AN EMPIRICAL ANALYSIS OF THE IMPACT OF CAPITAL MARKET ACTIVITIES ON THE NIGERIAN ECONOMY
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Abstract
This study examined empirically the impact of capital market activities on the Nigerian economy within the period 1990 – 2006. The study was carried out to show the relevance of capital market in the economic development of the country. The Ordinary Least Square (OLS) techniques was utilized to empirically assess the impact of our modeled independent variables/regressors on our chosen dependent variables. The hypothesis that the Nigerian Capital Market has a significant impact on GDP was tested and validated with the results. Our findings gave rise to statistically significant t-statistics which further confirms the effect of the independent variables on the dependent variables. Some of the recommendations to further accelerate economic growth in Nigeria, are more efforts at formulating and implementing favourable investment friendly policies. Others include the expansion of the stock market in terms of depth and breadth and the attraction of foreign direct investment and foreign portfolio investment into the Nigerian economic landscape.

Keywords: Nigeria, Market Capitalization, New issues, Trading Values, Gross Domestic Product.

Introduction
The impact of the financial sector which comprises of the capital and money markets in an economy cannot be overemphasized. It plays a very vital role in the general performance of the economy. It also basically serves as a lubricant that keep the wheels of the economy turning as well as affects the political and socio-cultural system of the country.

The financial market can be defined as a medium through which funds are mobilized and transferred efficiently from the surplus to the deficit sectors of the economy for productive investment purpose (Nwankwo, 1980). The market basically bridges the savings and investment gap as well as stimulate capital formation and economic development (Osamwonyi and Anikamadu, 2002). There are principally two segments of the financial market which is broadly differentiated by the tenor (time profile) of fund in each market (SEC, 1998). The money market, which is the first segment is at the short end which involves the provision of funds to those with cash demand not exceeding a period of one year. The longer end of the market is called the capital market, and provides long term funds and financial instruments whose maturities exceed one year.
Numerous empirical studies have appeared in recent years concerning the impact of capital market activities on the economy of a country (See, for example Hamilton, 1990; Hagerman and Richmond, 1973; Aigbokha, 1995; and Chigue, 2006 to cite only a few). While many of these studies have provided empirical evidence supporting a significant impact of capital markets and stock exchanges on the general economy of a country there seems to be a few dissenters who have opined that the impact is not significant. Theory has clearly made some progress in the subject. We now understand the importance of the capital market on the economic development of a country. However, very little is known about the empirical relevance of the capital market to a third world or developing country like Nigeria. Empirical work has unearthed some stylized facts on capital market importance, but these evidence is largely based on foreign and highly advanced European and Asian economies; and it is not at all clear how these facts relates to different economic models of other developing countries.

Without testing the robustness of these findings outside the environment in which they were uncovered, it is hard to determine whether these empirical regularities are merely spurious correlations let alone whether they support one theory or another (Idolor, 2010; Rajan and Zingales, 1995). This paper attempts to start filling this gap in our knowledge. Against this background, the purpose of this study is to wade into this controversy and reinvestigate, using the Ordinary Least Square (OLS) regression technique to determine whether the capital market significantly have an impact on the Nigerian economy.

**Methodology**

In this study, the impact of capital market activities on the Nigerian economy was analysed and measured so that the relationship between both can be established. The Ordinary Least Square (OLS) method of regression was used while the Cochrane Ockut Method for correcting autocorrelation was used where applicable. Also a Unit Root Test was conducted to test for stationarity in the time series data utilized. Our choice of the Ordinary Least Square estimation technique is based on the fact that it possesses some desirable properties which makes it unique. This is because among a class of linear unbiased estimators the Ordinary Least Square estimator is “blue” (best linear unbiased Estimator).

Our model was specified using Gross Domestic Product (GDP) as the dependent variable. While capital market indicators such as market capitalization, new issues and trading value was used as independent variables (explanatory variables). Specifically, the model is specified in functional form as follows:

\[ RGD_P = F(MCAP, NISS, TVAL) \]

Where:

- **RGDP** = Real Gross Domestic Product
- **MCAP** = Market Capitalization
- **NISS** = New Issues
- **TVAL** = Trading Value

The model is further specified in linear form as follows:

\[ RDGP = \beta_0 + \beta_1 MCAP + \beta_2 NISS + \beta_3 TVAL + U_t \]

Where:

- \( \beta_0 \) = Intercept of the entire regression model
- \( \beta_1 \) = Slope of MCAP
- \( \beta_2 \) = Slope of NISS
- \( \beta_3 \) = Slope of TVAL
- \( U_t \) = Stochastic error term.
The a priori expectations of the model are $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, This shows that the set of explanatory variables are expected/assumed to be directly related to the gross domestic product (GDP). The data used in this study were obtained from the 2008 CBN statistical bulletin and the 2009 NSE fact book; and our data set spanned a period between 1990 and 2006, which is a period of sixteen years. The suggested model variables (and data set) was also converted to their log form. This is because log models help to condense data into a unified scale which helps to avoid some of the problems of Stationarity and Autocorrelation in time series analysis (Gujarati, 2005).

Data analysis and interpretation of regression result

The empirical relationships between the Nigerian capital market and the Nigerian economy was examined. The study adopted the census mode whereby aggregate data for the variables on an economy wide basis was utilized. The Gross Domestic Product acted as proxy for the Nigerian economy while the regressors or independent variables were market capitalization, New issues and Trading values. A careful analysis of the variations in the Gross Domestic Product (GDP) verified a positive relationship between it and the regressors/determinant. This is shown in table 1.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Regressors</th>
<th>Estimated Co-efficient</th>
<th>Standard Error</th>
<th>T-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNRGDP</td>
<td>C</td>
<td>10.95064</td>
<td>0.123470</td>
<td>88.69060</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>LNMCAP</td>
<td>0.026652</td>
<td>0.011648</td>
<td>2.288200</td>
<td>0.0395</td>
</tr>
<tr>
<td></td>
<td>LNNISS</td>
<td>0.035469</td>
<td>0.013757</td>
<td>2.578176</td>
<td>0.0229</td>
</tr>
<tr>
<td></td>
<td>LNTVAL</td>
<td>5.62E-07</td>
<td>1.66E-07</td>
<td>3.393403</td>
<td>0.0048</td>
</tr>
</tbody>
</table>

$R^2 = 0.9151913$  
Adjusted $R^2 = 0.896508$  
F-Statistics = 47.20036  
D.W. Stat = 2.197786

Source: Authors (2011)

Before interpreting the regression results, it is imperative that the following diagnostics (statistics) are examined. The $R^2$ value of 0.915913 indicates that about 92% of the systemic variation in the gross domestic product (GDP) is explained by changes in the regressors (independent variable). This is a good fit as it leaves about 8% systemic variation in the GDP unaccounted for in the model. Furthermore, the adjusted $R^2$ which equals 0.896508 indicates that the model explains about 90% systemic variation in the dependent variable.

In support of the above, the F-statistics (47.20036) measure the overall significance of the model, that is, whether $R^2 = 0.915913$ is different from zero. The $R^2$ values of 0.915913 is different from zero and it is statistically significant at 5% and 1% levels of significance. This shows that the slope co-efficient is statistically significant, which implies that there is a linear relationship between the independent variables and the dependent variable. The Durbin-Watson statistic was also employed as a model to test for autocorrelation and partial auto-correlation. The regression results yielded a DW statistics of 2.197786 which indicates the absence of serial correlation. However, as shown in the Appendix, the unit Root test was carried out to confirm the absence of auto correlation in the variables. This test was passed either at level or first difference and with a lag of 1 (i.e. l(0), l(1)). This is shown by the greater value of their augmented Dickey-Fuller test statistics, value which is greater than the critical values either at 1%, 5% or
10% for all our variables of interest (see appendix). In all the cases, a D.W. Statistics slightly above the international standard of 2 was recorded which is also good for our model.

Furthermore, our Akaike information criterion (-2.676484) and Schwarz Criterion (-2.480433) are small enough to make our result acceptable. Naturally, the international best practice is to choose the result with the smallest Akaike information criterion or Schwarz criterion when faced with the regression results from two or more studies of a similar nature (using the same model and data). The sign of the estimated coefficient for our independent variables (LNMCAP, LNNISS and LNTVAL) is correct. The t-statistics of their slope coefficient is 2.288200, 2.578176 and 3.393403 respectively for market capitalization (LNMCAP) New Issues (LNNISS) and Trading Value (LNTVAL). As obviously observed in regression result 1 in our Appendix, we converted our said model to log form. This is because log models help to condense your data into a unified scale which helps to avoid some of the problems of Stationarity and Autocorrelation. The statistically significant t-values show at the 5% level of significance that a positive relationship exist between the gross domestic product (our dependent variable) and the regressors for the period under review (see Appendix).

It is however, recognized by the researcher that other factors, may impact on the economy, though, they were not captured within the model specified. For instance, Foreign Portfolio Investment (FPI), Foreign Direct Investment (FDI), government expenditure and exchange rate all affect the nature of the economy.

Conclusion and recommendation
From the findings, it was observed that the gross domestic product (proxy for the economy) is affected by some key significant variables. We observed that market capitalization, new issues and trading value in the nation’s bourse (stock exchange) affects the economy of the country; with a positive correlation as well.

Precisely, this study shows a positive relationship between our specified dependent variables and regressors (independent variables) over the period under study. Drawing from our research findings, the under-mentioned recommendations have been developed to serve as measures for improving the Nigerian economy. These includes among many others, the formulation and implementation of favourable investment friendly policies which can significantly encourage potential investors in the Nigerian capital market. Also, the depth and breadth of the stock market should be expanded to accommodate not only more securities but increase the value of the securities traded in the market. Finally, foreign portfolio investment (FPI) and foreign direct investment (FDI) should be vigorously pursued as additional stimulants and propellers of economic growth and development. These policies we believe is the only way for our economy to meet up with the emergent economies of Asia (e.g. China, Singapore) and indeed the rest of the world. While suggesting that this research work expresses a highly intelligent guide to determining the propellers of economic growth and development in Nigeria, interested researchers are hereby advised to conduct more research on this area, as improvement will be highly appreciated.

References


**APPENDIX**

Dependent Variable: LNRGDP
Method: Least Squares
Date: 08/09/11   Time: 12:20
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>10.95064</td>
<td>0.123470</td>
<td>88.69060</td>
<td>0.0000</td>
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<td>LNMCAP</td>
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</tr>
<tr>
<td>LNTVAL</td>
<td>5.62E-07</td>
<td>1.66E-07</td>
<td>3.393403</td>
<td>0.0048</td>
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</tbody>
</table>

R-squared 0.915913 Mean dependent var 11.66649
Adjusted R-squared 0.896508 S.D. dependent var 0.178313
S.E. of regression 0.057364 Akaike info criterion -2.676484
Sum squared resid 0.042778 Schwarz criterion -2.480433
Log likelihood 26.75011 F-statistic 47.20036
Durbin-Watson stat 2.197786 Prob(F-statistic) 0.000000

474
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNMCAP,2)
Method: Least Squares
Date: 08/09/11   Time: 13:37
Sample(adjusted): 1993 2006
Included observations: 14 after adjusting endpoints

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
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ADF Test Statistic 7.086818  1% Critical Value* -3.9635
5% Critical Value  -3.0818
10% Critical Value -2.6829

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTVAL)
Method: Least Squares
Date: 08/09/11   Time: 13:28
Sample(adjusted): 1992 2006
Included observations: 15 after adjusting endpoints

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<th>Variable</th>
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<td>R-squared</td>
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<td>Adjusted R-squared</td>
<td>0.817538</td>
<td>S.D. dependent var</td>
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ADF Test Statistic -4.334704  1% Critical Value* -4.0113
5% Critical Value  -3.1003
10% Critical Value -2.6927

*MacKinnon critical values for rejection of hypothesis of a unit root.
S.E. of regression       24344.28    Akaike info criterion    23.21484
Sum squared resid       7.11E+09    Schwarz criterion       23.35645
Log likelihood          -171.1113    F-statistic              32.36423
Durbin-Watson stat      2.783837    Prob(F-statistic)        0.000015

ADF Test Statistic  -3.663303
1% Critical Value*     -4.0113
5% Critical Value       -3.1003
10% Critical Value      -2.6927

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNNISS,2)
Method: Least Squares
Date: 08/09/11   Time: 13:35
Sample(adjusted): 1993 2006
Included observations: 14 after adjusting endpoints

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
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<tbody>
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R-squared            0.702462   Mean dependent var  -0.035201
Adjusted R-squared   0.648364   S.D. dependent var  1.811014
S.E. of regression   1.073912   Akaike info criterion 3.167902
Sum squared resid    12.68615   Schwarz criterion   3.304843
F-statistic          -19.17531  Prob(F-statistic)  12.98503
Durbin-Watson stat   2.003266   Mean dependent var  0.001272

ADF Test Statistic  -3.162889
1% Critical Value*     -3.7343
5% Critical Value       -2.9907
10% Critical Value      -2.6348

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP,2)
Method: Least Squares
Date: 09/03/11   Time: 23:53
Sample(adjusted): 1983 2006
Included observations: 24 after adjusting endpoints

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<th>Variable</th>
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