



## Macroeconomic Variables and its Impact on Capital Market Development in Nigeria (1990-2016)

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**Abstract:** *The study discusses the macroeconomic variables and its impacts on capital market development in Nigeria. The capital market acts as moderator along with investors and borrowers in the financial market. The operation of the market is influenced by macroeconomic variables either negatively or positively. So to what extent these variables impact the development of the market? The main objective of the study is to re-examine the impact macroeconomic variables on the development of Nigerian capital market. The study used time series data for the period of 27 years ranges from 1990-2016. It was compiled from the statistical bulletin obtained from the Central Bank of Nigeria (CBN) and also from national human development report. The auto regression analysis was used to assess the extent of the relationship between dependent and independent variables. The results of the study reveals that all the independent variables have a causal relationship with HDI which significantly impact on the capital market development that are affect the economy development in Nigeria. The study recommends that government should lower the cost of lending rate and encourage the production base of the nation in order to enhance Growth Domestic Product.*

**Key words:** *Macroeconomic variables, Capital market, Development.*

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## 1.0 INTRODUCTION

The machinery of capital market occupies central position to the development of any economy. It is essentially felt in terms of its intermediation role of providing finance to the deficit spending units from the surplus spending units. The market provides liquidity, contributes to capital formation and investment risk reduction by offering opportunities for portfolio diversification (Levine & Zeros, 1997; Fller, Hanousek & Nauro, 1999). The liquidity role of the market stands out clearly as the most significant among the numerous functions provided by the capital market. Levine and zeros (1997) emphasis that without liquidity many profitable long-term investments would not be undertaken because savers maybe reluctant to ties up their investment for a long period of time. The market provides liquidity by enabling firms to raise funds through the sale of securities with relative ease and speed. Through this activity the market is able to influence investments and economic development. Mohtadi and Agarwal(2004) state that the market lowers the cost of mobilizing and facilitates investments in the most productive technologies. The market enables government and industry to raise long-term capital for financing new projects and to expanding or modernizing industrial and or commercial concerns. If capital resources are not provided to those economic units, essentially industries where demand for funds are increasing for production purposes, the rate of expansion of the economy often suffers.

Capital market plays the role of providing long-term short-term debt and non-debt financing that enables government corporate and non-corporate institutions to acquire capital for development (Imobighe, 2015). It is essentially felt also in terms of its intermediation role of providing finance to the deficit spending units from the surplus sending units. The capital market acts as moderator along with investor and borrowers opportunities for investments. Unfortunately the operations of the capital market is been influenced by macro-economic variables both in short and long-run. That is, the securities traded at stock exchange are affected by these variables. Variables such as interest rate inflation rate, exchange rate, money supply, price level, investment level, income amongst others which exert high level of influence on the development of the capital market generally (Abbas, Tahir & Raza, 2014). These factors affect the sensitivity of equity and debenture returns as well as other financial assets.

The macro-economic variables and monetary aggregates together form the targets of monetary policy. Variables such as interest rate, exchange rate and inflation rate affect the performance of the capital market. Okpara, (2010), Akani (2013) assert that the economic environment plays a significant roles in determining the performance of capital markets development.

The Nigerian economic environment has been unable to grow to its full potentials due to unable operating environment, which is surrounded by inefficient capital markets, high rate of inflation, high rate of exchange rate, unstable policy, low investment level, poverty, and low income, among others (Yesufu, 1996). As a result of the behavior of the variables aforementioned that is associated with declining productivity indices and other several structural imbalance and uncertainties, which are determinants of Nigerian's economic development made this area of study imperative.

Many scholars have written on this subject matter and based on their understanding, they used gross domestic product (GDP) as proxy for economic development. But the right determinant is human development index (HDI) which one uses to assess the level of economic development in the country. From the reviewed works,

many researchers affirm that problems of the Nigerian's economic development are not well understood and solution proffered. Majority of the reviewed studies were very helpful, the exception is that they have methodological problem which affect the outcome of the conclusion and recommendations. Most for instance, did not apply unit root test to avoid spurious regression as a result of non-stationary properties of the time series and the use of cross-country analysis that eliminates country specifics which lead to incorrect conclusions. For instance, Gujarati and porters (2009), Essie (2002), Essian and Bawa (2007), Engel and Granger (1987) and Akintoby and Linyabuguma (2004). Finally, a lot of inconsistency of the results reviewed from the previous studies.

In view if the foregoing short-comings of some reviewed studies need arise to reinvestigate the impact of macro-economic variables on the development of Nigerian capital market using time series data and modern economic techniques for the analysis. The main objective of the study is to empirically re-examine the impact of macro-economic variables on the development of Nigerian capital market. To achieve the objective the following hypothesis is considered:

H<sub>01</sub>: There is no significant relationship between macro-economic variables (inflation rate, exchange rate, interest rate, money supply and excess demand) and the development of the Nigerian capital market.

## **2.0 REVIEW OF RELATED LITERATURE**

### **2.1 Conceptual Framework**

The capital market is said to be an organized market where long term securities are bought and sold. In the words of Edame and Okoro (2013) it is the market for dealings (lending and Borrowing) in long-term loanable funds. Akingbohunge, (1996) surmise that it is the market where medium to long-term finance is raised. The capital market is a collection of financial institutions set up for the granting of medium and long-term loans. It is a market for government securities, corporate institutions' securities, bonds amongst others for the mobilization of long term funds for development. Idris (2014) opine that it is a market for dealing in long-term lonable funds and equity shares. He stressed that it is made up of primary and secondary markets. The primary market deals with the raise of fresh or new issues while the secondary market is the market for the sale and the purchase of the existing securities.

The market is described as a medium where by funds are transferred from the surplus units to deficit economic units for purpose of productive investment. Alajekwu and Achugbu, (2011) suggest that this market lenders provide long term funds in exchange for long term financial assets offered by borrowers. Nwankwo (1991) deduce that the task of capital market is the mobilization of funds in the hands of myriad individuals who save and the pooling and channeling of such funds into production uses. This key function leads capital formations which culminate towards economic development. In the words of Akinsanmi (2015), it is said to be a mechanism where economic unit desire to invest their surplus funds, interact directly or through financial intermediaries with those who wish to procure funds for their businesses.

Capital market development is likening to economic development because the market contributes its quota to the economic growth which refers to the economic

wellbeing of a country by promoting economic growth and good standard of living which leads to economic development. (Adams 2006) define economic development as the elimination or reduction in poverty, in equality, and unemployment within growing economy. Mansell and wehen (1998) suggest that economic development involves economic growth, namely the increase in per capital and attainment of standard of living equivalent to that of industrialized nations. Musgrave and Musgrave (2004) conform to the fact that the requirements for economic development in low-income nations include those needed for consistent economic growth as compared with highly developed nations. Economic growths stand as a transiting phenomenon through which economic development is achieved. Which means economic development can only be achieved through economic growth, though they can be economic growth without economic development. Economic growth is the increase in real growth Domestic Product (GDP) this study considers it as economic development indicator.

## 2.2 Theoretical Framework

### 2.2.1 The efficient market theory

One of the key concepts underlying investment analysis is the notion of efficient capital markets. From the economic point of view, the efficiency of stock markets is the key to optimal allocation of resources. From the investor's point of view, it is necessary to have an efficient stock market to ensure that the investor is involved in a fair game (Finnerty, 1976). The efficient market hypothesis (EMH) was developed from the Random walk theory. The EMH says that the market is efficient at all times meaning that share prices instantly reflect available information in the market. Consequently, if the market is efficient as argued, then the market price is the only good and correct guide for the share selection. We can view capital market efficiency from the roles the capital markets are expected to perform in the economy, which we can classify into three:

- i. **Allocational efficiency:** The role of a capital market here is to optimally allocate scarce savings to productive investments in a way that benefits everyone. It means that the market channels funds to those firms with the most promising real investment opportunities.
- ii. **Operational efficiency:** A market is said to be operationally efficient if intermediaries who provide the service at the minimum cost. That is, buyers and sellers of securities can purchase transactions services at prices that are as low as possible, given the costs associated with having these service provided (Copeland and Weston, 1983; Olowe, 1997).
- iii. **Pricing Efficiency:** This is a market where prices are used as signals for capital allocation. The prices are set by forces of demand and supply. A market that is pricing efficient implies efficiency in the processing of information (Fama, 1976). The efficient market hypothesis often refers to efficiency with respect to pricing. The study anchored on this theory.

## 2.3 Review of Empirical Studies

There is significant positive impact of structural break on the Nigerian stock market returns in both short-run and long-run. The gross domestic per capita income a key provider to increasing stock market returns and also positive impact of gross domestic per

capita income and inflation on stock market returns in Nigerian. Osamwonyi & Michael (2004) collected annual data from 1990-2013 found a positive relationship between independent variables GDP, interest rate, exchange rate and inflation and dependant variable return on equity. Listed commercial banks profitability in Nigeria using the regression technique and found a positive relationship of GDP with return on equity (ROE), Interest rate and inflation rate have a negative relationship with return on equity (ROE). GDP significant effect position of return on equity (ROE), while interest rate have a significant negative effect on return on equity (ROE) but inflation is not significant at all levels of significance in Nigeria.

Menike (2006) analyzed the relationship between independent variables namely exchange rate, inflation rate, money supply & interest rate and dependent variable, using Sri Lankan stock market. Authors worked on monthly data from September 1991 to December 2002. And applied multivariate regression method and try to result that most significant variables like the exchange rate is mainly negative to stock prices, a strong negative relation exist between stock prices and inflation rate, stock prices react negatively to Treasury Bill rate. The lagged money supply variables become visible to have a negative outcome of stock prices in Sri Lankan Stock market. Gay (2008) conducted empirical research on exchange rate and oil price as an independent variables and stock markets of BRIC (Brazil, Russia, India and China) countries as a dependent variable. Study effort on monthly data of BRIC (Brazil, Russia, India and China) countries from March 1999 to June 2006. Box-Jenkins ARIMA statistical model used and found the effect of exchange rate and oil price on the stock market return of Brazil Russia, India, and China did not reveal a significant relationship, although, the descriptive values of exchange rate, oil prices and the lagged stock market return were not significant in BRIC (Brazil, Russia, India and China) countries.

Sharma & Mahendru (2010) found the relationship between four independent variables namely inflation rate, foreign exchange reserve, exchange rate and gold price and dependent variable Bombay stock exchange (BSE). Study examined weekly data a period from January 2008 to January 2009. The researchers used statistical multiple regression model. Results show that independent variables exchange rate & gold price have a significant relation with stock price; it gives the impression to affect the entire stock price while inflation rate is significant for only three of the twelve portfolios. Inflation rate & gold price do not become visible to have any significant effect on stock returns. It means that inflation rate & foreign exchange reserve don't influence the stock price. Momani & Alshharari (2012) studied the relationship between Amman Stock Exchange as a dependent variable and four Independent variables namely Annual gross national Product (GNP), annual Money Supply, Annual Interest rates on the Long-term deposits and Annual Industrial Production Index. Researchers used data a period from 1992 to 2010 and practical multiple regressions (stepwise method). Result shows that a relation create with statistical significance between the all independent and dependent variables. The interest rates variable has an enormous influence on Amman Stock Exchange.

Raza, Igbal, Ahmed, Ahmed & Ahed (2012) studied the relation between stock return and macro-economic independent variables namely foreign direct investment, domestic savings, exchange rate and inflation rate and Karachi stock exchange 100 index dependent variable. The study covered a period of 1988-2009, and found that FDI and Domestic savings have positive significant impact on stock market development. Exchange

rate has negative significant impact, while inflation insignificant impact on stock market development in Pakistan. Hasanzadeh & Kianvand (2012) studied the relationship between macro-economic variables namely gross domestic product, nominal effective exchange rate, money supply, gold coin price and investment in housing sector, dependent variable Tehran stock index (TSI). Researchers worked on quarterly base a period from January 1996 to January 2008. Study used process Co-integration and Vector Error correction Method (VECM) and found results that stock price shows a significantly negative relation with nominal effective exchange rate and the relationship between stock price and money supply is found significantly positive effect & increase stock prices. Gold coin & housing division act as substitutes for stock market in Iran.

Naik & Padhi (2012) argued that stock return should be affected by five independent variables namely industrial production index wholesale price index (inflation), money supply (M3), treasury bills rates and exchange rates on Bombay Stock exchange Study collected monthly data from April 1994 to June 2011. Results found by used Johansen's co-integration and vector error correction model that the Indian stock market index formed significant long-run relation with three out of five macroeconomic variables tested. In the long-run, the stock prices are positively related to money supply (M3) and real economic activity represented by industrial production index. Inflation has found to be negatively related to stock price index, the short term interest rate as proxies by three month government treasury bills and the real effective exchange rate are not turning out to be significant determinant of stock prices. In India, the interest rate does Granger cause stock prices in the long run but the co-integration results do not show its significant impact on stock prices although the coefficient is negative in India.

Issahaku, Ustarz & Domamban (2013) examines the association between five independent variables namely exchange rate, consumer price index (inflation), treasury-bill rate, money supply & FDI and Ghana Stock exchange (GSE) as a dependent variable. The study worked period is from January 1995 to December 2010 and collected data on monthly base with used technique: Unit Root Test, Co-integration and Granger Causality Test. The researchers found the results that in long run, a significant relationship among stock returns and inflation, money supply and FDI. Also, in the short term significant relationship among stock returns and interest rate, inflation and money supply. The insignificant relationship exists between inflation and exchange rate to stock returns has been established in the study. Also, a causal relationship appeared from stock returns to FDI, interest rate, and money supply exists in Ghana.

Nkechukwu, Onyeagba & Okoh (2013) examined the relationship between two independent variables gross domestic product (GDP) & broad money supply (M2) and dependent variable Nigerian stock market. Researchers worked annually data start from 1980-2012. The study used statistical tools like: the Augmented- Dickey Fuller Unit root test, co-integration analysis, normalized co-integration vectors test, vector correction model (VECM), granger-causality tests. A significant found by researchers in the co-integrating vectors indicated that gross domestic product has long-run negative effect on stock market prices contrary to the a priori expectation Money supply has long-run positive effect on stock market prices, which it is consistent with the priori expectation. However, the results of the vector error correction model shows that both gross domestic production and money supply (M2) have insignificant positive effect on stock market prices in Nigeria.

Khan (2014) studied the relation between independent variables namely exchange rate, interest rate, inflation rate & GDP growth rate and dependent variable Karachi Stock Exchange 100 index. Study used data from 1992 to 2011 with constructive techniques Pearson's correlation coefficient and multiple regression models found result about exchange rate, inflation & GDP growth rate show in a positive straight line correlation with stock prices of dependent variable. Interest rate show opposite & depressing correlation with stock prices of KSE-100 index, and exchange rate & inflation are statistically significant, while interest rate & GDP growth rate is statistically insignificant. There are relationship survive between exchange rate & stock prices of KSE-100 index show strong positive correlation with stock prices and also statistically very significant in Pakistan.

Venkatraja (2014) investigated association between five independent variables namely the real economic output foreign institutional investment, inflation, gold price & exchange rate and Bombay Stock exchange (BSE) as a dependent Variable. Author collocated data from April 2010- June 2014 on monthly base. The study adopted multiple regression and found that inflation, inflow of foreign institutional investment, exchange rate & gold price positive influence impact on the Indian stock market performance significantly, while, an increase in gold price is found causing crash in Indian stock market.

Singh (2014) scrutinized relationship about macro-economic factors. The study used index of industrial production (IIP), wholesale price Index (WPI), Money Supply (M3), 91 days treasury bills proxy for interest rates (IR), trade deficit (TD), Foreign institutional Investment (FII), exchange rate (ER), Crude Oil Price ((CP) & Gold price (GP) nine Independent variables and Bombay Stock Exchange (BSE) as a dependent variable. Researcher collected data from January 2011 to December 2012 on monthly base. The realistic technique correlation, multivariate stepwise regression analysis and granger causality test to originate a significant impact of gold, money supply, exchange rates & foreign institutional investors on the Indian stock market, another unidirectional causality is from money supply to S&P CNX Nifty which signifies the pressure of variable on the India stock market.

Yunus, Mahyideen & Saidon (2014) evaluated short-term association between independent variables and dependent variable. Authors used five independent variables namely money supply, industrial production, exchange rate, interest rates & foreign reserves with dependent variable in Malaysia stock market. Study found result with techniques used Johansen co-integration test and vector error correction model (Vecm) that foreign reserves, real exchange rate and industrial production exhibited the significant response to the change in stock prices in the short run, while money supply and interest rates did not indicate the significant responses to stock prices. A period of data collected on monthly base from January 1980 to November 2007.

Abbas Tahir & Raza (2014) empirically investigated relationship between five independent variables namely inflation, exchange rate, Gross Domestic Product, gold prices & T-bills rate and dependent variable on Karachi Stock exchange. The study employed regression and Pearson correlation method and found that dependent variables negatively co-related with all independent variables insignificant positive relationship between exchange rate and stock return, the relationship between inflation rate and stock return is negatively insignificant, Treasury bills is insignificant negatively co-related with Stock Return, Gold prices (GP) is negatively insignificant and Gross Domestic product has positively insignificant relation with Stock Return in Pakistan.

Alam & Rashid (2014) explored the interaction between independent variables namely inflation, industrial production, money supply, exchange rate and interest rate dependent variable Karachi Stock Exchange 100 index. A [period of secondary data collected from 2001 to 2011 on monthly base. Researchers find out result by used of Johnson co-integration test, Augmented Dickey Fuller (ADF) Unit Root Test, Phillip Perron (pp) tests and Autoregressive Conditional Hereroskedasticity Lagrange Multiplier (ARCH LM) test, that there is an impact of macroeconomic indicators on the Karachi stock market on consumer price index, money supply, exchange rates and interest rates negatively connected with the stock returns. All the variables were significantly connected to stock market returns except inflation in Pakistan.

Khodaparasti (2014) examined the impact of exchange rates, inflation, industrial index as independent variables on Tehran Stock Index (TSI) Dependent Variables affect. The author used secondary data base, a period from 2007-2011. He used Pearson correlation and ANOVA methods and find that exchange rates and industrial index have more effect on the stock return than inflation and Money supply in Iran.

Ouma, & Muriu (2014) investigated the impact of macro-economic variables on stock prices. The researchers employed three independent variables namely Money supply, exchange rates and inflation to be tested the dependent variable Nairobi stock exchange (NSE 20). The study employed data from 2003 to 2013 on monthly base. Applied the classical regression model, best linear unbiased estimates Augment Dickey-Fuller (ADF) and find that interest rates have a significant relation between stock returns and macro-economic variables, Money supply (M1) and inflation are found to have a significant relation with the Stock returns. Exchange rates have a negative impact on stock returns, while interest rates have a positive relationship with long-term return. And there is positive significant relationship between Money supply (M2) and stock returns and also, negative & significant impact of exchange rate on stock returns, while a positive impact of inflation on stock returns. There exists no impact of interest rates on stock returns in Kenya.

Wasseja, Njoroge & Mwenda (2015) analyzed the causal relationship between macroeconomic variables and stock prices in Kenya, used Augmented-Dickey Fuller Unit Root test, Johansen co-integration test, regression, Granger-causality test and vector autoregressive (VAR) model. These five independent variables namely Treasury bill, inflation rate, money supply, Real Exchange Rate and Gross Domestic product as dependent variable in Nairobi Stock Exchange. The study used the historically annual data as period from 1980 to 2012. Researchers used technique Augmented-Dickey Fuller, Unit Root Test, Johansen co-integration test, Regression, Granger-causality test and vector autoregressive (VAR) model. The results are that macroeconomic variables have no significant effect on stock prices except for inflation rate; exchange rate and change in stock prices also has an insignificant factor explaining part of the movement in the macroeconomic variables and stock prices runs entirely in one direction from inflation rate and exchange rate to stock prices and from stock prices to market interest rates in Kenya.

Ahmad, Abudullah, Abdullahi, Aziz & Muhammad (2015) indentified relation between two independent variables namely per capital income & inflation with dependent variable Nigerian stock market (NSE). Study conducted annual data from 1970 to 2013. Researcher pertain Zivot-Andrews Unit Test, F-bound co-integration and Toda and Yamamoto Causality tests. Results found that the variables were non-stationary at levels

but were stationary after first differencing. Co-integration established the existence of co-integration amongst all the variables. Nijam, Ismail & Musthafa (2015) described a relationship between five independent variables namely gross domestic product (GDP), inflation proxy by wholesale price index Interest rate balance of payment & Exchange rate and Colombo stock exchange as a dependent variable. Researchers applied Correlation Multiple regression techniques on a period from 1980 to 2011. Outcome of study shows that stock market significantly positively relates to Gross Domestic Product (GDP), Exchange rate and Interest Rate while it negatively relates to inflation. Insignificant impact of Balance of Payment found to be deterred the stock market performance in Sri Lanka.

Ali, Haq & Ullah (2015) studied the impact of macro-economic variables on Karachi stock Exchange 100 index dependent variable. The researchers investigated the relationship with respect to gross Domestic saving (GDS), Money Supply (MS) and Foreign Remittances (FR) as Independent variables. Study worked data on annual base start period from 1973 to 2012. Researchers applied Philips and Perron test and Auto Regressive Distributed Lag (ARDL) to co-integration technique. The ARDL to Co-integration results proved that Gross Domestic savings, Money Supply have positively force on stock market expansion in Pakistan in both short run and long run that are consistent. Foreign remittances have an insignificant effect on stock market development in short run, while in long run the researchers found no any effect on stock market in Pakistan.

Ahmad. Abullah Sulong & Abdullahi (2015) identified the causal relationship between stock market returns in Nigerian Stock Exchange as a dependent variable and six macroeconomic independent variables namely money supply, nominal effective exchange rate, short term treasury bills rate, foreign direct investment, gross domestic per capita income, and gross saving. The researchers used statistics methods autoregressive Distributive lag (ARDL) and Vector autoregressive model (VAR) and found that all six variables have a long-run equilibrium relationship between them, although they may be in disequilibrium in the short-run used they used time period from 1984 to 2013.

Akinlo (2015) analyzed effect of two independent variables, foreign that is exchange reserves & interest rate and dependent variable, Nigerian stock exchange. Study worked annual data a period from 1981 to 2011. Statistical technique unit root tests obtained using the Augmented-Dickey Fuller and KPSS (Kwiatkowski-Phillips-Schmidt-Shin) tests the results show that foreign reserves had positive effect on stock exchange development. And granger causality shows that a bidirectional cooperative association was found between interest rates & stock market development. In the same vein, there was a cooperative association between interest rate and external reserves in Nigeria. Khan & Ahmed (2015) established the relation between macro-economic variable of national Imports & Exports of Goods & Services as Independent variables and Karachi Stock Exchange 100 index as a dependent variable. Researchers worked on Quarterly data start a period from 2005 to 2009. Statistical regression and co-integration applied and found results that the Historically stock prices predicts the current fluctuation in stock prices and it predict the current fluctuation of national exports while there are no impact on current values of imports by the historically stock prices (SP) or historically stock prices are not predicting the current fluctuation in imports of Pakistan.

### 3.0 METHODOLOGY AND MODEL SPECIFICATION

The research uses the time series data and it covers a period of 27 years (1990-2016), this period was adopted to give a fair assessment of the impact of the variables on capital market development. The study uses econometric techniques to analyze time series data. Among these techniques include, the descriptive statistics, Augmented Dickey-Fuller (ADF) to test for a unit root in the individual data series as demonstrated by Dickey and Fuller, (1981), Johansen co integration was also used to test for the integration of all the data series (Johansen, 1991). The error correction model (ECM) is used to estimate the model, moreover, the Pair wise Granger causality test to indicate the direction of causality between capital market development and macroeconomic variables in Nigeria (Engle and Granger 1987). The proxy for capital market development for this study is Human Development Index (HDI) which represents the dependent variable for the study. While the proxy for macroeconomic variables are the inflation rate (INF); exchange rate (EXR); interest rate (INT); money supply (MSS) and excess demand (ExD), these represent the independent variables for the study. Inflation rate is measured by a general increase in prices of goods and services over a given period of time, usually one year. Exchange rate is measured by the average exchange rate for the year. Interest rate is measured as the average interest rate for the year. Money supply is measured as the natural logarithm of the total amount of money supplied in the country for each year. While excess demand is measured by the quantity demanded over and above the aggregate supply at a given price at a particular time. As used by Abbas, Tahir, and Raza (2014). The choice of these proxies was based on the internal growth model.

For purpose of this study only secondary data was used. Time series data collection method was the main method of data, collection. The chief source of data for this study is statistical bulletin (time series data, 1990-2016) Of the Central Bank of Nigeria in respect of independent variables. The data for dependent variable was obtained from national human development report 2016. Studies like Alam and Rashid, (2014), Hasanzadeh and Kianvand (2012), Khodaparati, (2014) and Naik and Padhi (2012) used Auto-regression analysis to assess the extent of the relationship between dependent and independent variables. They adopted a time series model and this study follow suit using e-view 9.5 version. The model for this study is presented as follows:

$$\text{HDI} = f(\text{INF}, \text{EXR}, \text{INT}, \text{MSS}, \text{ExD})$$

The equation for the above relationship becomes:

$$\text{HDI} = \beta_0 + \beta_1 \text{INF}_{t-1} + \beta_2 \text{EXR}_{t-1} + \beta_3 \text{INT}_{t-1} + \beta_4 \text{MSS}_{t-1} + \beta_5 \text{EXD}_{t-1} + \text{ECT}_{t-1} + \varepsilon_t \dots\dots (1)$$

**Where:**

HDI = Human development index, INF = Inflation, ExR = Exchange rate, INT = Interest rate, MSS = Money Supply, EXD = Equity market excess demand (percentage change in composite share price index), while E = Error term or disturbance term,  $\beta_0$  is a constant;  $\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  are coefficients of the regression model, ECT is the error correction term; and t is time.

The A' priori expectations are:

$\beta_1 < 0, \beta_2 < 0, \beta_3 < 0, \beta_4 \beta_5 > 0$  or  $< 0$  while  $0 \leq \beta \leq 1$ .

$\beta_1 \beta_2 \beta_3 < 0$ , or  $\beta_4$  &  $\beta_5 > 0$ .

#### 4.0 PRESENTATION AND ANALYSIS OF RESULTS

##### 4.1 Descriptive Statistics

The statistics describe the variables used in the model and their characteristics. Each of the variable explains their characteristics through: the mean, median, minimum & maximum values, standard deviation and also the probability. The mean and standard deviation of any form of data are reported together. The standard deviation is a measure of uncertainty. It measures the degree of spread- out of a trend in a given set of data. The higher the standard deviation of any given set of data, the far it is from the mean and the low standard deviation indicates that the data points are dose to the mean. This is indicated in the following table:

**Table 4.1 Measure of Dispersion**

	HDI	INF	INT	EXR	MSS	EXD
Mean	0.395444	9.853333	20.48000	13.62037	7.676667	0.242519
Median	0.381000	10.80000	19.74000	13.43000	7.830000	0.107000
Maximum	0.516000	29.30000	42.60000	18.54000	8.280000	1.309000
Minimum	0.291000	-15.85000	10.50000	10.06000	6.010000	-0.117000
Std. Dev.	0.077946	8.723562	6.709327	2.678489	0.614767	0.312183
Skewness	0.346071	-1.169802	1.265264	0.373246	-1.448516	1.518300
Kurtosis	1.844158	6.038224	5.606298	1.960488	4.206557	5.944002
Jarque-Bera	2.041911	16.54263	14.84591	1.842565	11.07965	20.12409
Probability	0.360251	0.000256	0.000597	0.398008	0.003927	0.000043
Sum	10.67700	266.0400	552.9600	367.7500	207.2700	6.548000
Sum Sq. Dev.	0.157965	1978.614	1170.392	186.5319	9.826400	2.533907
Observations	27	27	27	27	27	27

**Source:** Author’s Computation using E-views 9.5 Computer Software.

From the above table, you can see the standard deviation value of HDI, INF EXR MSS and EXD show that the data points are close to the mean and the spread-out are not far from each other. The only exception is that of INF and INT whose standard deviation values are far from the mean and are also far from one another. All the variables have a good probability values.

##### 4.2 Unit Root Test

For proper and fair regression analysis to be done there is a need to estimate a unit root test to verify the stationary of the variables that will identify the order of integration based on the submission of Engle and Granger (1985) and Dickey and Fuller (1981), unit root test should be done to avoid obtaining a spurious regression. So the Augmented Dickey Fuller (ADF) unit root test was used for the unit root test and the results shows that all the variables are stationary at 1<sup>st</sup> difference, and at 5% and 1% level of significance, with impressive p-values. The following results were obtained:

**Table 4.2: ADF unit root test result.**

Series	Order	5%	10%	15%	Stationary
	9	5	0		Yes
	4	5	0		Yes
	6	5	0		Yes
	0	5	0		Yes
	2	5	0		Yes

**Source:** Author’s Computation using e-view 9.5 Computer Soft Ware.

**4.3 Co Integration Test**

The co-integration suggests that if two or more series are linked to form an equilibrium relationship spanning the long run, then even though the series themselves may be non-stationary, they will move closely together overtime and their difference will be stationary. Their long –run relationship is the equilibrium to which the system converge overtime, and the disturbance term can be interpreted as the disequilibrium error or the distance that the system is away from equilibrium at time t. Engle and Granger (1987) state that a set of series are co-integrated when their residual is stationary. The Engle-Granger two stage co-integration tests are used to generate the Eigen value and trace statistic results as stated below:

**Table 4.3 Johansen Co-integration Results.**

Date: 08/09/17 Time: 14:56  
 Sample (adjusted): 1992 2016  
 Included observations: 25 after adjustments  
 Trend assumption: Linear deterministic trend  
 Series: HDI INF INT EXR MSS EXD  
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.879212	119.3617	95.75366	0.0005
At most 1	0.707801	66.51880	69.81889	0.0891
At most 2	0.511972	35.76077	47.85613	0.4085
At most 3	0.382302	17.82621	29.79707	0.5789

At most 4	0.191120	5.782336	15.49471	0.7211
At most 5	0.019005	0.479706	3.841466	0.4886

Trace test indicates 1 cointegrating equation(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.879212	52.84288	40.07757	0.0011
At most 1	0.707801	30.75803	33.87687	0.1127
At most 2	0.511972	17.93456	27.58434	0.5006
At most 3	0.382302	12.04387	21.13162	0.5433
At most 4	0.191120	5.302629	14.26460	0.7033
At most 5	0.019005	0.479706	3.841466	0.4886

Max-eigenvalue test indicates 1 cointegrating equation(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

**Source:** Autor’s Computation using eviews 9.5 Computer Soft Ware.

The above table shows the results of Johansen co-integration equations at 0.05 level of significance, in the trace test and Max-Eigen test. The results show that there is a long-run relationship existing within the variables under study. It also reveals that the values of Eigen Value are less than that of trace statistic and maximum Eigen statistic at 5% level of significance. This is evident that the dependent variable and independent variables are co-integrated. It also means that since 1990 to 2016 there was a long-run stable relationship among capital market development and macro-economic variables (inflation, interest rate, exchange rate, money supply, excess demand) in Nigeria in a manner that whenever there is a divergence in their behavior in the short-run were converged in the long-run. Moreover, Trace test indicates co-integration at .05 level of significance which denotes rejection of the null hypotheses at the .05% level of significance.

#### 4.4 Vector Error Correction Model (ECM) Estimates

The results of the most coefficient of the error correction term appears with negative sign and statistically significant at 5% level. This is in consonant with the results of the Johansen co-integration test which indicate a long-run relationship among the variables. The estimate has also shown that 9.9% of the previous years’ disagreement is gradually being corrected each year from the long-run relationship among the variables. The ECM table below explains more:

**Table 4.4: Error Correction Model (ECM) Estimates.**

Dependent Variable: D(HDI)

Method: Least Squares

Date: 11/25/17 Time: 08:05

Sample (adjusted): 1992 2016

Included observations: 25 after adjustments

$D(HDI) = C(1)*(HDI(-1) - 0.000917518890644*INF(-1) + 0.0051225689269$

$$9*INT(-1) - 0.0235848437362*EXR(-1) + 0.0280243177343*MSS(-1) + 0.00148259843686*EXD(-1) - 0.387006830946) + C(2)*D(HDI(-1)) + C(3)*D(INF(-1)) + C(4)*D(INT(-1)) + C(5)*D(EXR(-1)) + C(6)*D(MSS(-1)) + C(7)*D(EXD(-1)) + C(8)$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.099326	0.153151	0.648554	0.5253
C(2)	-0.046821	0.513044	-0.091262	0.9284
C(3)	-0.000500	0.000321	-1.561480	0.1368
C(4)	-0.000411	0.000433	-0.949076	0.3559
C(5)	-0.008541	0.004526	-1.887169	0.0763
C(6)	-0.002066	0.006348	-0.325543	0.7487
C(7)	0.008972	0.006683	1.342395	0.1971
C(8)	0.012816	0.005870	2.183518	0.0433
R-squared	0.301150	Mean dependent var		0.009000
Adjusted R-squared	0.013388	S.D. dependent var		0.011493
S.E. of regression	0.011416	Akaike info criterion		-5.853342
Sum squared resid	0.002215	Schwarz criterion		-5.463301
Log likelihood	81.16677	Hannan-Quinn criter.		-5.745161
Durbin-Watson stat	2.187978			

Source :Author’s computation using Eviews 9.5 computer software.

The P values of ECM in table 4 above at 0.05 level of significance shows P- Value of the model as 0.5253. This means that  $H_0$  is rejected at 0.05 level of significance, the lag values of all the independent variables (Inflation, interest, exchange rate, money supply and excess demand) together create impact on HDI for the period 1990 to 2016. All the variables significantly influence HDI in Nigeria for the period under review with only money supply showing a positive significant result with a coefficient of 0.008972. This is evidenced in the individual variables’ P values. The  $R^2$  in the model shows that 30.11% of variability in capital market development which is justified by the lag values. The Durbin – Watson indicates 2.187978 meaning that there is no sign of serial correlation in the models.

**Table 5: Residual Statistics**

test	test	ics (P)
1. correlation	Godfrey serial correlation LM test	† (0.7543)
2. y test	alization: Cholesky normality test	‡ (0.1017)
3. edasticity test	Pagan-Godfrey Heteroskedasticity Test	§ (0.4936)

Source: author’s computation using Eviews 9.5 computer software.

**Table 6: Pairwise Granger Causality Test Results**

Pairwise Granger Causality Tests  
 Date: 08/09/17 Time: 14:58  
 Sample: 1990 2016  
 Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
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INF does not Granger Cause HDI	25	0.71082	0.5032
HDI does not Granger Cause INF		0.86833	0.4349
INT does not Granger Cause HDI	25	0.85310	0.4410
HDI does not Granger Cause INT		1.75517	0.1985
EXR does not Granger Cause HDI	25	0.61996	0.5480
HDI does not Granger Cause EXR		12.9751	0.0002
MSS does not Granger Cause HDI	25	0.31069	0.7364
HDI does not Granger Cause MSS		3.23946	0.0604
EXD does not Granger Cause HDI	25	0.54228	0.5897
HDI does not Granger Cause EXD		3.53093	0.0486

**Sources:** Author's Computation using E-view 9.5 Computer Software.

To assess the relationship between the macroeconomic variable and capital market development using the pairwise granger causality test. The results show a unidirectional causality running from macroeconomic variables to economic development in Nigeria. The above tables 6 attest to this.

## 5.0 CONCLUSION

All the variables used in the study have a long-run relationship among them essentially, during the period under review (1990-2016) in Nigeria. These independent variables have a causal relationship with the HDI (dependent) and which exert a significant influence on the economic development of Nigeria. The study reveals that exchange rate, inflation rate and interest rate have a significant negative relationship with economic development. The reverse is the case in respect to other independent variables the result is in consonant with the a' priori expectations. This conclusion is in consistent with the findings of Wasseja, Njoroge and Mwenda(2015); Nkechukwu, Onyegba & Okoh (2013) and that of Abbas, Tahir & Raza (2014).

## 6.0 RECOMMENDATIONS

In view of the above conclusion, the following recommendations are made:

- ❖ Government should try to lower the cost of lending rate hence it is too high in the economy. The spate at which it is going may deteriorate the economic growth and development. It is persistently creating room for high cost of financing.
- ❖ Government should reduce the spate of money supply in circulation in order to forestall inflationary rate. There is an indication that such a large quantum of money is in the economy and it is beyond the control of monetary authorities. This provides opportunities for: high level of corruption in the financial system, high level of crime and above all, insecurity challenges in the economy which hamper economic development.
- ❖ Effort should be on the way to constantly enhance production base of the nation. This will help check-mate the devaluation of naira and improve its value even in international economy. So that our naira will always gain value and enjoy a favorable exchange rate in foreign market. This could be achieved through investing more in real sector of the economy.

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