Modeling the Residuals of Linear Regression of All Share Index on Capitalizations of Nigerian Stock Exchange

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Abstract
The study was a statistical modeling the residuals of linear regression of all share index on capitalizations of Nigerian stock exchange, while the study specific objectives include to : determine the trends in the All Share Index within the period under investigation, develop a linear regression model for all share index on capitalization, determine how past value of all share index affect market capitalization contributes with economic growth and determine if the all share index contributes to Nigeria economic growth. To achieve aimed and objectives of the study, the data extracted for the study were on All Share Index (ASI) and market capitalization from the year, 1985-2017. The data for the study were extracted from the central Bank of Nigeria online statistical bulletin. The data were fitted to ordinary least square regression using Eviews statistical software version ten. However, preliminary investigations show that the data were de-trend to avoid biased estimation and later fitted to ordinary least square linear regression model. The result obtained from the ordinary least square linear regression it was found that the R-square is 0.759778 and this simply means that 75.9778 percent of the All Share Index explained Market Capitalization. Also, the residual obtained from the error term of ordinary least square linear regression was fitted to an Autoregressive (AR(1)) process and it was found that past value of all share index affect market capitalization which in turn contributes to economic growth of market capitalization. Sequel to the results of the findings, the following recommendations were made; The Nigerian Stock market regulators should ensure that all share index and market capitalization are always stable so that their stability will enhance resultant positive effect on economic growth, With the presence of a positive relationship between all share index and market capitalization, therefore it is pertinent to recommend that there should be sustained effort to boast productivity in the economy (public and private sectors), having revealed how past value of all share index affect market capitalization as well contributes to economic growth , the Nigerian Capital Market should ensure that they build her investors confidence by ensuring integrity in the market , as well as providing marketers with the enabling environment to diversify their portfolio investments to other sector of the economy and also, having found that the residual error term of the ordinary least square regression can be fitted to an Autoregressive process, it is therefore recommended with empirical proof that market forces such as the interplay of demand and supply should be allowed to operate without any hindrance or Interference in security pricing as that will be inimical to the growth of the market

Keywords: *Residuals , Linear Regression and Stock Exchange*

Introduction

1.1 Background of the Study

In world today, statistics have created the way for the studied of economic and markets problems which have posed a challenge to the entire society especially the issue of all share index on capitalizations of Nigerian stock exchange. In this research work, the researcher will be making a forecast of all share index on capitalizations of Nigerian Stock Exchange; implication to the modeling the residuals of linear regression. The Nigerian Stock exchange market has a common feature of a modern economy and it is noted to perform a function that enhances the promotion, growth and development of the economy. According to Iornav(2015), the Nigerian Stock exchange is an economic institution; which promotes efficiency in capital formation and allocation. They promote efficiency in capital formation and allocation enables governments and industry to raise long-term capital for financing new development, and intensifying and modernizing industrial and commercial concerns. Iornav(2015) further opined that all share on capitalizations of Nigerian Stock indices are used as a general measure of the performance of stock markets in terms of price appreciation or depreciation. An all share on capitalizations of Nigerian Stock indices or stock market index could be seen as a measure of the value of a section of stock market. It is calculated from the prices of some selected typically a weighted average obtained from the stock market. Iornav(2015) define it as a tool used by investors and financial managers to describe the market, and to compare the return on specific investments.

In another development, the Nigerian Stock Exchange Alexander (1999),opined that these indices are significant economic indicators, as they weigh the health and, regularly, can forecast the future direction of economic activity. For some time now, challenging uncertainty and volatility has been observed in the emerging and nature of the financial markets worldwide. According to Alexander (1999), financial analysts and investors are concerned about the volatility in the returns of financial investments and price of stock as a result of the market risk associated with it and variation in the market price speculation as well as their interaction with other microeconomic variables which brought unstable business performance. This has led to the need of how best to forecast all share index of Nigerian stock exchange residuals of their linear regression with other macroeconomic variables for better economic planning and growth. According to Mark *et al.*, (1995), predicting the prospect of economic variables based on historical pattern could be determined by residuals of their linear regression model. As we all know that the major objective of time series econometrics as seen in Kolapo, and Adaramola, (2012) was to identify relationships between economic variables and use residuals of their linear regression to estimate and forecast the future, forecasting stock returns is therefore a significant method to understanding future stock price behavior of the all share index on capitalizations of Nigerian stock exchange. Fischer and Jordan,(2005), opined that accurate all share index on capitalizations of Nigerian stock exchange would not only lessen uncertainty in all share index prices but also provide a way to form expectation and perhaps avoid the risk of a large adverse change in all share index.

In another development, the expected stock market environment, therefore, the stock price forecast, is significant for making decisions especially for both the timing of stock investment and the relative investment desirability among the various sectors in the market. It is against this

background that this study models the Residuals of Linear Regression of All Share Index on Capitalizations of Nigerian Stock Exchange

Methodology

3.1 Research Design

Research design could be defined as "a blue print that guides researcher in his or her investigation and analyses" (Onwumere, 2005**).** It specifies the procedures for the collection and analysis of data, in order to ensure successful control of unnecessary and undue influences or interference in the study. Therefore, the research design for this study is an expo-factor design. Wali (2002) define an expo-facto as a form of design in which the variables (independent & dependent) used in the study are not manipulated. Also, it is a form of research design in which variables (independent & dependent) used in the study had already been determined by the natural course of event

3.2 Source of Data/ Software Used for the Analysis

The data to be used in this research work will be obtained from the Central Bank of Nigeria (CBN) statistical database Website (www.cbn.gov.ng). Variables (indicators) will be monthly data on All share Index and Capitalization within the period 1985-2017. The software used for the analysis was Econometric View(EVIEW) version ten

3.3 Model Specification

Black (2002) defined model specification as "a simplified system used to simulate some aspects of the real or actual economy. It is a form or specified view of reality design to enable the researcher described the essence or inter-relationship within the variables or condition under the study" However, in line with the objectives of this study, two classes of models used in the study and they include ; ordinary least squares and Autoregressive Model

3.3.1 Method of ordinary least squares

For method of ordinary least squares; the specification for the method of ordinary least squares of all square index $\hat{A}$ and $\hat{A}$ estimated That is

$$A = \alpha + Bx + e$$

3.3.1 Parameter Estimation of Residuals of Linear Regression

The specification for the method of ordinary least squares of all square index $\hat{A}$ and $\hat{A}$ estimated . That is

$$A_t = \alpha + Bx + e$$

The estimated model is

$\hat{A}$ = a+ bx

Then the residual sum of square is

$$\Sigma\hat{e}^2 = \Sigma(A_t - \hat{A})^2$$

$$\Sigma\hat{e}^2 = \Sigma(A - a - bx)^2 \quad \text{.....equation(A)}$$

Minimizing equation (A) with respect to "a"

$$\frac{\partial \Sigma e^2}{\partial a} = 2\Sigma(y - a - bx)^{2-1}(-1)$$

$$o = -2\Sigma(y - a - bx)$$

$$\varphi = -\Sigma(y - a - bx)$$

$$\varphi = -\Sigma y + na + b\Sigma x$$

$$\Sigma Y = na + b\Sigma x \qquad (1)$$

Minimizing equation (A) with respect to "b" and equating then

$$\frac{\partial \Sigma e^2}{\partial b} = 2\Sigma(y - a - bx)^{2-1}(-1)$$

$$\varphi = -2\Sigma X\,(y - a - bx)$$

$$\varphi = -2\Sigma X + a\Sigma X + b\Sigma X^2$$

$$\Sigma XY = a\Sigma X + b\Sigma X^2 \qquad (2)$$

Dividing equation (1) by "n" to the both side

$$\frac{\Sigma Y}{n} = \frac{na}{n} + \frac{b\Sigma X}{n}$$

$$\hat{Y} = \text{a} + \text{b}\ \bar{x}$$

$$\text{a} = \bar{y} - \text{b}\ \bar{x}$$

Put the value of "a" into equation (2)

$$\Sigma XY = (\ \bar{y} - \text{b}\ \bar{x}\ )\quad \Sigma X + b\Sigma X^2$$

$$\Sigma XY = (\ \frac{\Sigma Y}{n} - b\frac{\Sigma X}{n}\ )\ \Sigma X + b\Sigma X^2$$

$$\Sigma XY = \frac{\Sigma X \Sigma Y}{n} - b\left(\Sigma X^2\right) + b\Sigma XY$$

$$\Sigma XY - \frac{\Sigma X \Sigma Y}{n} = b\Sigma X^2 - b\frac{(\Sigma X)^2}{n}$$

$$\Sigma XY - \frac{\Sigma X \Sigma Y}{n} = b\left[\Sigma X^2 - \frac{(\Sigma X)^2}{n}\right]$$

$$\text{b} = \Sigma XY - \frac{\Sigma X \Sigma Y}{n}$$

$$\left[\Sigma X^2 - \frac{(\Sigma X^2}{n}\right]$$

$$\text{b} = \frac{n\Sigma XY - \Sigma X \Sigma Y}{N\Sigma X^2 - (\Sigma X)^2}$$

The additive model assumes that the residuals are roughly the same throughout the series. They are a random component that adds to the other component in the same way at all points of the series. The least squares method uses a straight line In order to fit through the given points which are known as the method of linear or ordinary least squares. This line is termed as the line of best

fit from which the sum of squares of the distances from the point is minimized. Equations with certain parameters usually represent the results in this method. The method of least squares actually defines the solution for the minimization of the sum of squares of deviations or the errors in the result of each equation. Here, we used the least squares method to fit our data. The best fit result minimizes the sum of squared errors or residuals which are said to be differences between the observed or experimental value and corresponding fitted values given in the model. The sum of the deviations of the actual values of A_t and the computed values of A_t is zero. The sum of the squares of the deviations of the actual values and the computed values is least. This method gives the line for the best fit

3.3.2 Autoregressive (AR(1)) Model

Let y represent the series of a residual term obtained from the ordinary least square estimation of all share index with market capitalization, the AR (1) model representation shall be given as

$y_t = \delta + \varphi_1 y_{t-1} + \varphi_2 y_{t-2} + \ldots + \varphi_p y_{t-1} + A_t$

Where: $y_{t-1}, y_{t-2} \ldots y_{t-p}$ are the past series values (lags), A_t is white noise (i.e. randomness), and δ is defined by the following equation

3.4 Estimation Technique

"The estimation technique and procedure used in testing the model follows the times series, statistical and econometric criteria" (Salvatore, 1992). The times series criteria include the following;

3.4.1 Time Plot

Time series plot are simply defined as the representation of a collection of observations or variables obtained through measurements over time and it is represented on a graph. A time plot (often called a time series graph) presents values against time such that values are on the horizontal axis (y) while the vertical axis represents time (otherwise refers to as the X-axis). According to Ari (2013), unlike other form of charts, "the time plot do not categorized or grouped data. It is good when demonstrating or representing how data changes over time".

3.4.2 Descriptive Statistics using Jarque-Bera Test

Test for normality of the return data. According to Thor (2016), "the Jarque-Bera test statistic for normality is a goodness-of-fit test to verify whether a data variable has the skewness and kurtosis reflecting a normal distribution or not. The test statistics was developed by Jarque and Bera (JB) in 1980, (Deebom and Essi, 2017). The test statistic (JB) is defined as thus

$$\text{JB} = \frac{n-k+1}{6}\left(S^2 + \frac{1}{4}(C-3)^2\right) \qquad (3.13)$$

Where n represents the member of observations,

S represents the sample skewness.

C represents the sample Kurtosis and k stands for member of regressors".

Thor (2016), further explained that "if the data comes from a normal distribution, the JB statistic has chi-square distribution with two degrees of freedom. Also, the null hypothesis is joint hypothesis of both skewness and Kurtosis being zero, as in the case of normal distribution. However, we reject the null hypotheses if normality assumption fails. That is to say that rejection of null hypothesis is rejection of the normality assumption".

3.4.3 Unit Root Test

The Unit root test is carried out to verify the integrating order and level of the variables under investigation. It will also help in showing the stationary level of the data series. As recommended by time series econometricians like Pindyck and Rubinfeld (1998), Enders (1995), Engle and Granger (1987), Dickey and Fuller, (1981) and others. The essence of examining or verifying the time series properties of the variables to be used is to avoid spurious results. Based on this reason, before estimating our model in equation (3.1), we shall examine the time series properties of the data using Augmented Dickey Fuller (ADF). In other words we have to first confirm that all the variables (series) to be used are integrated of order I(d) with d<2. That is I (d) is either I(0) or I(1)

Results

First, we present the raw data. Figure 4.1 is a plot of the raw data with Time (years) on the horizontal axis and all share index on the vertical axis. This represents the direction and moving trend of the variable under study. It was followed by Figure 4.2 which is also a plot of the raw data with Time (years) on the horizontal axis and capitalization on the vertical axis.

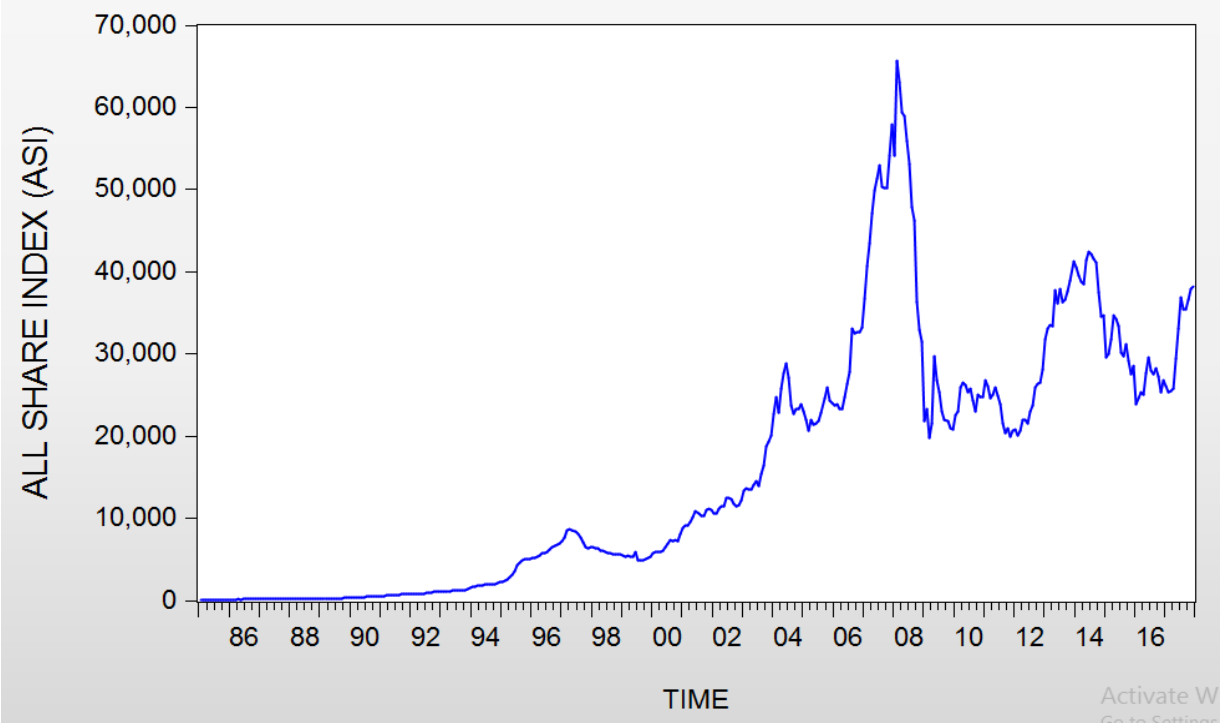


Fig. 4.1: Time Plot on Monthly All Share Index (ASI) January, 1995 to December, 2018.

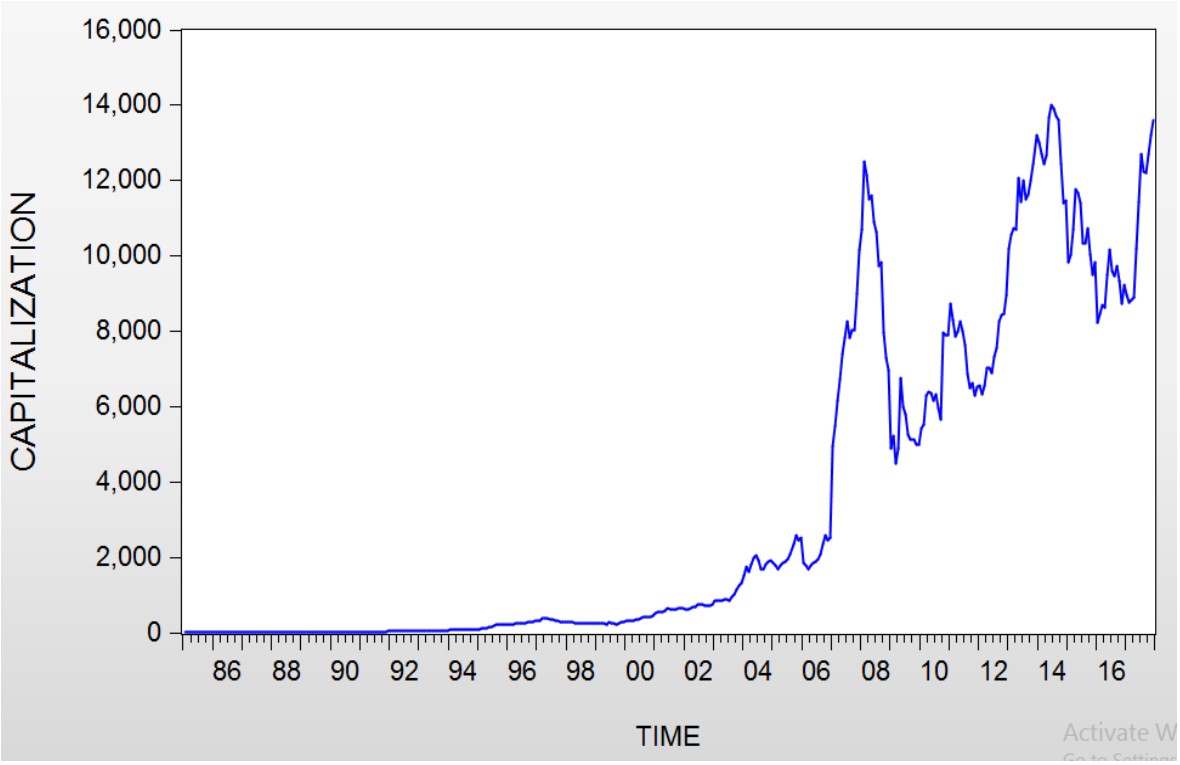


Fig. 4.2: Time Plot on Monthly Capitalization from January, 1995 to December, 2018.
This is followed by Table 4.1 which contains the results of descriptive statistics on capitalization and All share Index. This is carried out in order to know whether these obey the normality assumption

Table 4.1: Descriptive Statistic of All share Index and Capitalization

Variables	**"Mean**	**Median**	**Max**	**Min**	**Std. Dev.**	**Skewness**	**Kurtosis**	**Jarque-Bera**	**P-value"**
All share Index	146	770	657	111.	1521	0.998	3.246	62.508	0.000
Capitalization	352	717	140	6.700	436	0.926	2.351	59.49	0.000

Source: "Researcher's Calculation, 2018 using Eviews, Version 10. It is all tested Significant at 1 and 5% respectively"

4.4 Unit Root Test

The unit root test was carried out to determine whether the variables in the time series have a unit root in order to make it stationary; or otherwise. The Augmented Dickey Fuller (ADF) and Phillip Perron unit root test was employed in determining the stationary of the variables.

Table 4.4 Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Test

Variables	Augmented Dickey Fuller Test		Phillip Perron Test	
	1(0)	1(1)	1(0)	1(1)
All share Index	-2.177694	-17.56529***	-2.150966	-17.94871***
Capitalization	-1.874735	-18.93670***	-2.305596	34.16127***

"Source- *Computed by Researcher Using E-views 9.5"*

Table 4.3 shows the results obtained from the estimation result of Linear Regression of ASI on Capitalization and this was done to confirmed whether data can be fitted to Linear Regression

Table 4.3 : Estimation Result s of Linear Regression of ASI on Capitalization

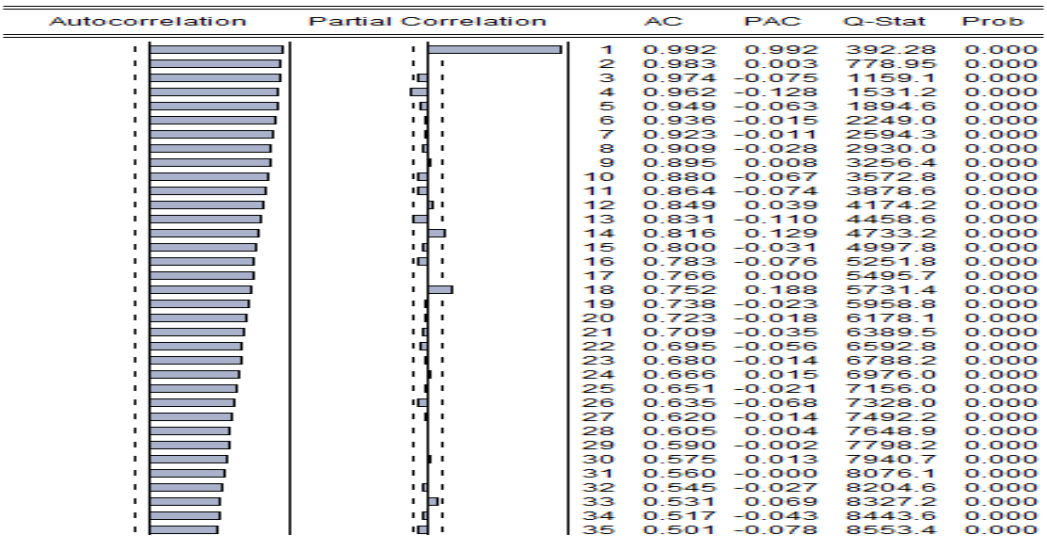
Dependent Variable: ASI
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 02/06/19 Time: 10:36
Sample: 1985M01 2017M12
Included observations: 396
ASI = C(1) + C(2)*CAPITALIZATION

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	5420.741	472.5670	11.47084	0.0000
C(2)	3.049606	0.086389	35.30088	0.0000

R-squared	0.759778	Mean dependent var	15566.29
Adjusted R-squared	0.759169	S.D. dependent var	15211.37
S.E. of regression	7464.913	Akaike info criterion	20.67885
Sum squared resid	2.20E+10	Schwarz criterion	20.69896
Log likelihood	-4092.413	Hannan-Quinn criter.	20.68682
F-statistic	1246.152	Durbin-Watson stat	0.012216
Prob(F-statistic)	0.000000		

"**Source-***Researcher's Computation Using Eview Version 10"*

Figure 4.3 shows the results obtained from the estimation result of the partial Correlogram of residuals at lag one from the Linear Regression of ASI on Capitalization . This was done to confirmed the type of model the residual of the linear regression can be fitted



	AC	PAC	Q-Stat	Prob
1	0.992	0.992	392.28	0.000
2	0.983	0.003	778.95	0.000
3	0.974	-0.075	1159.1	0.000
4	0.962	-0.128	1531.2	0.000
5	0.949	-0.063	1894.6	0.000
6	0.936	-0.015	2249.0	0.000
7	0.923	-0.011	2594.3	0.000
8	0.909	-0.028	2930.0	0.000
9	0.895	0.008	3256.4	0.000
10	0.880	-0.067	3572.8	0.000
11	0.864	-0.074	3878.6	0.000
12	0.849	0.039	4174.2	0.000
13	0.831	-0.110	4458.6	0.000
14	0.816	0.129	4733.2	0.000
15	0.800	-0.031	4997.8	0.000
16	0.783	-0.076	5251.8	0.000
17	0.766	0.000	5495.7	0.000
18	0.752	0.188	5731.4	0.000
19	0.738	-0.023	5958.8	0.000
20	0.723	-0.018	6178.1	0.000
21	0.709	-0.035	6389.5	0.000
22	0.695	-0.056	6592.8	0.000
23	0.680	-0.014	6788.2	0.000
24	0.666	0.015	6976.0	0.000
25	0.651	-0.021	7156.0	0.000
26	0.635	-0.068	7328.0	0.000
27	0.620	-0.014	7492.2	0.000
28	0.605	0.004	7648.9	0.000
29	0.590	-0.002	7798.2	0.000
30	0.575	0.013	7940.7	0.000
31	0.560	-0.000	8076.1	0.000
32	0.545	-0.027	8204.6	0.000
33	0.531	0.069	8327.2	0.000
34	0.517	-0.043	8443.6	0.000
35	0.501	-0.078	8553.4	0.000

Figure 4:3 : The partial Correlogram of residuals at lag one

*"***Source-***Researcher's Computation Using Eview Version 10"*

Table 4.4 shows the results obtained from the estimation result of Autoregressive model of ASI on Capitalization and this was done to confirmed whether data can be fitted to Linear Regression

Table 4:4 AR(1) Fit to the residuals

Dependent Variable: RSD
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 02/06/19 Time: 10:54
Sample: 1985M01 2017M12
Included observations: 396
Convergence achieved after 28 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.993761	0.002827	351.5088	0.0000
SIGMASQ	676849.3	14292.88	47.35571	0.0000

R-squared	0.987792	Mean dependent var	-4.04E-13
Adjusted R-squared	0.987761	S.D. dependent var	7455.458
S.E. of regression	824.7939	Akaike info criterion	16.28426
Sum squared resid	2.68E+08	Schwarz criterion	16.30437
Log likelihood	-3222.284	Hannan-Quinn criter.	16.29223
Durbin-Watson stat	1.947371		

Inverted AR Roots	.99

Source-*Researcher's Computation Using Eview Version 10"*

DISCUSSION

First, we present the raw data. Figure 4.1 is a plot of the raw data with Time (years) on the horizontal axis and all share index on the vertical axis. This represents the direction and moving trend of the variable under study. It was followed by Figure 4.2 which is also a plot of the raw data with Time (years) on the horizontal axis and capitalization on the vertical axis.

The descriptive statistics in the Table 4.1 as reported from the result of the analysis reveals a positive mean value of 146 and 354 for all share index and capitalization, indicating that the data series have positive mean-reverting. This means that at a certain point in time, the data, when subjected to constraint, will return to its favorable position (Engle and Patton, 2001).

Also, the standard deviation was 1521 and 436, which is simply referred to as the risk measure associated with both all share index and capitalization under investigation. The result also confirmed that the returns on the all share and capitalization series were positively skewed with the value (0.998 and 0.926) which means that the right tail of the distribution were longer indicating that the mass of the distribution is shifted to the right.

Meanwhile, the distribution Kurtosis was reported to be 3.246 and 2.351 for both all share index and capitalization, which means that it is leptokurtic and has a flatter tail. This is a standard characteristic behavior mostly exhibited by financial assets. Also, the Jarque-Bera test statistic gives the value 62.508 and 59.49 with a corresponding probability value of 0.000 confirming that the data was not normally distributed.

Similarly, table 4.4 contains the results obtained from unit root test using Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Test. Unit root test was carried out to determine whether the variables in the time series have a unit root in order to make it stationary; or otherwise. The results shows that the variables all share index and capitalization were stationary at first difference order one using both Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Test. They were stationary at 5 percent level of significance. The result obtained here was inline with Obubu. *et al* ,(2018) findings . Obubu. *et al* ,(2018) examine an empirical assessment of the impact of Nigerian all Share Index, Market Capitalization, and Number of Equities on Gross Domestic Product. The aim of the study was to assess the impact of Nigerian Stock Market such as All Share Index, Market Capitalization, and number of equities on Gross Domestic Product (GDP) (Economic Growth). The methods used in the study were regression analysis and ordinary least square technique. The results obtained shows that the series was stationary at 1%, 5%, and 10% α level; the residuals were normally distributed but not serially correlated at 5% α level.
Table 4.3 shows the results obtained from the estimation result of Linear Regression of ASI on Capitalization and this was done to confirmed whether data can be fitted to Linear Regression

The result shows that the intercept of the model (C(1)5420.741) and the co-efficient of capitalization (3.049606) were significant at the 5 percent level of significance. It also found that the R-square is 0.759778 and this simply means that 75.9778 of the All Share Index explained Market Capitalization. This found that All Share Index and market capitalization are well fitted to Linear Regression model. The result obtained here agrees with Aliyu, &Bashir (2015), and Obubu. *et al* ,(2018) findings

Aliyu, &Bashir (2015) evaluated Nigerian stock exchange (NSE) and economic development. The aim of the study was to critically evaluate the impact of the Nigerian stock exchange (NSE) on economic development. The study adopted an ex post factor design, while using secondary data collected from the activity reports of the Nigerian stock exchange and the central bank of Nigeria (CBN) from statistical bulletins (various years) in examining the influence of the Nigerian Stock Exchange on economic development. To determine the direct causal relationship between the various variables of the study, the ordinary least square (OLS) technique was used for analysis

purpose. The study revealed that the all share index (ASI), market capitalization and turnover ratio have significant effect on the gross domestic product (GDP) in Nigeria. Similarly, in Obubu. *et al* ,(2018) study on the impact of Nigerian all Share Index, Market Capitalization, and Number of Equities on Gross Domestic Product using the Residuals of Linear Regression of All Share Index on Capitalizations of Nigerian Stock Exchange . It was found all share index (ASI), has significant effect on market capitalization in Nigeria. As confirmed in the study , the results shows that to compare the current trends with that of the past or the expected trends, it reveals a clear picture of growth and the cyclic variation, helps us to understand the relationship between share index (ASI), and market capitalization in Nigeria especially in the business cycles. In Figure 4.3 the partial Correlogram of residuals at lag one from the Linear Regression of ASI on Capitalization obtained was tested. This was done to confirm whether the data for the study follow an autoregressive model process. The result shows that there is spike at lag one of the partial Correlogram of residuals obtained and this suggests that the Linear Regression model followed an autoregressive (AR (1)) model process. Table 4.4 contains the results obtained from the estimation of Autoregressive model of the relationship between All Share Index and Capitalization. An AR (1) was fit to the residuals of our linear regression. An AR (1) autoregressive process is the first order process meaning that the current value is based on the immediately preceding value.

Summary of Findings

- The results of the time plot in figure 4.1 and 4.2, it was found that there are the presents of trend in the variables under investigation study. The presents of trend in the variables is capable of causing a biased and spurious regression, therefore there is need to de-trend variables under investigation, and this leads to the test for unit root as well as differencing.
- The result also confirmed that the descriptive statistics on all share and capitalization series were positively skewed with the value (0.998 and 0.926) which means that the weight tail of the data distribution were indicating that the mass of the data were shifted to the right. Also, it was found that the Jarque-Bera test statistic gives the value 62.508 and 59.49 with a corresponding probability value of 0.000 and 0.000 confirming that the data was not normally distributed.
- The results of both Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Test show that the variables all share index and capitalization were stationary at first difference order one. This is an indication that the variables under investigations stationary at the same level.
- The results in table 4.3 obtained from the estimation of Linear Regression of All Share Index on Capitalization confirmed that their data are fitted to ordinary least square Linear Regression. It was also found that the R-square is 0.759778 and this simply means that 75.9778 percent of the All Share Index can explain Market Capitalization. This means that as All Share Index increase by 75.9778 percent there is a corresponding increase in market capitalization. We can conclude by saying that All Share Index contribute greatly to the growth of market capitalization.

- Figure 4.3 contains the result of the partial correlogram of residuals at lag one from the Linear Regression of All Share Index on capitalization obtained. The result shows that there is a spike at lag one of the partial Correlogram of residuals obtained and this suggests that the ordinary square linear regression model followed an autoregressive (AR (1)) model process.

CONCLUSION AND RECOMMENDATIONS

This chapter deals with the following sub-headings, conclusion, recommendations, Suggestion for further studies and contributions to knowledge.

6.1 Conclusion

The aim of the study was to do a statistical modeling the residuals of linear regression of all share index on capitalizations of Nigerian stock exchange, while the specific objectives include to : determine the trends in the All Share Index within the period under investigation, develop a linear regression model for all share index on capitalization, determine how past value of all share index affect market capitalization and contributes to economic growth and determine if the all share index contributes to Nigeria economic growth. To achieve aimed and objectives of the study, the data extracted for the study were on All Share Index (ASI) and market capitalization from the year, 1985-2017. The data were fitted to ordinary least square regression. However, preliminary investigations show that the data were de-trended to avoid biased estimation and later fitted to ordinary least square linear regression model. Also, from the error term of the residual obtained from ordinary least square linear regression fitted to an Autoregressive (AR(1)) process it was found that past value of all share index affected market capitalization which in turn contributes to economic growth of market capitalization

6.2 Recommendations

Sequel to the results of the findings, the following recommendations were made;

I. The Nigerian Stock market regulators should ensure that all share index and market capitalization are always stable so that their stability will enhance resultant positive effect on economic growth.

II. With the presence of a positive relationship between all share index and market capitalization, therefore it is pertinent to recommend that there should be sustained effort to boast productivity in the economy (public and private sectors)

III. Having revealed how past value of all share index affect market capitalization as well contributes to economic growth , the Nigerian Capital Market should ensure that they build her investors confidence by ensuring integrity in the market , as well as providing marketers with the enabling environment to diversify their portfolio investments to other sector of the economy.

IV. Also, having found that the residual error term of the ordinary least square regression can be fitted to an Autoregressive process, it is therefore recommended with empirical proof that market forces such as the interplay of demand and supply should be allowed to operate

without any hindrance or Interference in security pricing as that will be inimical to the growth of the market

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