is liquidity ratio (independent variable)

OER is operating expense ratio (independent variable)

CR is credit risks ratio (independent variable)

SIZE is bank size (independent variable)

μ_{it} are the error terms or variations that cannot be explained by the above model.

i is the number of firms and

t is the number of time periods.

Description of Variables

(1)   Capitalization ratio:

The capitalization ratio measures the debt component of a company's capital structure, or capitalization (i.e., the sum of long-term debt liabilities and shareholders' equity) to support a company's operations and growth. This ratio is considered to be one of the more meaningful of the "debt" ratios - it delivers the key insight into a company's use of leverage.

$$Capitalisation\ Ratio = \frac{long-term\ Debt}{Long-term\ Debt + Shareholders'Equity}$$

(2)   Credit Risk Ratio

. If a bank's credit quality is in decline because of non-performing loans and assets and/or charge-offs increases, the bank's earnings and capital may be at risk. A non-performing loan is a loan where payments of interest or principal are overdue by 90 days or more, and it is typically presented as a percentage of outstanding loans. It can be calculated as:

- The ratio of the total loans to total assets
- The ratio of the non performing loans to the total loans
- The ratio of the loan losses to the total loans

(3)   Operating Expenses Ratio

The operating expense ratio (OER) is a measure of what it costs to operate a piece of property compared to the income that the property brings in. The operating expense ratio is calculated by dividing a property's operating expense by its gross operating income and used for comparing the expenses of similar properties. It is also referred to as cost to income ratio or efficiency ratio. The formula for calculating OER is operating expenses / revenues i.e.

$$OER = \frac{operating\ expenses}{revenues}$$

(4)   Liquidity Ratio

Liquidity Ratio: are used to measure a firm's ability to meet its most current obligations as they come due. Two

commonly used liquidity ratios are   presented here:

$$(i) \quad Current\,ratio = \frac{current\,assets}{current\,liabilities}$$

$$(ii) \quad Quick\,ratio\,or\,Acid\,test = \frac{current\,asset\,less\,inventory}{current\,liabilities}$$

(5)   Bank Size Ratio

Bank size is a measure of bank's total assets. Bank size ratio is calculated as the log transformation of the bank total assets.

(6)   Return on Equity (ROE)

In corporate finance, the return on equity (ROE) is a measure of the profitability of a business in relation to the book value of shareholder equity, also known as *net assets* or *assets minus liabilities*. ROE is a measure of how well a company uses investments to generate earnings growth. It is usually calculated using the following formulae

$$Return\,on\,equity = \frac{Net\,Profit\,after\,taxes}{Total\,equity}$$

PRESENTATION AND ANALYSIS OF DATA

Table 1: Time Series Data of the Variables – Zenith Bank Plc

2007	0.1551	0.8724	0.2961	0.7319	1.073	5.989
2008	0.1374	0.7986	0.2494	0.6175	1.525	6.252
2009	0.0559	0.7913	0.4254	0.4069	1.294	6.220
2010	0.0951	0.8042	0.3732	0.5259	1.310	6.278
2011	0.1417	0.8325	0.3813	0.5034	1.228	6.367
2012	0.235	0.8202	0.3674	0.3979	1.231	6.416
2013	0.196	0.8358	0.3913	0.2315	1.321	6.497
2014	0.188	0.8503	0.4615	0.2026	1.434	6.575
2015	0.184	0.8541	0.4931	0.2102	1.259	6.603
2016	0.200	0.8561	0.4991	0.1856	1.200	6.676

Source: *Researchers Computation from Annual Report and Accounts, 2016.*

In Table 1, the time series data indicate that the focal and explanatory variables which are return on equity, capitalization ratio, credit risk ratio, operational expenses ratio, liquidity ratio and bank size ratio have some level of linearity among them. This linearity or otherwise has been revealed in subsequent analysis.

**Table 2 Descriptive Statistics of the variables – Zenith Bank Plc**

	ROE	BSIZE	CAPR	CRR	LR	OER
Mean	0.158820	6.387300	0.831550	0.393780	1.287500	0.401340
Median	0.169550	6.391500	0.834150	0.386300	1.276500	0.402400
Maximum	0.235000	6.676000	0.872400	0.499100	1.525000	0.731900
Minimum	0.055900	5.989000	0.791300	0.249400	1.073000	0.185600
Std. Dev.	0.053526	0.209566	0.027352	0.080423	0.125056	0.192467
Skewness	-0.580166	-0.376753	-0.124790	-0.333365	0.337559	0.319394
Kurtosis	2.535389	2.363639	1.744792	2.268379	2.949292	1.832273
Jarque-Bera	0.650931	0.405302	0.682432	0.408250	0.190981	0.738182
Probability	0.722191	0.816563	0.710905	0.815361	0.908927	0.691362
Sum	1.588200	63.87300	8.315500	3.937800	12.87500	4.013400
Sum Sq. Dev.	0.025786	0.395260	0.006733	0.058211	0.140750	0.333391
Observations	10	10	10	10	10	10

Source: Researcher's computation using Eviews, 2017.

Table 2 reveals, most importantly, the mean, maximum and minimum values for the series. While the mean of the series stood at 0.15%, 6.39%, 0.83%, 0.39%, 1.28% and 0.40% for ROE, BSIZE, CAPR, CRR, LR and OER respectively, the maximum of the series stood at 0.24%, 6.68%, 0.87%, 0.49%, 1.53% and 0.731% respectively. The minimum of the series stood at 0.056%, 5.99%, 0.791%, 0.249%, 1.07% and 0.195% for ROE, BSIZE, CAPR, CRR, LR and OER respectively.

The skewness for all variables are below 4, which shows that all the variables are within normal frequency distribution. The probability for the Jarque-Bera coefficients shows that none of the variables has significant contribution. This is in line with the skewness.

FIGURE:1 Line Graph of Focal And Explanatory Variables – Zenith Bank Plc
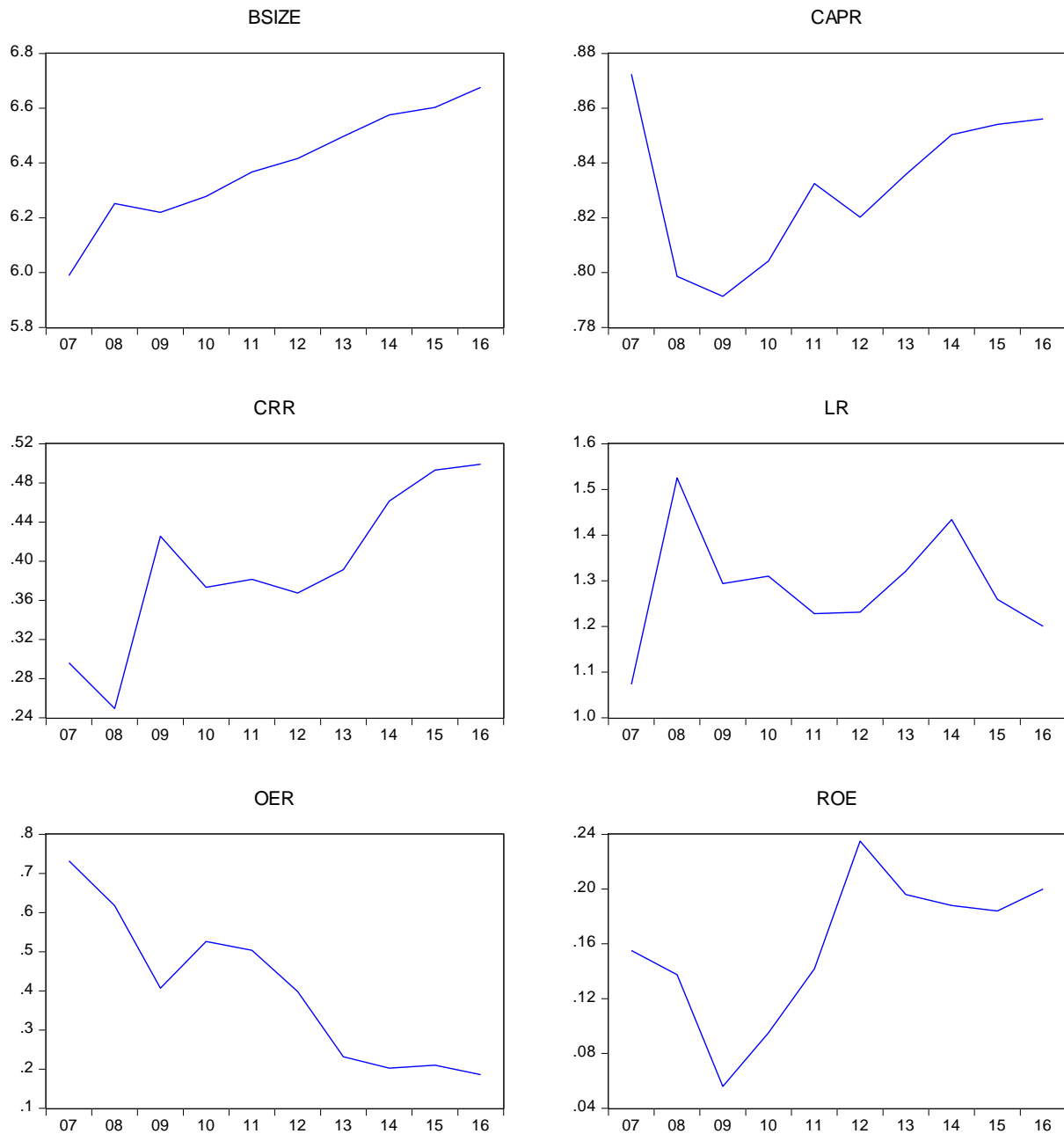
Source: Researcher's computation using Eviews, 2017.

Fig. 1 shows that liquidity ration (LR) and operational expenses ratio (OER) have similar pattern of movement, while return on equity (ROE) and credit risk ratio (CRR) have similar pattern of movement from 2007 to 2016. This implies that there are some degrees of association between

them which will be revealed in the output   below.

Table 3 Regression analysis – Zenith Bank Plc

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.249382	0.894900	-1.396114	0.2352
BSIZE	0.242619	0.126457	1.918587	0.1275
CAPR	0.699038	0.462999	1.509805	0.2056
CRR	-0.940922	0.298172	-3.155632	0.0343
LR	-0.204418	0.118743	-1.721512	0.1603
OER	-0.221906	0.176541	-1.256966	0.2772
R-squared	0.880415	Mean dependent var		0.158820
Adjusted R-squared	0.730934	S.D. dependent var		0.053526
S.E. of regression	0.027765	Akaike info criterion		-4.046376
Sum squared resid	0.003084	Schwarz criterion		-3.864825
Log likelihood	26.23188	Hannan-Quinn criter.		-4.245537
F-statistic	5.889796	Durbin-Watson stat		3.245518
Prob(F-statistic)	0.055254			

Source: *Researcher's Computation using Eview, 2017.*

Interpretation of Regression Coefficient Result
In Table 4, the regression result indicates that bank size (BSIZE) and capitalization ratio (CAPR) have positive and insignificant effect on return on equity (ROE). This was evidenced as they have positive coefficients and p-values of 0.1275 and 0.2056 respectively, which are greater than 0.05. Credit risk ratio (CRR), liquidity ratio (LR) and operational expenses ratio (OER) have negative coefficients indicating a negative effect on ROE. P-values of CRR is <0.05 and those of LR and OER are >0.05 indicating a significant effect for CRR and insignificant effect for both LR and OER.

FIRST BANK PLC

Table 4: Time Series Data of the Variables – First Bank Plc

2007	0.1417	0.8325	0.3813	0.5034	1.228	6.367
2008	0.235	0.8202	0.3674	0.3979	1.231	6.416
2009	0.196	0.8358	0.3913	0.2315	1.321	6.497
2010	0.188	0.8503	0.4615	0.2026	1.434	6.575
2011	0.184	0.8541	0.4931	0.2102	1.259	6.603
2012	0.200	0.8561	0.4991	0.1856	1.200	6.676
2013	0.1551	0.8724	0.2961	0.7319	1.073	5.989
2014	0.1374	0.7986	0.2494	0.6175	1.525	6.252
2015	0.0559	0.7913	0.4254	0.4069	1.294	6.220
2016	0.0951	0.8042	0.3732	0.5259	1.310	6.278

Source: *Researcher's Computation from Annual Report and Accounts, 2017.*

In Table 4, the time series data indicate that the focal and explanatory variables which are return on equity, capitalization ratio, credit risk ratio, operational expenses ratio, liquidity ratio and bank size ratio have some level of linearity among them. This linearity or otherwise has been revealed in subsequent analysis.

Table 5: Descriptive Statistics of the Variables – First Bank Plc

	ROE	BSIZE	CAPR	CRR	LR	OER
Mean	0.158820	6.387300	0.831550	0.393780	1.287500	0.401340
Median	0.169550	6.391500	0.834150	0.386300	1.276500	0.402400
Maximum	0.235000	6.676000	0.872400	0.499100	1.525000	0.731900
Minimum	0.055900	5.989000	0.791300	0.249400	1.073000	0.185600
Std. Dev.	0.053526	0.209566	0.027352	0.080423	0.125056	0.192467
Skewness	-0.580166	-0.376753	-0.124790	-0.333365	0.337559	0.319394
Kurtosis	2.535389	2.363639	1.744792	2.268379	2.949292	1.832273
Jarque-Bera	0.650931	0.405302	0.682432	0.408250	0.190981	0.738182
Probability	0.722191	0.816563	0.710905	0.815361	0.908927	0.691362
Sum	1.588200	63.87300	8.315500	3.937800	12.87500	4.013400
Sum Sq. Dev.	0.025786	0.395260	0.006733	0.058211	0.140750	0.333391

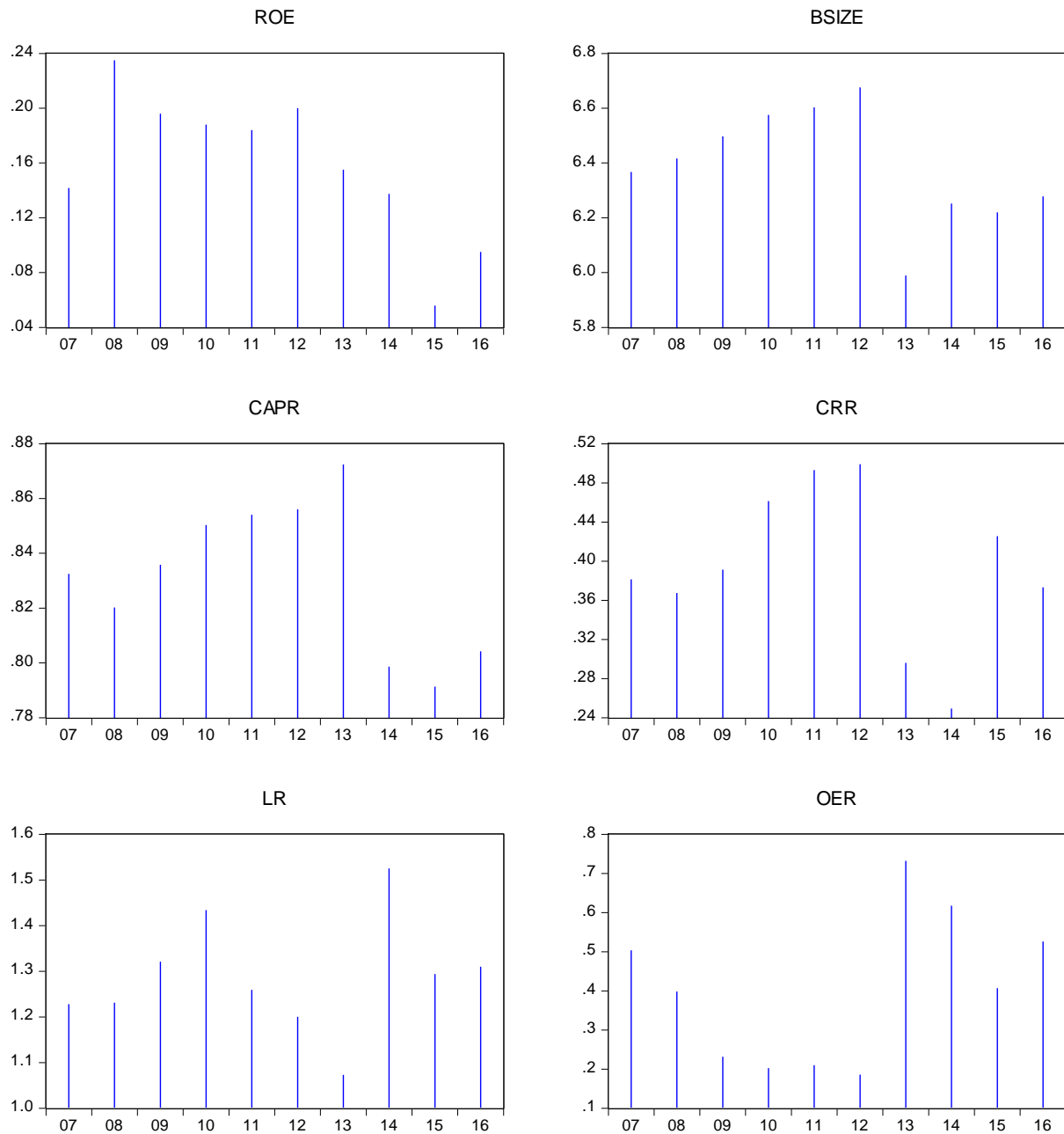| Observations	10	10	10	10	10	10

Source: Researcher's Computation using Eviews, 2017

Table 5 reveals, most importantly, the mean, maximum and minimum values for the series. While the mean of the series stood at 0.15%, 6.39%, 0.83%, 0.39%, 1.28% and 0.40% for ROE, BSIZE, CAPR, CRR, LR and OER respectively, the maximum of the series stood at 0.24%, 6.68%, 0.87%, 0.49%, 1.53% and 0.731% respectively. The minimum of the series stood at 0.056%, 5.99%, 0.791%, 0.249%, 1.07% and 0.195% for ROE, BSIZE, CAPR, CRR, LR and OER respectively.

The skewness for all variables are below 4, which shows that all the variables are within normal frequency distribution. The probability for the Jarque-Bera coefficients shows that none of the variables has significant contribution. This is in line with the skewnes

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Figure: 2 Line Graph Of Focal And Explanatory Variables – First Bank Plc

Source: Researcher's computation using Eview, 2017.

Fig. 2 shows that LR AND OER have similar pattern of movement, while CAPR and CRR have similar pattern of movement from 2007 to 2016. This implies that there are some degrees of association between them which will be revealed in the output below.

Table 6 Regression Analysis – First Bank Plc

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.044367	1.406806	0.742368	0.4991
BSIZE	-0.069196	0.178151	-0.388414	0.7175
CAPR	-0.389150	0.555879	-0.700064	0.5225
CRR	0.235695	0.741705	0.317775	0.7666
LR	-0.199172	0.275396	-0.723221	0.5096
OER	0.094539	0.944757	0.100067	0.9251
R-squared	0.472643	Mean dependent var		0.308650
Adjusted R-squared	-0.186553	S.D. dependent var		0.269620
S.E. of regression	0.293694	Akaike info criterion		0.671155
Sum squared resid	0.345026	Schwarz criterion		0.852706
Log likelihood	2.644223	Hannan-Quinn criter.		0.471994
F-statistic	0.717000	Durbin-Watson stat		1.939195
Prob(F-statistic)	0.643942			

Source: Researcher's computation using Eviews, 2017

Interpretation of Regression Coefficient Result

In Table 6, the regression result indicates that bank size (BSIZE) and capitalization ratio (CAPR) have negative and insignificant effect on return on equity (ROE). This was evidenced as they have positive coefficients and p-values of 0.7175 and 0.5225 respectively, which are greater than 0.05. Credit risk ratio (CRR), amd operational expenses ratio (OER) have a positive and insignificant effect on ROE, with a p-value of 0.7666 and 0.5096 respectively. Meanwhile, liquidity ratio (LR) has a negative and insignificant effect on ROE.

FIDELITY BANK PLC

Table 7: Time Series Data of the Variables – Fidelity Bank Plc

2007	0.3417	0.8325	0.3813	0.9934	0.628	2.367
2008	0.235	0.8202	0.3674	0.3979	1.231	6.416
2009	0.496	0.2358	0.3913	0.2315	1.321	6.497
2010	0.188	0.8503	0.4615	0.2026	1.434	6.575
2011	0.284	0.8541	0.931	0.2102	1.259	6.603
2012	0.200	0.8561	0.4991	0.1856	0.200	6.676
2013	0.1551	0.8724	0.2961	0.7319	1.073	5.989
2014	0.1374	0.7986	0.2494	0.6175	1.525	6.252
2015	0.0559	0.4513	0.4254	0.4069	1.294	6.220
2016	0.9934	0.8042	0.3732	0.9259	0.310	3.278

Source: *Researcher's Computation from Annual Report and Accounts, 2017.*

In Table 7, the time series data indicate that the focal and explanatory variables which are return on equity, capitalization ratio, credit risk ratio, operational expenses ratio, liquidity ratio and bank size ratio have some level of linearity among them. This linearity or otherwise has been revealed in subsequent analysis.

Table 8: Descriptive Statistics of the Variables – First Bank Plc

	ROE	BSIZE	CAPR	CRR	LR	OER
Mean	0.308650	5.687300	0.737550	0.437570	1.027500	0.490340
Median	0.217500	6.334000	0.826350	0.386300	1.245000	0.402400
Maximum	0.993400	6.676000	0.872400	0.931000	1.525000	0.993400
Minimum	0.055900	2.367000	0.235800	0.249400	0.200000	0.185600
Std. Dev.	0.269620	1.538883	0.215056	0.187905	0.474476	0.308031
Skewness	1.789310	-1.506608	-1.656732	1.941798	-0.816123	0.534058
Kurtosis	5.302240	3.487270	4.105403	6.041113	2.107062	1.782018
Jarque-Bera	7.544510	3.882042	5.083733	10.13779	1.442319	1.093479
Probability	0.023000	0.143557	0.078719	0.006289	0.486188	0.578834
Sum	3.086500	56.87300	7.375500	4.375700	10.27500	4.903400
Sum Sq. Dev.	0.654255	21.31346	0.416243	0.317776	2.026151	0.853948

Observations	10	10	10	10	10	10

Source: Researcher's Computation using Eviews, 2017.

Table 8 reveals, most importantly, the mean, maximum and minimum values for the series. While the mean of the series stood at 0.31%, 5.69%, 0.74%, 0.49%, 1.03% and 0.49% for ROE, BSIZE, CAPR, CRR, LR and OER respectively, the maximum of the series stood at 0.99%, 6.68%, 0.87%, 0.93%, 1.53% and 0.99% respectively. The minimum of the series stood at 0.0559%, 2.367%, 0.235%, 0.249%, 0.20% and 0.186% for ROE, BSIZE, CAPR, CRR, LR and OER respectively.

The skewness for all variables are below 4, which shows that all the variables are within normal frequency distribution. The probability for the Jarque-Bera coefficients shows that ROE and CARR have values below 0.05, which shows they have significant contributions to the list of variable.

Figure: 3 Line Graph of Focal and Explanatory Variables – First Bank Plc
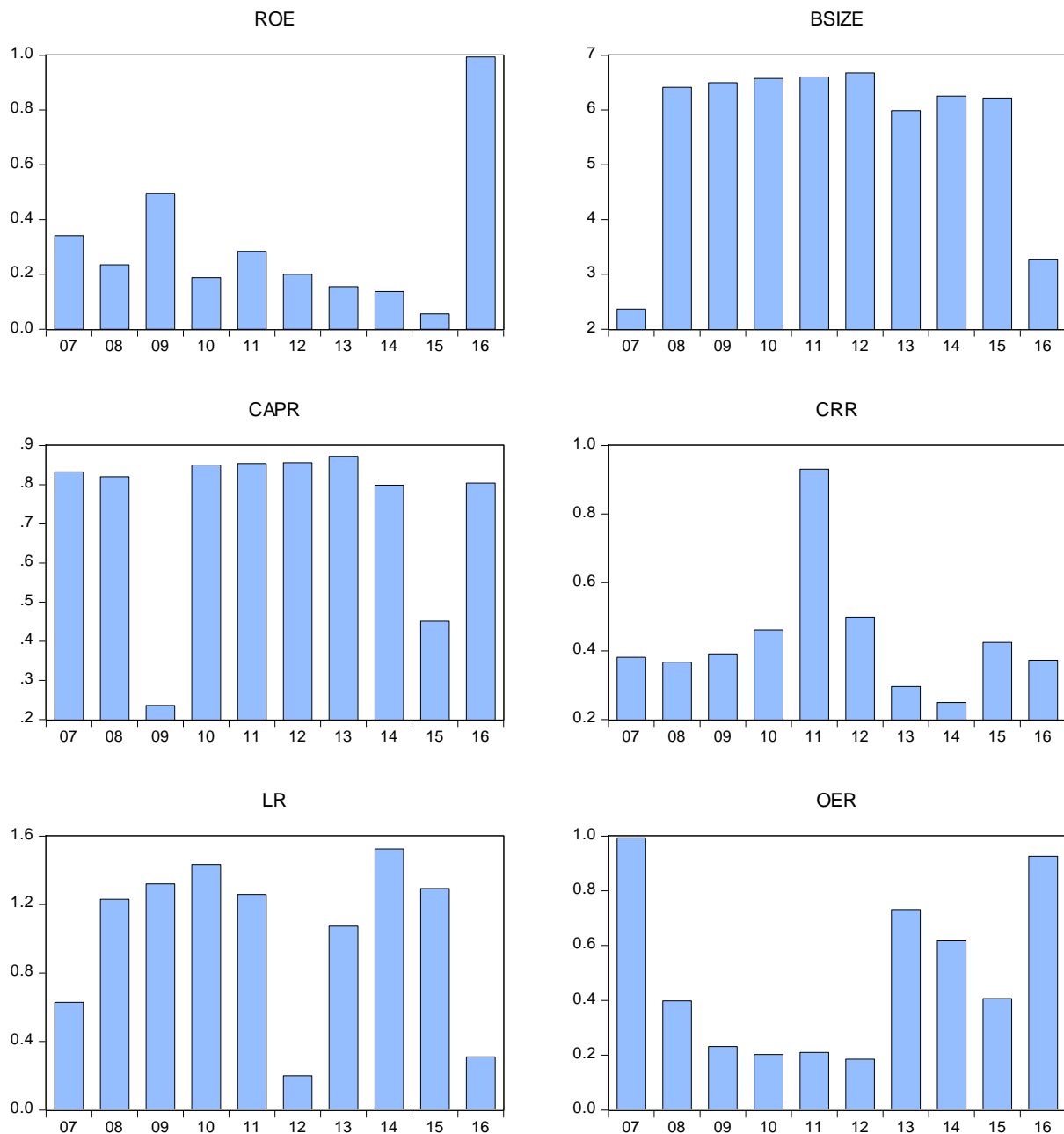
Source: Researcher's computation using Eviews, 2017.

Fig. 3: shows that LR and OER have similar pattern of movement, while CAPR and CRR have similar pattern of movement from 2007 to 2016. This implies that there are some degrees of association between them which will be revealed in the output below.

Table 9: Regression Analysis – Fidelity Bank Plc

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.249382	0.894900	-1.396114	0.2352
BSIZE	0.242619	0.126457	1.918587	0.1275
CAPR	0.699038	0.462999	1.509805	0.2056
CRR	-0.940922	0.298172	-3.155632	0.0343
LR	-0.204418	0.118743	-1.721512	0.1603
OER	-0.221906	0.176541	-1.256966	0.2772
R-squared	0.880415	Mean dependent var		0.158820
Adjusted R-squared	0.730934	S.D. dependent var		0.053526
S.E. of regression	0.027765	Akaike info criterion		-4.046376
Sum squared resid	0.003084	Schwarz criterion		-3.864825
Log likelihood	26.23188	Hannan-Quinn criter.		-4.245537
F-statistic	5.889796	Durbin-Watson stat		3.289320
Prob(F-statistic)	0.055254			

Source: Researcher's computation using Eviews, 2017

Interpretation of Regression Coefficient Result

In Table 6, the regression result indicates that bank size (BSIZE) and capitalization ratio (CAPR) have positive and insignificant effect on return on equity (ROE). This was evidenced as they have positive coefficients and p-values of 0.1275 and 0.2056 respectively, which are greater than 0.05. Credit risk ratio (CRR), liquidity ratio (LR) and operational expenses ratio (OER) have negative coefficients indicating a negative effect on ROE. P-values of CRR is <0.05 and those of LR and OER are >0.05 indicating a significant effect for CRR and insignificant effect for both LR and OER.

INDUSTRY ANALYSIS

Table 10: Time Series Data of the Variables – Industry Data

1.	0.1551	0.8724	0.2961	0.7319	1.073	5.989
2.	0.1374	0.7986	0.2494	0.6175	1.525	6.252
3.	0.0559	0.7913	0.4254	0.4069	1.294	6.220
4.	0.0951	0.8042	0.3732	0.5259	1.310	6.278
5.	0.1417	0.8325	0.3813	0.5034	1.228	6.367
6.	0.235	0.8202	0.3674	0.3979	1.231	6.416
7.	0.196	0.8358	0.3913	0.2315	1.321	6.497
8.	0.188	0.8503	0.4615	0.2026	1.434	6.575
9.	0.184	0.8541	0.4931	0.2102	1.259	6.603
10.	0.200	0.8561	0.4991	0.1856	1.200	6.676
11.	0.3417	0.8325	0.3813	0.9934	0.628	2.367
12.	0.235	0.8202	0.3674	0.3979	1.231	6.416
13.	0.496	0.2358	0.3913	0.2315	1.321	6.497
14.	0.188	0.8503	0.4615	0.2026	1.434	6.575
15.	0.284	0.8541	0.931	0.2102	1.259	6.603
16.	0.200	0.8561	0.4991	0.1856	0.200	6.676
17.	0.1551	0.8724	0.2961	0.7319	1.073	5.989
18.	0.1374	0.7986	0.2494	0.6175	1.525	6.252
19.	0.0559	0.4513	0.4254	0.4069	1.294	6.220
20.	0.9934	0.8042	0.3732	0.9259	0.310	3.278
21.	0.1417	0.8325	0.3813	0.5034	1.228	6.367
22.	0.235	0.8202	0.3674	0.3979	1.231	6.416
23.	0.196	0.8358	0.3913	0.2315	1.321	6.497
24.	0.188	0.8503	0.4615	0.2026	1.434	6.575
25.	0.184	0.8541	0.4931	0.2102	1.259	6.603
26.	0.200	0.8561	0.4991	0.1856	1.200	6.676
27.	0.1551	0.8724	0.2961	0.7319	1.073	5.989
28.	0.1374	0.7986	0.2494	0.6175	1.525	6.252
29.	0.0559	0.7913	0.4254	0.4069	1.294	6.220

| 30. | 0.0951 | 0.8042 | 0.3732 | 0.5259 | 1.310 | 6.278 |

Source: Researcher's Computation, 2017.

Table 11:   Descriptive Statistics of the Variables - Industry Data

	ROE	BSIZE	CAPR	CRR	LR	OER
Mean	0.208763	6.153967	0.800217	0.408377	1.200833	0.431007
Median	0.186000	6.391500	0.832500	0.386300	1.259000	0.402400
Maximum	0.993400	6.676000	0.872400	0.931000	1.525000	0.993400
Minimum	0.055900	2.367000	0.235800	0.249400	0.200000	0.185600
Std. Dev.	0.171754	0.935334	0.129803	0.124150	0.308406	0.232937
Skewness	3.417603	-3.299714	-3.521137	2.381903	-2.095350	0.739180
Kurtosis	15.91705	12.79765	14.63494	11.61322	7.037392	2.658231
Jarque-Bera	266.9629	174.4330	231.2069	121.1017	42.32813	2.877946
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.237171
Sum	6.262900	184.6190	24.00650	12.25130	36.02500	12.93020
Sum Sq. Dev.	0.855486	25.37065	0.488616	0.446982	2.758318	1.573536
Observations	30	30	30	30	30	30

Source: Researcher's Computation using Eviews, 2017

In Table 11: the descriptive statistics was computed as it relates to industry data for all the variables that operationalized the study in a common sample.

Figure 3: Line Graph of Focal and Explanatory Variables –Industry Data
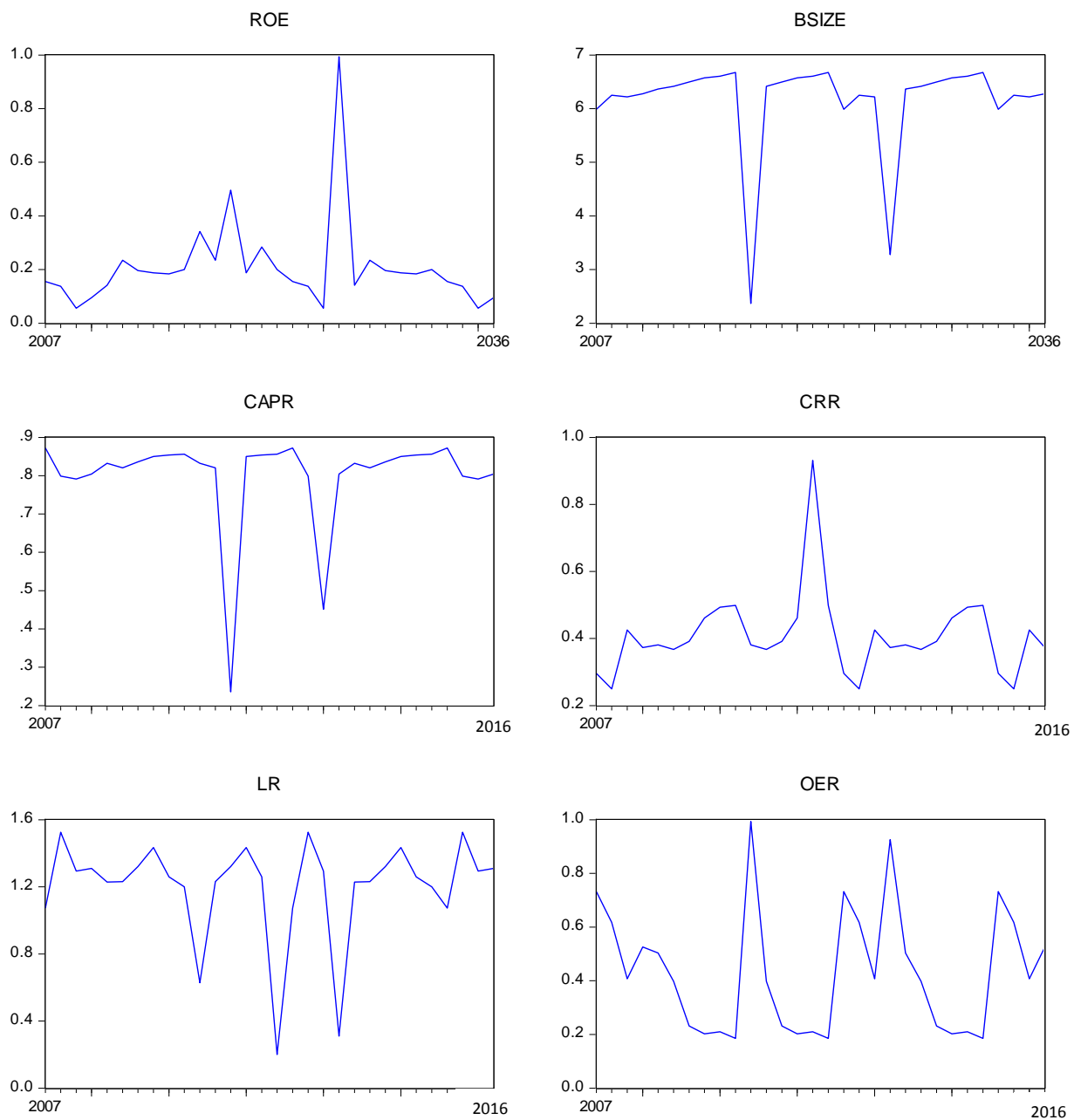
Source: Researcher's computation using Eviews, 2017

Fig. 4 shows that LR and OER have similar pattern of movement, while CAPR and CRR have similar pattern of movement from 2007 to 2016. This implies that there are some degrees of association between them which will be revealed in the output below.

Table12: Regression Analysis Results – Industry Data

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.421296	0.424898	3.345029	0.0027
BSIZE	-0.115258	0.051292	-2.247067	0.0341
CAPR	-0.289696	0.195163	-1.484380	0.1507
CRR	0.050685	0.273336	0.185433	0.8544
LR	-0.172182	0.102558	-1.678880	0.1062
OER	-0.198044	0.219289	-0.903119	0.3754
R-squared	0.515753	Mean dependent var		0.208763
Adjusted R-squared	0.414868	S.D. dependent var		0.171754
S.E. of regression	0.131382	Akaike info criterion		-1.044566
Sum squared resid	0.414267	Schwarz criterion		-0.764326
Log likelihood	21.66849	Hannan-Quinn criter.		-0.954915
F-statistic	5.112296	Durbin-Watson stat		2.562001
Prob(F-statistic)	0.002483			

Source: Researcher's computation using Eviews, 2017

Interpretation of Regression Coefficient Result

In Table 12, the regression result indicates that return on equity is negatively influenced by bank size, capitalization ratio, and liquidity ratio. The extent of the influence exerted on ROE by BSIZE is significant and negative, capitalization ratio and liquidity ratio exerts insignificant effects on ROE equivalent while liquidity ratio and operational expenses had insignificant and positive effects on return on equity equivalent. This was evidenced at 5 per cent level of significance at a p-value of 0.0341, 0.1507, 0.8544, 0.1062 and 0.3754 respective for BSIZE, CAPR, CRR, LR and OER respectively. The Durbin Watson statistics shows that the data have no serial correlation. The adjusted R^2 is 0.414868 and this reveals that about 41% of the variations in return on equity could be explained by CAPR, CRR LR and OER while 59% could be explained by other factors.

Test of Hypotheses

Hypothesis One

Ho:

Capitalisation ratio has no significant effect on return on equity of deposit money banks

H$_i$: Capitalisation ratio has significant effect on return on equity of deposit money banks

Decision Rule

Reject the null hypothesis (H$_0$) if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

Presentation and Analysis of Result

Table 13: Result of the Regression for Hypothesis One

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.401508	0.199245	2.015144	0.0536
CAPR	-0.240865	0.245882	-0.979598	0.3357
R-squared	0.033136	Mean dependent var		0.208763
Adjusted R-squared	-0.001395	S.D. dependent var		0.171754
S.E. of regression	0.171874	Akaike info criterion		-0.619770
Sum squared resid	0.827139	Schwarz criterion		-0.526357
Log likelihood	11.29655	Hannan-Quinn criter.		-0.589886
F-statistic	0.959613	Durbin-Watson stat		2.321738
Prob(F-statistic)	0.335673			

Source: *Researcher' E-views Output, 2017.*

Decision:

The regression result above in table 13 indicates that return on equity is influenced negatively by capitalization ratio (CAPR). The extent of the influenced of CAPR on ROE is negative and insignificant. The decision criterion is to accept the null hypothesis if the probability of the t-statistics > 0.05, otherwise, reject the null hypothesis and accept the alternate hypothesis. The outcome shows the probability of the t-Statistic of 0.3357 which is greater

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than 0.05. Therefore, we reject the alternate hypothesis and accept the null hypothesis that capitalization ratio has no significant effect on return on equity of banks.

Hypothesis Two

Ho₁: Credit risk ratio has no significant effect on return on equity of deposit money banks

Ha₁: Credit risk ratio has significant effect on return on equity of deposit money banks

Decision Rule

Reject the null hypothesis (H_0), if the p-value of the t-statistics is equal to or less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

Presentation and Analysis of Result

Table 14: Result of the Regression for Hypothesis Two

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.166309	0.111121	1.496649	0.1457
CRR	0.103959	0.260707	0.398757	0.6931
R-squared	0.005647	Mean dependent var		0.208763
Adjusted R-squared	-0.029866	S.D. dependent var		0.171754
S.E. of regression	0.174300	Akaike info criterion		-0.591735
Sum squared resid	0.850655	Schwarz criterion		-0.498322
Log likelihood	10.87603	Hannan-Quinn criter.		-0.561852
F-statistic	0.159007	Durbin-Watson stat		2.210931
Prob(F-statistic)	0.693097			

Source: *Researcher's E-views Output, 2017.*

Decision

The regression result above in table 14 indicates that credit risk ratio (CRR) positively influenced return on equity (ROE). The decision criterion is to accept the null hypothesis if the probability of the t-statistics > 0.05, otherwise, reject the null hypothesis and accept the alternate hypothesis. The outcome shows the probability of the t-Statistic of 0.398757 which is more than 0.05. Therefore, we reject the alternate hypothesis and accept the null hypothesis that CRR has no significant effect on return on equity of banks in Nigeria.

Hypothesis Three

Ho$_1$: Operating expenses ratio has no significant effect on return on equity

Ha$_1$: Operating expenses ratio has significant effect on return on equity

Decision Rule

Reject the null hypothesis (H$_0$) if the p-value of the t-statistics is equal to or less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

Presentation and Analysis of Result
Table15: Result of the Regression for Hypothesis Three

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.122574	0.065462	1.872454	0.0716
OER	0.199973	0.134122	1.490977	0.1471
R-squared	0.073554	Mean dependent var		0.208763
Adjusted R-squared	0.040466	S.D. dependent var		0.171754
S.E. of regression	0.168243	Akaike info criterion		-0.662472
Sum squared resid	0.792562	Schwarz criterion		-0.569058
Log likelihood	11.93707	Hannan-Quinn criter.		-0.6325

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F-statistic	2.223014	**Durbin-Watson stat**	1.968151
Prob(F-statistic)	0.147148		

Source: *Researcher's E-views Output, 2017.*

Decision

The regression result above in table 15 indicates that return on equity (ROE) is positively influenced by operational expenses ratio (OER). The extent of the influenced of OER on ROE is positive and insignificant. The decision criterion is to accept the null hypothesis if the probability of the t-statistics > 0.05, otherwise, reject the null hypothesis and accept the alternate hypothesis. The outcome shows the probability of the t-Statistic of 0.1471 which is greater than 0.05. Therefore, we reject the alternate hypothesis and accept the null hypothesis that operational expenses ratio has no significant effect on return on equity of Nigeria banking firms.

Hypothesis Four

Ho₁: Liquidity ratio has no significant effect on return on equity of deposit money banks

Ha₁: Liquidity ratio has significant effect on return on equity of deposit money banks

Decision Rule

Reject the null hypothesis (H_0), if the p-value of the t-statistics is equal to or less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

Presentation and Analysis of Result

Table 16: Result of the Regression for Hypothesis Three

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.585584	0.107687	5.437827	0.0000
LR	-0.313799	0.086948	-3.609050	0.0012
R-squared	0.317493	Mean dependent var		0.208763
Adjusted R-squared	0.293118	S.D. dependent var		0.171754

S.E. of regression	0.144405	Akaike info criterion	-0.968055
Sum squared resid	0.583875	Schwarz criterion	-0.874642
Log likelihood	16.52083	Hannan-Quinn criter.	-0.938172
F-statistic	13.02524	Durbin-Watson stat	2.161370
Prob(F-statistic)	0.001186		

Source: *Researcher's E-views Output, 2017.*

Decision

The regression result above in table 16 indicates that return on equity (ROE) is influenced negatively by liquidity ratio (LR). The extent of the influenced of LR on ROE is negative and significant. The decision criterion is to accept the null hypothesis if the probability of the t-statistics > 0.05, otherwise, reject the null hypothesis and accept the alternate hypothesis. The outcome shows the probability of the t-Statistic of 0.0012 which is less than 0.05. Therefore, we reject the alternate hypothesis and accept the null hypothesis that liquidity ratio has significant effect on return on equity of Nigeria banking firms.

Hypothesis Five

Ho$_1$: Bank size ratio has no significant effect on return on equity of deposit money banks

Ha$_1$: Bank Size ratio has significant effect on return on equity of deposit money banks

Decision Rule

Reject the null hypothesis (H$_0$) if the p-value of the t-statistics is equal to or less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

Presentation and Analysis of Result

Table 17: Result of the Regression for Hypothesis Three

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.87811	0.17397	5.04737	0.0000

	5	5	2	
BSIZE	-0.108768	0.027960	-3.890129	0.0006
R-squared	0.350847	Mean dependent var	0.208763	
Adjusted R-squared	0.327663	S.D. dependent var	0.171754	
S.E. of regression	0.140832	Akaike info criterion	-1.018159	
Sum squared resid	0.555342	Schwarz criterion	-0.924746	
Log likelihood	17.27238	Hannan-Quinn criter.	-0.988275	
F-statistic	15.13310	Durbin-Watson stat	2.024032	
Prob(F-statistic)	0.000564			

Source: *Researcher's E-views Output, 2017.*

Decision

The regression result above in table 17 indicates that return on equity (ROE) is influenced negatively by bank size ratio (BSIZE). The extent of the influenced of BSIZE on ROE is negative and significant. The decision criterion is to accept the null hypothesis if the probability of the t-statistics > 0.05, otherwise, reject the null hypothesis and accept the alternate hypothesis. The outcome shows the probability of the t-Statistic of 0.0006 which is less than 0.05. Therefore, we accept the alternate hypothesis and reject the null hypothesis that bank size has no significant effect on return on equity of Nigeria banking firms.

Discussion of Results

Hypothesis One: This hypothesis states that Capitalization ratio has no significant effect on return on equity of deposit money banks. From the result of regression analysis capitalization ratio exerts a negative effect on return on equity in the turn of 0.240865 and insignificantly in a turn of 0.3357. This finding is in line with those of of [32].

Hypothesis Two: This hypothesis states that Credit risk ratio has no significant effect on return on equity of deposit money banks. From the result of regression analysis, credit risk ratio exerts a positive effect on return on equity in turn of 0.103959 and

insignificantly effect in a turn of 0.6931. This agrees with the work [33] found out that credit risk ratio affect profitability negatively, and disagreed by [10] and [2] and [34].

Hypothesis Three: This hypothesis states that operating expenses ratio has no significant effects on return on equity of deposit money banks in Nigeria. From the result of regression analysis. Operating expenses ratio exerts a positive effect on return on equity in a turn of 0.199973 and insignificant in a turn of 0.1471. This agrees with the work of [13] and disagreed by [22] and [35].

Hypothesis Four: This hypothesis states that liquidity ratio has no significant effects on return on equity of deposit money banks in Nigeria. From the result of regression analysis, liquidity ratio exerts a negative effect on return on equity in a turn of 0.3138 and significant in a turn of 0.0012. In this light, [9] from his findings indicated that there is a significant relationship between liquidity management and the performance of Deposit Money Banks in Nigeria.

Hypothesis Five: This hypothesis states that bank size ratio has no significant effects on return on equity of deposit money banks in Nigeria. From the result of regression analysis, bank size ratio exerts a negative effect on return on equity in a turn of 0.1088 and significant in a turn of 0.0006. This finding is similar to that of [36].

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

SUMMARY OF FINDINGS

Based on the analysis on the research work on the effect of accounting ratios on investment performance of deposit money banks in Nigeria, for the period 2007–2016, it was revealed that:

(1)   Capitalization ratio have negative and insignificant effect on return on equity of deposit money banks in Nigeria;

(2)   Credit risk ratio have positive and insignificant effect on return on equity of deposit money banks in Nigeria;

(3)   Operating expenses ratio have positive and insignificant effect on return on equity of deposit money banks in Nigeria;

(4)   Liquidity ratio have negative and significant effect on return on equity of deposit money banks in Nigeria;

(5)   Bank size have negative and significant effect on return on equity of deposit money banks in Nigeria.

CONCLUSION

The study has established that for a period of ten years (covering 2007 and 2016), the statistics from three deposit money banks revealed cumulative significant relationship between accounting ratios and performance. It is the submission of the study that accounting ratio analysis had significant effect on investment performance of banks in Nigeria between 2007 and 2016.

RECOMMENDATIONS

Based on the findings of this research study, the following recommendations are made:

(1)   The management of deposit money banks should put more attention on their liquidity in order to maintain an adequate liquidity as the study has empirically proved that higher liquidity signifies better performance. The listed Deposit Money Banks in Nigeria should try and maintain a higher quick ratio as it will have a positive impact on their profitability.

(2)   The management should reduce the amount held in cash as current asset and concentrate more in investing them, so that it could

yield higher return rather than tie down the idle cash.

(3)   Efforts must be geared towards managing operating expenses as it has been seen to have negative effect on performance. Rise in operating expenses must be curbed so as not to overspend.

(4)   Management of financial institution in Nigeria should set up financial analysis and monitoring section for the purpose of developing, analyzing and interpreting financial report of the bank on weekly, monthly, quarterly and yearly basis for dynamic and strategic response to challenges in the environment and to help quick and prompt decision making process.

(5)   Concerted effort must be put in place to grow the asset column of these banks. The study has shown that bank size is major determinant of performance, so with a huge asset base, the chances

for investment performance will be greatly enhanced.

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APPENDIX

RAW DATA

Time Series Data of the Variables - Zenith Bank Plc

Year	Profit after tax (₦'m)	Long-term debt (₦'m)	Shareholders equity (₦'m)	Total liabilities (₦'m)	Total assets (₦'m)	Operating expenses (₦'m)	Revenues (₦'m)	Current assets (₦'m)	Current liabilities (₦'m)
2007	17,509	21,947	294,444	568,012	883,940	45,388	89,193	34,543	170,087
2008	49,566	40,431	341,794	1,331,286	1,673,080	81,013	190,075	341,794	1,164,459
2009	21,933	36,402	335,760	1,243,152	1,578,912	103,338	255,264	335,760	1,114,271
2010	32,305	28,358	356,909	1,441,770	1,798,679	89,107	168,415	356,909	1,290,014
2011	41,301	21,070	372,017	1,797,056	2,169,073	108,529	214,980	372,017	1,577,290
2012	95,803	15,138	438,003	1,998,883	2,436,886	111,644	279,042	438,003	1,802,008
2013	83,414	60,150	472,622	2,406,071	2,878,693	138,789	311,275	472,622	2,079,862
2014	92,479	198,066	512,707	2,911,112	3,423,819	152,335	372,015	512,707	2,265,262
2015	98,784	268,111	546,946	3,203,381	3,750,327	155,406	396,653	546,946	2,333,017
2016	119,285	292,802	616,353	3,667,383	4,283,736	156,676	454,808	616,353	2,552,963

Time Series Data of the Variables - First Bank Plc

Year	Profit after tax (₦'m)	Long-term debt (₦'m)	Shareholders equity (₦'m)	Total liabilities (₦'m)	Total assets (₦'m)	Operating expenses (₦'m)	Revenues (₦'m)	Current assets (₦'m)	Current liabilities (₦'m)
2007	20,636	28,007	301,551	441,210	1,001,457	670,884	115,740	145,565	989,102
2008	36,540	40,431	341,794	1,331,286	1,673,080	81,013	190,075	341,794	1,164,459
2009	3,622	36,402	335,760	1,243,152	1,578,912	103,338	255,264	335,760	1,114,271
2010	29,177	28,358	356,909	1,441,770	1,798,679	89,107	168,415	356,909	1,290,014
2011	18,636	21,070	372,017	1,797,056	2,169,073	108,529	214,980	372,017	1,577,290
2012	75,097	15,138	438,003	1,998,883	2,436,886	111,644	279,042	438,003	1,802,008

2013	66,451	60,150	472,622	2,406,071	2,878,693	138,789	311,275	472,622	2,079,862
2014	84,842	198,066	512,707	2,911,112	3,423,819	152,335	372,015	512,707	2,265,262
2015	2,945	268,111	546,946	3,203,381	3,750,327	155,406	396,653	546,946	2,333,017
2016	10,452	292,802	616,353	3,667,383	4,283,736	156,676	454,808	616,353	3,012,816

Time Series Data of the Variables - Fidelity Bank Plc

Year	Profit after tax (₦'m)	Long-term debt (₦'m)	Shareholders equity (₦'m)	Total liabilities (₦'m)	Total assets (₦'m)	Operating expenses (₦'m)	Revenues (₦'m)	Current assets (₦'m)	Current liabilities (₦'m)
2007	4,844	28,007	301,551	441,210	1,001,457	670,884	115,740	145,565	989,102
2008	3,127	40,431	341,794	1,331,286	1,673,080	81,013	190,075	341,794	1,164,459
2009	3,622	36,402	335,760	1,243,152	1,578,912	103,338	255,264	335,760	1,114,271
2010	5,828	28,358	356,909	1,441,770	1,798,679	89,107	168,415	356,909	1,290,014
2011	3,911	21,070	372,017	1,797,056	2,169,073	108,529	214,980	372,017	1,577,290
2012	17,924	15,138	438,003	1,998,883	2,436,886	111,644	279,042	438,003	1,802,008
2013	7,721	60,150	472,622	2,406,071	2,878,693	138,789	311,275	472,622	2,079,862
2014	13,796	198,066	512,707	2,911,112	3,423,819	152,335	372,015	512,707	2,265,262
2015	13,904	268,111	546,946	3,203,381	3,750,327	155,406	396,653	546,946	2,333,017
2016	8,753	292,802	616,353	3,667,383	4,283,736	156,676	454,808	616,353	3,012,816