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Abstract: - This study examined whether or not stock market promotes industrial growth and development in Nigeria. To achieve this objective, multiple linear regression analysis was used to establish the relationship between capital market and industrial growth and development from 1985-2015. The result indicated that there is a jointed long-run positive relationship between industrial growth and development for all the stock market variables used. By 95.58% R-squared and 94.85% adjusted R-squared, the result showed that industrial growth and development in Nigeria is adequately explained by the model for the period between 1985 and 2015. By implication 94.85% of the variation in the growth of industrial activities is explained by the independent variables. The result of the study stabled a jointed long-run positive links between the stock market and industrial growth and development. The capital market variables captured in the model such as market capitalization, money supply, government expenditure and interest rate, they both have positive and negative relationship with industrial productivity, except the constant term and level of money supply (MS). Government is therefore advise to put up measures to stem up investors’ confidence and activities in the market and increase market capitalization so that it could contribute significantly to the sector, and suggested pursuit of policies geared towards rapid development of the stock market. Also, all sectors of the economy should act in a collaborative manner such that the optimum benefits of linkages between the stock market and industrial growth and development can be realized in Nigeria.

Keywords: Expenditure, Government, Nigeria, Productivity, Stock Market

I. INTRODUCTION

The capital market is a common feature of every modern economy and is reputed, amongst other things, to perform critical allocation function which promote industrial growth and stimulate orderly industrial development (Enisan, and Olufisayo, 2009; Olowe, 1997). In many advanced countries where capital market correlate directly with the economy, the capital market with adequate depth plays an essential role in industrial growth and develop (Elumide, and Asaolu, 2006; Ibrahim, and Aziz, 2003). Since they are the principal platform through which low cost funds to finance medium to long-term projects on infrastructure and other important project that transform economies are mobilized (Mishira, 2010). Such markets are characterized by high investor confidence, market integrity, efficient processes, adequate product offerings, sound regulatory framework, strong and transparent disclosure and accountability regime and good corporate governance. On the other hand, social amenities, infrastructure, etc. markets with these attributes is classified as world class capital markets (Securities and Exchange Commission 2002).

Nigeria has the capacity to evolve into such a market. It is our strong conviction that a world class capital market is a necessity if indeed we aspire to better leverage our wealth in terms of natural and human resources.

In essence, the capital market can foster diversification of the country’s economic base which is largely oil dependent and assist economic agents to pool price and exchange risk thereby encouraging saving and ultimately creating wealth. This conviction informed our vision to build a world class capital market as a catalyst for the realization of the nations full potential even as our leaders strive to address our socio-economic challenges (Securities and Exchange Commission, 2002).

Sule and Momoh (2009) noted that the capital market is the medium through which funds are mobilized and channelled efficiently from savers to users of funds. Apart from judicious mobilization of idle savings into productive use, the capital market creates an avenue for foreign investment and the influx of foreign capital for developing projects that increase the welfare of citizens (Donwa, and Ovia, 2010; Ewah, et al 2009).

Given the importance of high productivity in the industrial sector in boosting economic growth and standards of living of the people, the sourcing of long-term finance through the capital market cannot but be of importance to researchers (Aretis, and Luintel, 2001). It will also be useful in ascertaining the relative efficiency of the capital market in sourcing capital for the Nigerian industrial growth and development. Knowledge of the relative efficiency of the capital market could aid managers in making their financing decision and also the government in planning its programmes and policies, especially in creating a more vibrant capital market (Amadi, et al 2002).

Thus, the major instrument used in fund raising at the Nigeria capital market includes equities-ordinary shares and
preference shares, debt- government bonds (federal, states and local government) and industrial loans / debenture stocks and bonds.

Okereke (2000) point that the cheap source of funds from the capital market remains a critical element in the sustainable development of the economy. She enumerated the advantages of capital market financing to include non-short repayment period as funds are held for medium and long-term periods or in perpetuity, funds to federal, states, local governments and industries without pressures and ample time to repay loans.

According to Al-Faki (2006) the capital market is a network of specialized financial institutions, series of mechanisms, processes and infrastructure that, in various ways, facilitate the bringing together of suppliers and uses of medium to long term capital for investment in industrial growth and development projects.

This research examines the impact of capital market on industrial growth and development in Nigeria. It seeks to evaluate whether or not there is a relationship between the operations of the capital market has impacted in any way on the productivity of the industrial sector.

II. RESEARCH DESIGN

This research adopted historical design framework that seek to give answers to the research questions formulated in chapter 1. Therefore, this design is considered the most appropriate for this since it involves investigating the past event of capital market operations which is considered to provide information that represented the entire population of study. It was self-survey which covered Uyo Central Bank in Akwa Ibom state, Asaba Central Bank in Delta state, port Harcourt Central Bank in Rivers state, Benin Central Bank in Edo state, Umuahia Central Bank in Abia state and Owerri Central Bank in Imo state. Data were collected from Central Bank of Nigeria (CBN) annual report and statement of account and Central Bank of Nigeria (CBN) statistical bulletin. The study was based on time series data collected on annual basic from the period 1985 - 2015.

II.1 Model Specification


The model used industrial growth as a proxy which is significantly influenced by the capital market indices (market capitalization, money supply, government expenditure and interest rate).

Mathematical equation:

\[
INDG = \beta_0 + \beta_1 MCAP + \beta_2 MS + \beta_3 GEXP + \beta_4 INT
\]

Where,

\[
\log(INDG) = \beta_0 + \beta_1 \log(MCAP) + \beta_2 \log(MS) + \beta_3 \log(GEXP) + \beta_4 \log(INT) + \mu
\]

II.2. Sampling Design and Procedures

In designing this research, samples was drawn from six states of the federation which include Akwa Ibom, Delta, Rivers, Edo, Abia and Imo state and samples collected were twenty nine (29). The procedure involves estimating the impact of capital market on industrial sector with a view to assess the performance of stock market in growth and development of the sector.

The research will use multiple linear regression analysis to establish the relationship. The following variables are used to assess the effectiveness of the stock market; Market capitalization which refers to the total market value of the equity in the publicly traded entity. It also refers to the value of all listed securities base on their market prices, duly approved by the Securities and Exchange Commission and traded on the floor of the Stock Exchange; Money supply which refers to the total amount of money in circulation or in existence in a country; and Government expenditure which refers to total government spending in the economy; Interest rate refer to the proportion charge by capital market operators as interest to be paid by the borrower (industrial sector) within the period (1985-2015).

This research, as noted employed historical method in other to critically investigate the past experience of the operations of capital market and to evaluate its impact on industrial growth and development in Nigeria. Therefore, the population covers the entire capital market in Nigeria and sample was drawn from six states of the federation which include Akwa Ibom, Delta, Rivers, Edo, Abia and Imo state.

The study adopts multiple linear regression analysis to evaluate capital market performance and tis impact on industrial growth and development in Nigeria. It examines the effect of the capital market to exert positive impact on the growth is used as the proxy for growth and development while variables that are germane to the activities of the stock market are used to determine the market impact on the industrial sector.

Secondary sources of data were used as the main methods of data collection.
III. TEST OF VALIDITY AND RELIABILITY OF THE INSTRUMENT

The research employed multiple linear regression analysis to establish the relationship between capital market and industrial growth and development to test validity and reliability of the instrument and it was prove to be reliable. The major concerned is the data presentation, analysis, interpretation and discussion of result. It aims at establishing through evidence the impact of capital market on industrial growth and development in Nigeria.

III.1 The Time Series Properties of the Variables

Since, the data collected on these macro-economic variables are essentially time series in nature; accordingly, Demirgue-Kunt, and Levine (1996), is of the opinion that they should be spurious. This need is born out of the fact that if a time series data is non-stationary, the regression performed on these variables with unit root would be spurious (Ezeoha, et al 2009).

According to Mishira, (2010), a series is stationary if its mean and variance are constant overtime and the value of the co-variance between the two periods depend only on the distance or lag between the two time period and not the actual time at which the co-variance is computed.

We therefore applied the Augmented Dickey-fuller(ADF) unit root test on all the data series adopting the 5% critical level of the Dickey-Fuller (DF) critical table values to be tested here is:

\[ H_0 : \delta = 0 \text{ or } P = 1 \] (The variables are non-stationary)

\[ H_1 : \delta \neq 0 \text{ or } P \neq 1 \] (The variables are stationary)

Decision Rule

Reject \(H_0\) if the ADF statistic is greater than the ADF critical value at 5% level of significance, accept otherwise. Below is a summary of the ADF unit root test results.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>ADF TEST STATISTICS</th>
<th>5% CRITICAL LEVELS</th>
<th>LEVEL OF INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(INDP)</td>
<td>-7.315052</td>
<td>-2.976263</td>
<td>I(1)</td>
</tr>
<tr>
<td>LOG(MCAP)</td>
<td>-4.310850</td>
<td>-2.976263</td>
<td>I(1)</td>
</tr>
<tr>
<td>LOG(MS)</td>
<td>-3.222269</td>
<td>-2.991878</td>
<td>I(1)</td>
</tr>
<tr>
<td>LOG(GEXP)</td>
<td>-5.264658</td>
<td>-2.976263</td>
<td>I(1)</td>
</tr>
<tr>
<td>INT</td>
<td>-5.597462</td>
<td>-2.981038</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

The result show that at 5% critical value, INDG (Industrial growth), MCAP (Market Capitalization), GEXP (Government expenditure), MS (Money Supply level), and INT (Interest rate) is stationary at 1st difference and are all integrated at 1(1). This result is expected, since most macroeconomic variables (time-series) data are known to be non-stationary at level form or zero form.

Since our variables are non-stationary (i.e. at level form), we go further to carry out co-integration test. The essence is to show that, although most of our or equilibrium between them. That is, the variables are co-integrated.

III.2 Cointegration Test

Theoretically speaking, it is expected that regression involving non-stationary time series variables may produce spurious results. Co-integration tests prove that combination of such variables has a long-term equilibrium or relationship. Economically, two variables will be co-integrated if they have a long-run relationship between them (Gujarati, 2004).

<table>
<thead>
<tr>
<th>Hypothesized No. of (EC)s</th>
<th>Eigen Value</th>
<th>Likelihood Ratio</th>
<th>5% Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>0.821382</td>
<td>92.65742</td>
<td>69.81889</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.611576</td>
<td>46.14971</td>
<td>47.85613</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.395287</td>
<td>20.61694</td>
<td>29.79707</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.137212</td>
<td>7.035918</td>
<td>15.49471</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.085657</td>
<td>2.417850</td>
<td>3.841466</td>
</tr>
</tbody>
</table>

From the above results, it is quite clear that the co-integration test indicates that there is no co-integrating equation at 5% level, thus implying no long-run relationship among the variables.

However in the short-run, there can be temporary disequilibrium among the variables. To correct the short run disequilibrium the appropriate thing is to tie the short-run behavior of these variables to the long-run values using the Error Correction Mechanism (ECM). But for the purpose of this research we do not intend to carry out this Error Correction Mechanism (ECM).

III.3 Estimation of Output and Interpretation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>F- statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(MCAP)</td>
<td>0.250624</td>
<td>0.331428</td>
<td>0.756195</td>
<td>0.4569</td>
</tr>
<tr>
<td>LOG(MS)</td>
<td>0.781863</td>
<td>0.405350</td>
<td>1.928856</td>
<td>0.0657</td>
</tr>
<tr>
<td>LOG(GEXP)</td>
<td>-0.007459</td>
<td>0.035042</td>
<td>0.212874</td>
<td>0.8332</td>
</tr>
<tr>
<td>INT</td>
<td>0.038807</td>
<td>0.024585</td>
<td>1.578461</td>
<td>0.1276</td>
</tr>
<tr>
<td>C</td>
<td>6.965357</td>
<td>0.813048</td>
<td>8.569794</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.955869 \]
Adjust \(R^2\) = 0.948513

\[ F - \text{Statistic} = 129.9567 \]

Durbin Watson = 0.880103

\[ \text{Prob} (F) = 0.000000 \]

A unit change in the level of Market capitalization on average leads to about 0.250624 unit change in INDG (which
also indicates an increase). Also, a unit change in the level of government expenditure on the average leads to about 0.007459 unit change or INDG. Furthermore, a unit change in the level of money supply (MS) leads to 0.781763 unit change in INDG. Moreover a unit change in interest rate leads to about 0.038807 unit change INDG. Although they have both positive and negative relationship with industrial productivity or output, they are not statistically significant, except the constant term and the level of money supply (MS).

IV. EVALUATION OF RESULT BASED ON STATISTICAL CRITERIA

IV.0.1 Coefficient of Determination ($R^2$): the coefficient of determination determines the proportion of the variation in the dependent variable LOG (INDG) which is explained by the variables in the explanatory variables. The value of R2 which is 0.948513 reveals that only 94.85% of the variation in industrial growth (or INDG) is explained jointly by variations in the explanatory or independent variables.

IV.0.2 The Student T-Test: This test is used to show the significance of the parameter estimates by comparing the values of the calculated t-statistic and the critical t-values at 5% level of significance. The hypothesis is stated below:

$H_0 : \beta_i = 0$ (the parameters estimated is statistically insignificant)

$H_1 : \beta_i \neq 0$ (the parameters estimated is statistically insignificant)

The critical value of No tail test is obtained from the student t-table for a/2 level of significance and (n-k) degrees of freedom (df).

$a = 5$

\[
\frac{a}{2} = 0.05/2 = 0.025
\]

$k =$ number of parameters including the intercept in the regression

$n =$ number of observations

Decision Rule:

Reject $H_i/t$ if $> 0.025$, (n-k) and accept otherwise

n = 29

k = 5

$n - k = 29 - 5 = 24$

df = $t_{0.025,24} = 2.0639$

IV.0.3 T-Test

Since it is only industrial growth that is significant, we therefore conclude that the explanatory variables are jointly statistically significant.

IV.0.4 F-Test: this test statistic is used to show the joint significance of the parameters. The T-values provides a test of the Ho that the true slope coefficients are simultaneously zero.

That is:

$H_0 : \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$

$H_1 : \beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$

Decision Rule:

If $F_{cal} > F_{a, (k-1,n-k)}$, reject $H_0$, do not reject $H_0$ if otherwise.

Where $F_{a, (k-1,n-k)}$ is the critical F – value at the chosen level of significance (a) and (k-1) degree of freedom (df) for the numerator and (n-k) degree of freedom (df) for the denominator; $k =$ number of parameters used in the regression.

$n =$ number of observations: $a = 0.05$

Below is a summary.

<table>
<thead>
<tr>
<th>Variable</th>
<th>T-statistic/t</th>
<th>Critical value</th>
<th>Decision Rule</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.566974</td>
<td>2.0639</td>
<td>+ &gt; 2.0639</td>
<td>Statistically significant</td>
</tr>
<tr>
<td>LOG(MCAP)</td>
<td>0.756195</td>
<td>2.0639</td>
<td>+&lt; 2.0639</td>
<td>Statistically not significant</td>
</tr>
<tr>
<td>LOG(MS)</td>
<td>1.928856</td>
<td>2.0639</td>
<td>+&lt; 2.0639</td>
<td>Statistically significant</td>
</tr>
<tr>
<td>LOG(GEXP)</td>
<td>-0.212874</td>
<td>2.0639</td>
<td>+&lt; 2.0639</td>
<td>Statistically significant</td>
</tr>
<tr>
<td>INT</td>
<td>1.578461</td>
<td>2.0639</td>
<td>+&lt; 2.0639</td>
<td>Statistically significant</td>
</tr>
</tbody>
</table>

Since the F-statistic ($F_{cal}$) is greater than the critical value at 5% level of significance, we reject the null hypothesis (Ho) and conclude that the variables are jointly statistically significant.

IV.1 Test Based on Econometric Criteria

IV.1.1 Multicollinearity test: One of the assumptions of the classical linear regression model is that there is no multicollinearity among the regressors included in the regression model. In carrying out this test, a simple rule of thumb is used to search for high pair wise or zero order correlation between any two regressors. According to Adam and Sanni, (2005), if the correlation coefficient is in excess of 0.8, then multicolllinearity is serious from the correlation matrix table (on the appendix), we can notice that there is the
IV.1.2 Test for autocorrelation: In testing for auto correlation, the Durbin-Watson d-test will be used. Hence, we compare the established lower limit dL and upper limit, dU of Durbin-Watson based on 5% level of significance and K degrees of freedom, where K = number of explanatory variables excluding the constant. To test for autocorrelation (AC), we make use of the Amended Durbin-Watson Statistic. The hypothesis is thus stated:

\[ H_0 : dU < d < 4 - dU \text{ - there is no autocorrelation} \]

**Decision Criteria:**
Accept \( H_0 \) if \( dU < d < 4 - dU \) and reject if otherwise.

Where \( dU = 1.8409 \)

\[ dL = 1.0497 \]

\[ 4 - dU = 4 - 1.8409 = 2.1591 \]

\[ 1.8409 > 1.610019 < 2.1591 \]

Since \( dU > d < 4 - dU \)

i.e. \( 1.8409 > 1.610019 < 2.1591 \), we do not accept the \( H_0 \) and conclude that there is a positive autocorrelation.

**IV.1.3 Heteroscedasticity Test:** The essence of this test is to see whether the error variable of each observation is constant or not. Non constant variable can cause the estimated model to yield a biased result. White’s general heteroscedasticity test in which the residuals follow chi-square (x2) distribution with degrees of freedom equal to the number of regressors (excluding the constant) is used.

**IV.2 Hypothesis Testing**

\[ H_0 : \beta_i = 0 - \text{There is no heteroscedasticity} \]

\[ H_1 : \beta_i \neq 0 - \text{There is heteroscedasticity} \]

**Decision Criteria:**
Reject \( H_0 \) if the computed \( n.R^2 > X^2 \text{ tab} \), do not reject otherwise at 5% level of significance.

The result of the heteroscedasticity rest is summarized for each model as follows:

\[ n = \text{number of observations} = 29 \text{ and } R^2 = 0.164210 \]

Therefore, \( n.R^2 = 29(0.164210) = 4.762101 \)

\( X^2 \text{ tab at } 5\% \text{ level of significance with } 9 \text{ degrees of freedom (df)} \) gives 16.919 from the chi-square (X2) distribution table.

Since \( n.R^2 < X^2_{0.05, 9} \), the null hypothesis is accepted and we conclude that the errors in the regression result have constant variance.

**IV.3 Regression Findings**

The result shows that at 5% level of significance, the explanatory variables have a long-run positive relationship or equilibrium with the dependent variable. But in the short-run they can be temporary disequilibrium among the variables. Similarly, estimation of output shows that, a unit change in MCAP leads to 25% change in INDG (which indicates increase), also a unit change in the level of GEXP leads to 75% change in INDG, a unit change in MS leads to 78% change in INDG, a unit change in INT leads to 39% change in INDG, although they have both positive and negative relationship with industrial productivity, except the constant term and the level of money supply (MS), which is significant.

Similarly, the coefficient \( R^2 \) and adjusted \( R^2 \) are 95.8% and 94.8% respectively, this determines the ability of the explanatory variables to explain the dependent variable. Similarly, the student T-test and F-statistic values are also jointly statistically significant or have long-run relationship with industrial growth and development in Nigeria from the period 1985 – 2015. Therefore, the model is well specified. The explanatory variables are very good instruments for the growth and development of the Nigerian industrial sector.

**V. CONCLUSIONS**

The problems of provision of infrastructural facilities should be given increased attention by the government. Many businesses are groaning due to heavy outlay on funding electricity and other facilities and it is known that many businesses refuse to come to the country or start their businesses due to these challenges. If emphasize is given to these problems, it will assist to improve the depth of the market, because foreign businesses will be happy to invest in the market.

**REFERENCES**


