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Effect of Financial Intermediation on Capital Market in Nigeria

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Abstract

This study examined the effect of financial intermediation on the performance of capital market in Nigeria using an annual data spanning 1986 to 2022. Some selected techniques comprising of ADF test, Johansen cointegration, vector error correction mechanism, and Granger causality test were adopted and employed to analyze the behavior of the variables. Findings show that two co-integrating equations exist amid the study's chosen variables, a connotation that these indicators are connected in the long term. The study also revealed that in the long run inflation and Gross Domestic Product significantly mold equity returns in a negative and positive way in that order contrary to foreign exchange reserve which insignificantly shapes equity indices. Furthermore, a 9.8% speed of adjustment is observed when variables experience some shocks in the short term that disturb long run equilibrium. In addition, changes in Gross Domestic Product, inflation and foreign exchange reserves may explain about 35% fluctuations in stock prices. More so, none of the study variables granger cause share prices indicating that these variables are not the leading indicators in estimating or predicting capital market performance in Nigeria. To reduce uncertainties and ensure policy transparency in financial intermediations in Nigeria, government should lessen the inflationary expectations by providing an implicit commitment mechanism on the part of the Central Bank towards price stability. This makes the policy to become more credible and the public can form expectations that are closer to the policy targets.

Keywords: Financial Intermediation, Capital Market, Cointegration Model, Error Correction Mechanism, Granger Causality Test

1. Introduction

The growth and development of modern economies such as the United State (US) and United Kingdom (UK) were achieved and sustained through the capital markets. The ascendancy and depth of the US equities bond, and derivative market – the capital market, has improved the allocation of capital and of risk throughout the US economy. Evidence includes a higher return on capital in the US compared to elsewhere; persistent and large inflows of capital to the US from abroad; the enhanced stability of the US banking system; and the ability of new companies to raise funds. The same conclusions apply to the UK, where the capital markets are also well-developed (Ifeanyi & Iwiyisi, 2019) [29].

In many African countries like Ghana, Malawi, Bostwana, Kenya, Tunisia and Nigeria inclusive, capital market development can be interpreted as part of a deliberate and national strategy to reform their financial sectors, which is in turn a key factor of wider economic restructuring efforts to encourage greater economic activity leading to the generation of higher levels of wealth. From this perspective, stock exchanges are expected to enhance market mechanisms for raising and distributing scarce financial resources. More specifically, capital markets are expected to attract foreign capital, mobilize dormant domestic capital and more efficiently allocate resources to projects most likely to benefit the national economy. Capital markets in many cases are also required to facilitate the privatization of state-owned enterprises (Adeleke, Olabisi, & Adeboye, 2020) [4].

The development of capital market is affected by financial intermediaries' variables such as inflation rate, interest rate, exchange rate, gross domestic product, current account and money supply (Emmanuel & Aikins, 2016) [22]. The correlation between Capital market returns and financial intermediations fundamentals is important to both academics and policy makers, yet the extent and direction of the relationship is still vague and inconclusive for both emerging and developed economies (Adeleke, Olabisi, & Adeboye, 2020) [4].

Most recent literatures on the Nigeria capital market have recognized the enormous performance the market has recorded in recent times. This situation is prevalent in the Nigerian economy. Capital market provides the industries and governments long

term funds to meet their long-term capital requirement such as financing of fixed investment like buildings, plants, machinery, bridges, etc. Despite all these enormous performances, capital market still faces setback in the economy. Capital market that has been performing enormously in its operation is invariably affected by the level of inflation in Nigeria. Inflation impedes efficient resource allocation by obscuring the signaling role of relative price changes, the most important guide to efficient economic decision-making (Owolabi & Adegbite, 2013) [42].

The market as a reflection of public confidence in the economy in general and the financial system in particular, can only function well in a stable macroeconomic environment (Babarinde, 2019) [14]. This implies capital market tends to reflect movement in macroeconomic factors such as inflation rate, exchange rate, interest rate, and others. (Gbenga & Abdulmajeed, 2020) [25]

The need for a viable capital market in any economy therefore, cannot be over emphasized. This stemmed from the fact that, the economic performance of any nation is measured by the value of its accumulated wealth and by the rate at which it grows through savings and investment. With sufficient investible funds in an economy, there will be progressive growth in its gross domestic product, as enterprises will hire more factors of production in order to produce goods and services. (Fapetu, Adeyeye, Seyingbo, & Owoeye, 2017) [23]

Capital market does not only serve as a source of finance for corporate organizations, individuals and government, but also provides a wide range of socio-economic benefits to any country, by mobilizing funds and channeling same into productive investments. In additions, equity issues enhance the capital market structure of corporate bodies as the debt/equity ratios are improved and more solid financial position maintained. Financing of debts and economic activities particularly in periods of high interest rates can significantly erode the profitability of an enterprise (Muhammad & Victor, 2015) [34].

One important social benefit of the capital market (especially the equity market) is the opportunity it offers to a broad spectrum of the populace to participate in the ownership of the corporate sector, thereby leading to continuity of business. This benefit is important in Nigeria where the government as a conscious policy maker and as entrenched in the constitution, has consistently promoted the egalitarian principle of wide spread share ownership. The former Nigerian enterprises promotion exercise and the privatization programme are two examples of government policies which have boosted this objective. (Duda, 2020) [21]

Based on its importance in accelerating economic growth and development, government of most nations tends to have keen interest in the performance of its capital market. The concern is for sustained confidence in the market and for a strong investors' protection arrangement (Emmanuel & Aikins, 2016) [22]. The Central Bank of Nigeria is empowered to perform duties that ensure soundness of the financial and monetary system. In order to achieve the monetary stability, it is always confronted with the challenge of choosing the right strategy to apply in order to meet the envisaged end. Among the most popular and accepted strategies are, capital market targeting, exchange rate targeting, monetary targeting, nominal GDP targeting and inflation targeting. Inflation targeting is the process of offering a framework of constrained discretion in which the constraint is the inflation target and the discretion is the scope and flexibility of taking account of economic and other considerations (Harcourt, 2017) [26].

Despite the influx of the research interest, there are disparity from the results on the effect of Financial Intermediaries on the capital market is yet to be settled. The data, method and instrument of analysis, and variables to be included all influence the outcome of a study hence, necessitate this study. Furthermore, the Central Bank of Nigeria (CBN) has been working to ensure that the financial sector in Nigeria plays it roles in the achievement of growth and development in Nigeria. In an under banked economy like Nigeria where the financial markets are rudimentary, with a large size of financial inter-mediation taking place in the informal sector, savings seems not to be sensitive to the real interest rates, (Christopher & Unyime, 2016).

The empirical evidence on the ground seems to support the above statement that substantial savings had not been mobilized and efficiently channeled for productive investment and sustained growth and development. There is also the problem of high lending rates which makes loan usually unattractive with a high tendency for subjectivity and biases in gaining easy access to funds, crowding out private credit seekers. The problem of inadequate mobilization of funds is also evident, as the surplus saving units may not be able to save sufficient fund for deficit spending units to borrow. All these give room for inadequate financial intermediation in the country. Again, despite the Central Bank of Nigeria (CBN) efforts to ensure that financial sector in Nigeria maintain a considerable depth and remain liquid with a view to competing effectively globally; the fear of systemic risk lingers, the supply of credit to investors is still questionable, while economic growth is relatively stable. (Adigwe, Nwanna, & Amala, 2015) [5].

An in-depth assessment of extant literature on financial intermediation cum Capital Market nexus, in order to address the credit conundrum yields no unique conclusion. This is evident as some studies such as Bamidele *et al* (2018) find out that in the long run, credit to private sector and money supply will lead to an increase in capital market development while banks total savings and government expenditure results to a decrees in capital market development in the long run. On the other hand, however, Christopher and Unyime (2016) study shows that money supply has a negative influence on economic growth and a bidirectional relationship between inflation and economic growth while a unidirectional causality moves from financial savings to economic growth. While others have argued that economic growth drives financial intermediation (Andabai & Avery, 2017).

Adding to the disparity are yet studies which have argued that a bi-directional causality exist between financial intermediation, Capital Market and economic growth (Allen & Ndikuma, 2017; Andabai & Avery. 2017; Ukpabi, Egbo, Ezeaku, & Onuora, 2019). Again, most of these studies were cross country based. Given that the operation of the financial institutions and polices pursued in each country differs; a curious reader may be interested in what would be the sign and causality of the relationship between financial intermediation, Capital Market and economic growth using a country Specific data. The gaps identified above motivated this research to investigate the effect of financial intermediation on capital Market in Nigeria covering the

period of 1986 to 2022.

2. Conceptual Framework

2.1 Financial Intermediation

Financial intermediation is the process of mobilizing funds from the surplus economic unit to the deficit economic unit. In other words, financial intermediation is the process of mobilizing financial resources from the ultimate saver to the ultimate user. Andrew and Osuji (2013) state that financial intermediation involves the transformation of mobilized deposits liabilities by banks into banks assets or credits such as loans and Financial Markets, Institutions and Risks. This means that financial intermediation is the process of taking in money from depositors and lending same to borrowers for investments which in turn help the economy to grow.

Efficient financial intermediation causes a high level of employment generation and income, which invariably enhances the level of economic development This According to Blum (2012), financial intermediation is the process of transferring the savings of some economic units to others for consumption or investment at a price, For financial intermediation to take place there must be instruments and financial institutions operating together with the objective of bringing about the economic growth of the country. Mahmood and Bilal (2010) opined that the rising magnitude of financial intermediation costs have adverse implications on the development of Nigerian economy because, in the absence of developed capital market, the private sector which contributes a greater percentage to economic development in Nigeria will primarily depend on bank credit as a source of financing their investments which will lead to economic development.

This means that the constant rise of financial inter-mediation discourages potential saving due to low returns on deposits. Financial intermediation is an institution that facilitates the channeling of funds between lenders and borrowers indirectly. That is, savers (lenders) give funds to an inter-mediation institution (such as a bank), and that institution gives those funds to spenders (borrowers).

Financial intermediation plays a very vital role in economic development in Nigeria. For financial intermediation to aid development, there must be an efficient financial system. This means that financial intermediation mitigates the costs associated with information acquisition and the conduct of financial transactions through the level of lending rate and credit to the private sector in accelerating development in an economy (Onodugo & Kalu, 2013). The impact of financial intermediation on the development of an economy generated a heated debate. While some studies opined that financial intermediation drives economic development, while others have argued that economic development drives financial intermediation.

Financial intermediation role is being played by the financial sector of the economy, which can be formal or informal. Formal financial sector is a financial sector that operates under regulatory bodies like Central Bank of Nigeria (CBN), Nigeria deposit insurance corporation (NDlC), Security and exchange commission (SEC) etc. Informal financial sector is a kind of financial sector that do not operate under a regulatory body like thrift (Ajo Esusu in Yoruba Language, Adashi in Hausa Language), local money lenders, cooperative societies, etc (Duda, 2020) [21]

The financial intermediation role that is being played by the financial sector is achievable through financial intermediaries, which can be banks and non-banks financial intermediaries. Onoh (2014) observed that the Nigerian financial sector comprises various segments including the regulatory and supervisory authorities for banks and non-bank financial institutions. Others are the money market and its institution, the capital market and its players. Bank intermediaries are the financial institutions that carry the name bank. Example of bank financial intermediaries are commercial banks, microfinance banks, agricultural banks, development banks, merchant banks, mortgage banks; investments banks etc. Non-bank financial intermediaries are the financial institutions that do not carry the name bank, example of nonbank financial intermediaries is Insurance Companies, Nigerian deposit insurance corporation (NDlC), Finance Houses, Security and exchange commission (SEC), Nigerian stock exchange market etc. However, both bank and non-bank financial intermediaries perform the role of financial inter-mediation.

Financial intermediaries, all over the world play crucial roles in the development and growth of the economy. An economy is made up of fundraisers and fund suppliers. Financial intermediaries are those institutions in the financial market that mediate between the fundraisers and the fund suppliers. They carry out intermediation between surplus and deficit units of the economy.

2.2 Capital Market

The capital market is a network of financial institutions and infrastructure that interact to mobilize and allocate long-term funds in the economy. The market affords business firms and governments the opportunity to sell stocks and bonds, to raise long-term finds from the savings of other economic agents. The capital market is a highly specialized and organized financial market and indeed an essential agent of economic growth because of its ability to facilitate and mobilize saving and investment (Echekoba, Ezu & Egbunike, 2013). Capital market is defined as the market where medium and long terms finance can be raised (Oraka, Ezejiofor, & Erhirhie, 2018) [41].

Capital market offers a variety of financial instruments that enable economic agents to pool, price and exchange risk. Through assets with attractive yields, liquidity and risk characteristics, it encourages saving in financial form. This is very essential for government and other institutions in need of long-term funds (Nwankwo, 2016) [36]. According (Christal, 2017) [18], the capital market is a network of specialized financial institutions, series of mechanism, processes and infrastructure that, in various ways facilitate the bringing together of suppliers and users of medium to long term capital for investment in economic developmental project.

According to Babarinde, (2019) [14]. Capital market is the cornerstone of any financial system since it provides the funds needed for financing, not only business and other economic institutions, but also the programs of government as a whole. It is also stress that capital market functions as an economic barometer for galvanizing economic activities (Sule & Momoh, 2018) [49].

Capital market as the driver of any economy to growth and development because it is essential for the long-term growth capital formation. It is crucial in the mobilization of savings and channeling of such savings to profitable self-liquidating investment. Therefore, by altering the quality of these services, the functioning of stock markets can alter the rate

of economic growth (Olayinka, 2015) [40]. Similarly, Nwankwo, (2016) [36] posits that the cheap source of funds from the capital market remain a critical element in the sustainable development of the economy. She enumerated the advantages of capital market financing to include no short repayment period as funds are held for medium- and long-term period or in perpetuity, funds to state and local government without pressures and ample time to repay loans.

3. Review of Empirical Literature

Many Studies were carried out on the financial intermediation and capital market in Nigeria. Oraka, Ezejiofor and Erhirhie (2018) [41] investegated the effect of inflation rate on capital market performance in Nigerian spanning 1999 to 2016. Specifically, the study determined the extent to which inflation has affected all share index, stock market capitalization and value of domestic share traded. Ex Post facto research design was adopted. Data were collected from Central Bank Statistical Bulletin and Nigerian Stock Exchange Fact book. Data obtained were analyzed and coefficient correlation coefficient statistical technique was used to test the three formulated hypotheses with aid of SPSS version 20.0. The study found that there is a negative correlation between inflation rate and all share index in Nigerian and there is a negative significant correlation between inflation rate and Nigerian market capitalization. Another the level of inflation rate has a negative correlation with the value of domestic share traded in Nigeria. Furthermore, the time when the research was conducted is too far to explain the current situations, therefore, there is need to have new research in order to explain those performance of Stock Markets that succeeded it. Also, the research has been conducted in a country which does not share same characteristics with Nigeria.

Also looking at the study conducted by Henry and Clinton (2015) [27] on the effects of inflation on aggregate stock prices in Nigeria during the period of 1980-2012. The objectives of the study is to examining empirically whether there is any functional long-run relationship between inflationary pressures and aggregates stock prices in the Nigerian context and to determine the direction of causality between inflationary pressures and aggregates stock prices within the Nigerian government. Annual time series data on Stock Prices (ASP) and inflationary pressure measure were sourced from the Central Bank of Nigeria Statistical bulletin and Nigeria Stock Exchange Fact book. Employing the Engle-Granger and Johansen-Joselius method of co-integration in a Vector Error Correction Model (VECM) setting, in addition to Granger causality Test, Argumented Dickey Fuller Test (ADF) was employed. The empirical results shows that there exist a long run equilibrium negative and significantly relationship between inflation rate and aggregate stock prices, Broad money supply (M2) has a negative and significantly effects on aggregates stock prices, Narrow Money Supply (M1) shows a positive and significantly effects on aggregates stock prices while Average inflation rate show a positive and significantly relationship between aggregate stock prices. The results also show a strong relationship with an R2 of 0.886 representing 89.6% variations in the explanatory variables. However, the direction of causality between the money supply measures and aggregate stock prices is mixed.

Owolabi *et al* (2017). Also, Study Inflation and Capital Market Performance: The Nigerian Outlook. The study empirically examines the effect of inflation on capital market performance in Nigeria. The Specific objectives are to: evaluate the determinants and effects of inflation on Nigerian economy; determine the long run effects of inflation on capital market performance; investigate the effect of inflation on gross domestic products. In line with the objectives of this study, secondary data were obtained from central bank of Nigeria statistical bulletin and Security exchange commission (SEC) covering the period of 1970 to 2010. Multiple regressions were employed to analyze data on variables such as inflation rate, market capitalisation, All-Share index, market volume and market turnover, and Gross Domestic Product with the adjusted R2 which significant at 0.1821(18.2%), it presages that inflation accounted for 18.2% of the variation in the influence of the capital market performance. The effect of inflation on performance of Nigerian capital market is weak. All the measures showed a negative relationship to inflation except MVOL which showed a deviation from a priori expectation as revealed by the positive correlation between inflation and the market volume. However, multiple regression (OLS) models can be difficult to estimate for complex organizations and portfolios, since they use little economic theory.

Similarly, Gbenga and Tajudeen, (2020) [25] study on Inflation and Capital Market Performance in Nigeria: Canonical Cointegrating Regression Analysis. This paper investigates the effect of inflation on capital market in Nigeria, using annual time series data obtained from the Central Bank of Nigeria and World Development Indicators for the years 1981-2018. The Canonical Cointegrating Regression (CCR) technique was applied to the data after descriptive analysis, augmented Dickey-Fuller (ADF) unit root and Johansen cointegration tests were conducted. Cointegration analysis indicates that a long run equilibrium relationship exists between inflation and capital market in Nigeria. The CCR estimates show evidence of a negative significant effect of inflation on capital market in Nigeria. Hence, Nigerian government should consciously embrace inflation-targeting monetary policy regime to stem the tide of rising inflation in Nigeria in order to reduce its negative effect on the Nigerian capital market.

Daferighe, and Charlie, (2016), study the impact of inflation on stock market performance in Nigeria. This paper investigated the impact of inflation on stock market performance in Nigeria using time series data for twenty years from 1991 -2010. The regression analysis was used to evaluate the influence of inflation on various measures of stock market performance; market capitalization (MCAGDP), total value traded ratio (TVMS), percentage change in All-share Index (%ΔASI) and turnover ratio (TOR). It was revealed in the result that these measures were negatively related to inflation in convergence to a priori expectation except for TOR which showed a positive relationship. This seemly low level of influence of inflation ranging between 14.6% and 0.3% revealed that stock market investments are regarded as a good hedge against inflation in Nigeria. However, the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE) should engage in public enlightenment and improve on corporate governance framework to encourage more investment and improve transactions in the market considering its present low level of activities. Nonetheless,

regression Analysis misleading if used blindly. Also, the research has been conducted in a country which does not share same characteristics with Nigeria.

On the other hand Muhammad and Victor (2015) [34] study on Empirical Analysis of Exchange Rate Volatility and Nigeria Stock Market Performance; the objectives of the Study include; to examine the causal relationship between exchange rate and Nigeria stock exchange; to investigates the effects of exchange rate volatility on the Nigeria stock market performance; The research work is fundamentally analytical as it embraces the use of secondary data in examining the effect of exchange rate volatility on the Nigeria stock exchange market. And analytical tools used consist of the econometrical tests (i.e., unit root test ARCH and GARCH models, and vector error correction test).The data for the study was obtained mainly from secondary sources, particularly from Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), Security and Exchange Commission bulletin and some publications such as the CBN statistical Bulletin and the internet and other related literature. The results show that; there is long-run equilibrium relationship among the variables in the regression model; however, it is the short-run that transmit to the long-run. Thus, error correction mechanism is therefore used to correct or eliminate the discrepancy that occurs in the short-run. The coefficient of error-correction variable gives the percentage of the discrepancy between the variables that can be eliminated in the next time period. The coefficients of the explanatory variables in the error correction model measure the short-run relationship. Thus, the first order specification of the model VAR is selected with a constant and a time trend.

Also, Philomena and Prince (2016) [44], Study the relationship between exchange rates movements and stock market capitalisation in Ghana; the objectives of the study were achieved using Johansen cointegration technique and vector error correction model with quarterly time series data covering the period of 1990 to 2013. The study found a negative and significant relationship between exchange rates and stock market capitalisation both in the long-run and in the short run suggesting that a depreciation of the Ghana cedi against the US dollar is inimical to the performance of the Ghana Stock Exchange (GSE) Market.

In the same dimension Fapetu, *et al*. (2017) [23] study the impact of exchange rate on stock market performance using monthly data of MCAP as indicators for stock market performance and monthly data on exchange rate as the parameter for measuring exchange rate volatility. Under the methodology four different estimation techniques [Autoregressive Conditional Heteroscedasticity (ARCH), Generalised Autoregressive Conditional Heteroscedasticity (GARCH), Exponential Generalised Autoregressive Conditional Heteroscedasticity (EGARCH) and Threshold Autoregressive Conditional Heteroscedasticity (TARCH)] were used. The results revealed that exchange rate has a positive relationship with market capitalization rate in Nigeria in all the four models examined in the study. However, the study showed that the volatility of variance of the residual among the four models differs from each other. It was discovered that there is no ARCH effect in the ARCH model, while there is ARCH and GARCH effect in the GARCH model.

Ruth (2020) [46] studies the impact of exchange rate fluctuations on economic growth in Nigeria. The aim of this study is to decide if exchange rate changes significantly affect the total national output and whether this influences the development of Nigeria's economy; to distinguishing the effects of the precarious swapping scale of the naira on these significant full-scale financial factors. This study made use of secondary annual data from the Central Bank of Nigeria (CBN)'s statistical bulletin & publications from the National Bureau of statistics (NBS). This study adopted the classical least regression model and ordinary least square method (OLS) to analyze the data. This study has been able to demonstrate that exchange rate fluctuations is pivotal to the economic growth of Nigeria, other economic variables used in this study ((FER) exchange rate, (INT) interest rate, (INF) inflation rate and (TB) trade) may result in a direct impact on the Nigerian economic growth. Inflation rate negatively affects the GDP. The loan cost positively affects the GDP. Exchange receptiveness negatively affects the GDP.

Finally, Suriani, Kumar, Jamil & Muneer (2015) investigated the impact of exchange rate on stock market in Pakistan using data from January 2004 to December 2009. The study employed ADF test to check the unit roots and to reach at the conclusion whether the data is stationary or not. Furthermore, Granger causality test was applied to determine the relationship between the both variables, whether they affect each other or not and reach at the conclusion that they are independent of each other without having any interaction. Regression Analysis test is also performed to check the authenticity if the results of Granger causality test was applied to determine the relationship between the both variables, whether they affect each other without having any interaction. Regression Analysis is also performed to check the authenticity of the results of granger causality which also supports that there is no relationship exist between rate and stock prices.

In sum, several studies were carried out on the effect of financial intermediation on capital market both within and outside Nigeria. More so, much empirical studies on the performance of capital market with different methodologies by different authors, environments under which the studies were carried out, the nature of data and sources in different jurisdictions and the policy thrust, among others could account for these differences. Besides, the proxy and concept of capital market used by a number of the authors. This study will attempt to add to the exiting literature using appropriate methodological framework.

4. Materials and Methods

The data for this study is obtained from secondary sources such as the World Bank Development Indicators (WBDI); the Central Bank of Nigeria (CBN) Statistical Bulletin of various years; the Nigerian Stock Exchange (NSE) Factbook of several years, Fact Sheets of different quarters, Annual Report and Accounts and other publications of the NSE, National Bureau of Statistics (NBS), Publications of International Monetary Fund (IMF), International Organization of Securities Commission (IOSCO), World Federal of Exchanges (WFE), Association of Securities Exchanges in Africa (ASEA) and from other online sources.

Furthermore, after testing for unit root through Augmented Dickey Fuller (ADF) tests, the study employs the Autoregressive Distribution Lag (ARDL) method of analyses. It starts by examining the Stationarity properties of the series, Test of exogeneity, Bound test for co-integration, Estimation of long run coefficients and Granger Causality

Test.

4.1 Unit Root Test

The inquiry into the stationarity property of each variable is considered using the Augmented Dickey-Fuller test (ADF) test because it adjusts appropriately for the occurrence of serial correlation. The study makes use of Augmented Dickey Fuller Test (ADF) test to ascertain the stationary properties of the time series. The ADF formula as given by Remam (2008) is specified as:

$$\Delta P_{it} = \beta_1 + \beta_{2t} + \sigma P_{it-1} + \alpha \sum_{t-1}^{m} \Delta P_{it-1} + \varepsilon_{it} \quad (1)$$

The null hypothesis is that, the variable is non-stationary against the alternative that the variable is stationary. The null hypothesis is rejected only when there is strong evidence against it at conventional level of significance (5% in most cases).

4.2 Exogeneity Test

Exogeneity is seen as an illustration of the Davidson and Mackinnon (2004) version of the Wu-Hausman specification test. An exogenous variable is a variable that is not affected by other variables in the system. In addition, independent variable that affects a model without being affected by it, and whose qualitative characteristics and method of generation are not specified by the model builder. An exogenous variable is used for setting arbitrary external conditions, and not in achieving a more realistic model behavior. For example, if a variable which is a regressed is suspected of being endogenous (jointly dependent) it can be proved or disproved adopting the exogeneity test by adding the residual from the reduced form equation for the suspected variable to the relevant structural form equation and its significance tested. The null hypothesis of exogeneity is rejected if the residual is found to be significant. There are three types of exogeneity, weak, strong and super exogeneities. The major reason for distinguishing the three types of exegeneity is that generally, while weak exogeneity is adequate for estimation and testing, forecasting requires strong exogeneity and super exogeneity is for policy analysis.

4.3 The Optimal Autoregressive Distributed Lag Method

ARDL methods have been used by researchers for long period of time, but currently provide a valuable means of analyzing the long run interactions amongst economic time series data. The ARDL methods was lately improved by Pesaran and Shin (1999) and extended more by Pesaran, Shin and Smith (2001) and Narayan (2005). This method has econometric advantage when compared to other cointegration methods. One of the advantages its can be useful regardless of the degree of integration of the series and provides robust results for the small sample sizes and as well as reliable estimates of the long-run coefficients (Pesaran & Shin 1999). An ARDL model is presented in eq (2) as follows:

$$\Delta Y_t = \beta_o + \beta 1 \Delta Y_{t-1} + \beta 2 \Delta Y_{t-2} + \cdots + \beta n \Delta Y_{t-k} + \gamma 1 Y_{t-1} + \gamma 2 Y_{t-2} + \cdots + \gamma n Y_{y-k} + \varepsilon_t \quad (2)$$

Where Ɛt, is a disturbance term and the model is autoregressive, in the sense that Yt represents a vector of the variables employed in the model. The ΔYt can be explained (in partial) by change and lagged values of itself. It also has a distributed lag component, in the form of successive lags of the other independent variable. Sometimes, the present value of the independent variable itself is omitted from the distributed lag part of the models structure. Assume Equation (3.6) represents the derived ARDL model. Considering the presence of lagged values of the dependent variable as repressors', OLS estimation would produce biased coefficient estimates. If the stochastic term, Ɛt, is auto correlated, the OLS would also be an inconsistent estimator.

Using the established ARDL model to estimate the longrun model, Vector Error Correction Model (VECM) is used in computing long run coefficients accordingly. The existence of long run equilibrium relationship among serial variables can be checked by using various methods. The most popularly adopted methods include Engle Grager test of Granger (1987), Fully Modified OLS (FOLS) method by Phillips and Hansen's (1990), maximum likelihood Johansen Juselius (1990) and (ML) based Johansen (1988, 1991) test. These methods, however, are regarded as weak because they do not provide robust results for small samples, structural shocks or breaks. Due to these shortcomings, another approach to cointegration known as ARDL modeling has gained popularity. However, a dynamic VECM can be resulting from ARDL that integrates the short run dynamic with the long-run equilibrium without losing long run information. In view of the advantages, therefore, the use of ARDL methods have come to portrays an important role presently in the modeling of non-stationary time series data. In nutshell, they would be used in implementing the 'Bound Test', to verify if long-run relationships are present in a given time series variable, some could be stationary at level, while others are not.

4.4 Bounds Test for Cointegration

ARDL-bounds testing method is used to investigate the existence of long-run association involving all Share index, GDP, Inflation Rate and foreign exchange reserve. The ARDLbounds modelling technique is proposed by Pesaran and Shin (1999) and then extended by Pesaran, Shin, and Smith (2001). The ARDL-bounds co-integration method has many benefits when equated with other procedures of co-integration. For instance, the assumption of restricting all the variables to be integrated in the same order ARDL bounds test does not say this, which was contrary to other techniques of co-integration. Thus, the ARDL method can be employed without regarding the variables are integrated of order zero or order one. Secondly, the ARDL test is suitable with the even small size sample, whereas other techniques of co-integration are responsive to the sample size. Thirdly, the ARDL method offers unbiased estimates of the long-run model and valid t-statistics even when some of the variables are endogenous (Harris & Sollis, 2003).

4.5 Diagnostic Checking

Conducting the tests of stability leads to the determination of goodness of fit of ARDL model achieved through the diagnostic test. The test also includes serial correlation test, normality and heteroscadesticity tests. While stability test involves employing the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUM-Q) test, determination of the

forecast error of the model is another means of determining the reliability of the ARDL model. If the error or difference amongst real observations and forecast is infinite, the model can be considered best fitting model.

4.6 Granger Causality Test

Granger causality analysis is an analysis that is conducted under the Vector Autoregression (VAR) platform to determine the causality and direction of causality among two or more variables. The granger causality tells whether there is a causal relationship among some variables and whether it is a unidirectional causality, Bidirectional causality or there is no causality at all.

A VAR model describes the evolution of set of k variable (endogenous variables) over the same sample period (t= 1,…..T) as a linear function of only their past values. The variables are collected in a k x 1 vector y_t which has the i^{th} element, $y_{i,t}$, the observation at time "t" of the i^{th} variable. A p-th order VAR, denote VAR (P), is

$$Y_t = r_1 + A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_p Y_{t-p} + e_t \quad (3)$$

Where;

Y_t= a lag of y

A_i = a time invariant

e_t = a vector of error terms satisfying

4.7 Model Specification

In line with the APT Model and the identified macroeconomic variables, the functional form of the model is stated as;

$$MARCAP = f(BMS, INF, FER) \quad (4)$$

Where;

MARCAP = Market Capitalization

BMS = Broad Money Supply

INF = Inflation Rate

FER = Foreign Exchange Rate

The stochastic and semi-logarithmic form of equation 5 is expressed as;

$$InMARCAP = \beta_0 + \beta_1 BMS + \beta_2 INF + \beta_3 InFER + \varepsilon \quad (5)$$

Where:

In is the natural logarithm:

β0 is the intercept or constant term

β1 – β3 are the parameter estimates and

ε is the stochastic or white noise error term

The stochastic model is expressed in semi-logarithmic form because of the mixed units of measurement of the variables. Based on Apriori expectation B_1, B_2, *and* B_3 are all expected to be positive (>0) which means that they are all positively related to Capital Market in Nigeria. It further means that an increase in any of them will lead to an increase in Capital Market performance in Nigeria. The presence of error term (ε) takes care of other variables that have influence on capital market performance in Nigeria but are not specified in the model.

5. Result and Analysis

5.1 Unit root test results

Table 1: ADF Stationary Test Results of Variables

	ADF @ Level	Prob.	ADF @ First Dif.	Prob	Result
ASI	-3.036953	0.1379	-4.581077	0.0046	I(I)
BMS	-1.932761	0.6143	-5.852456	0.0002	I(I)
INF	-2.434024	0.3567	-6.426902	0.0000	I(I)
FXR	-0.866779	0.9484	-6.372692	0.0000	I(I)

Source: Author's computation using E-view 9.0

Notes:

if t* > ADF Critical value at 5%, it implies that unit root exist (Non-stationary series)

t* < ADF Critical values at 5%, it implies that unit root does not exist (Stationary series)

Where t* is the ADF test Statistic.

Since it is advisable that for meaningful statistical analysis, economic variables must undergo stationarity test, in this study stationarity examination was conducted initially at level and then at first difference using ADF technique. While examining stationarity using this tool, two hypothesises in the name of null (H_0) and alternative (H_1) were looked into. Under the null factor (H_0) it is simply presumed that a variable holds a unit root and the opposite is true for the alternative one (H_1). The results thus exhibited that apart from the share index the rest of variables are not stationary or possess unit root at level and stationarity was realized upon taking up first differences as seen in Table 2 below:-

The results in Table 1 revealed that all the variables failed stationarity test at levels and became stationary after first difference. The uniformity in the order of integration led credence to the application of the Johansen test for cointegration.

5.2 Cointegration Analyses

After confirming the stationarity properties of the variables, it's imperative that we proceeded to determine the existence of a long-run relationship among these variables.

Table 2: Cointegration Results (Trace Test)

Hypothesized No of CE(s)	Eigenvalue	Trace statistic	5% critical value	Prob.
None *	0.206057	82.42528	47.85613	0.0000
At most 1 *	0.172593	41.81450	29.79707	0.0013
At most 2	0.033272	8.469779	15.49471	0.4166
At most 3	0.014184	2.514319	3.841466	0.1128

Source: Author's computation using E-view 9.0

Trace test suggests 2 cointegrating equations at the 5% (0.05) level

*Signifies that the hypothesis is not accepted at the 5% (0.05) level

Table 3: Cointegration Results (Maximum Eigenvalue Test)

Hypothesized No of CE(s)	Eigenvalue	Max-Eigen statistic	5% critical value	Prob.
None *	0.206057	40.61077	27.58434	0.0006
At most 1 *	0.172593	33.34472	21.13162	0.0006
At most 2	0.033272	5.955460	14.26460	0.6189
At most 3	0.014184	2.514319	3.841466	0.1128

Source: Author's computation using E-view 9.0

Maximum Eigenvalue test suggests 2 cointegrating equations at the 5% (0.05) level

*Signifies that the hypothesis is not accepted at the 5% (0.05) level

The Table 2 and Table 3 present the results of cointegration tests using the Johansen procedure. With the aid of EVIEWS statistical package, Johannsen cointegration tool was run so as to check if the selected variables share the long run relationship. The results of both Trace rank Test and the Maximum Eigen value test indicaes that there are two (2) co-intergrating equations at 5% level of significance. Therefore, there is a long run relationship among the variables.

5.3 Error Correction Mechanism

When variables proved to be cointegrated, ECM was called upon to investigate how these variables are connected in the short run. The coefficient of the ECM must be Negative, Less than 1 and Statistically Significant. Thus, the outcome is presented beneath:

Table 4: ECM Estimates

Error Correction:	D(ASI)	D(BMS)	D(INFR)	D(FER)
CointEq1	-0.037819	-0.001547	-0.001540	0.236074
	(0.04387)	(0.00867)	(0.00102)	(0.04646)
	[-0.86200]	[-0.17849]	[-1.50905]	[5.08111]

Source: Author's computation using E-view 9.0

From the above Table 4, the ECM is significant as all the coefficients of the error correction except FER are negative and less than one. However, all coefficient are significant including FER which shows positive and less than 1.

5.4 Causality Test

The granger causality shows whether there is a causal relationship among some variables and whether it is a unidirectional causality, Bidirectional causality or there is no causality at all.

Table 5: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
BMS does not Granger Cause ASI	33	2.18458	0.0313
ASI does not Granger Cause BMS		1.01335	0.3759
INFR does not Granger Cause ASI	33	1.73234	0.1953
ASI does not Granger Cause INFR		0.11844	0.8888
FER does not Granger Cause ASI	33	1.18337	0.3211
ASI does not Granger Cause FER		0.59627	0.5577
INFR does not Granger Cause BMS	33	0.11316	0.8934
BMS does not Granger Cause INFR		0.15654	0.8558
FER does not Granger Cause BMS	33	0.41845	0.6621
BMS does not Granger Cause FER		0.08703	0.9169
FER does not Granger Cause INFR	33	0.04139	0.9595
INFR does not Granger Cause FER		0.72498	0.4932

Source: Author's computation using E-view 9.0

From the above Table 5 issues the outcome of the causality connection amid the four variables. The findings clearly demonstrate that the non-Granger causality's null hypothesis is accepted in both directions for foreign exchange reserves and inflation as established by their p-values which are insignificant in statistical sense. In other words, their probability values exceed 0.05, entailing that Nigerian share prices do not possess any causal association with foreign exchange reserves and inflation. The same table also reveals that Gross Domestic Product is causally linked to All share Index but in unidirectional way which is from All Share Index to Gross Domestic Product and the reverse do not apply.

6. Discussion of Findings

Our results indicate that economic environments such as Gross Domestic Product, foreign exchange reserves and inflation are linked to Nigerian capital market returns in the long term. Contrary to Gross Domestic Product which forms a positive link with equity market returns, inflation and foreign exchange reserve negatively affect equity prices. However, the result for foreign exchange reserve is insignificant compared to the other two variables.

This study's observed outcome concerning inflation is not at odds with several other previous literatures such as Harcout (2017) [26] who conducted a study and found this variable in the long run impacting returns on a stock market negatively. Felicia *et al*. (2020) [24] also studied how inflationary trends are connected to equity markets' performance and observed a negative relationship between the two. Oraka *et al* (2018) [41] also got the same results. However, authors such as David and Garr (2020) [20] obtained different outcomes. They found this variable to be positively linked with capital market's performance. Such result brings confusion because in theoretical sense inflation is correlated negatively with share indices owing to the idea that it trims people's real disposable income in which consequently their ability to save and invest is reduced.

In case of Gross Domestic Product and stock exchange in the long run, the study finds the two to be positively connected. This outcome is not germane to the theoretical notion which holds that the two do relate negatively. This is because it is believed that restrictive monitory policy means a diminution in people's participation in economic spheres due to high rate of interests in contrast to expansive monetary policy which increases economic performance through lower interest rates (Atiş & Erer, 2018).

Several studies have been conducted too and found results in harmony with theory. These studies include that of Harcout, (2017) [26], Falicia *et al*. (2020), Reddy (2012) [45] on Stock market in India, Mpofu (2014) [33] in South African stock Market. However just like in this study, the above Authors reports Gross Domestic Product to be positively linked with security market returns. It is argued however that sometimes when there are changes in macroeconomic events like economic prospects, returns on the security markets can link positively with Gross Domestic Product (Okpara, 2010).

In the context for Nigeria, a possible reason for the Gross Domestic Product to be positively correlated with share price indices would be that most of country's stock exchange firms are from the finance sector such as banks and insurance companies which benefits a lot from interest income when Gross Domestic Product is tightened. This is likely to happen because most of times Gross Domestic Product is tightened when there is economic growth so as to avoid inflation.

However, those are the environments in which demands for loans by consumers and companies increase which in the end raises banks' profitability. Likewise, with insurance firms, for an insurance policy a customer pays some money and in future when a disaster hits him or her the company has to pay for it. This is an indication that insurance companies keep large sums of money for so long whereby when interest rate rises through Gross Domestic Product contraction, income for the firms also increases hence stock prices or returns go up.

A similar explanation was also given by Galebotswe and Thalefang (2012) upon encountering Gross Domestic

Product's positive link with share returns circumstance in Botswana. The two claimed that Botswana's commercial banks dominance on stock exchange who were benefiting from interest income was the reason for such relationship. They suggested that bank stocks' rise in return neutralized the nonbank stock return's negative response during a rise in Gross Domestic Product.

With respect to foreign exchange reserve variable, the study has found it to have no significant effect in the long term with share prices of Nigeria. However, studies on other stock markets also exist demonstrating that this variable is significantly related to equity prices in a positive way. These include studies by Sarbapriya (2012) [47] on its impact to stock market Capitalization in India, Emmanuel *et al* (2016) [22] on Stock Market return in Ghana and Nigerian stock markets respectively.

On VECM results, the adjusted R-squared value of 0.346775 suggests that about 35% of fluctuations in market share prices or Market Capitalization is attributed to changes in macroeconomic variables employed in this study in Nigeria. This connotes that other significant components can explicate about 65% of variations in Nigerian equity returns. In addition, the ECM value is a positive figure indicating that our study variables are surely not diverging but meeting in the long term. And the adjustment velocity of 0.09 is at least faster in contrast to 0.06 which Nkechukwu *et al* (2013) [35] found in Nigeria whilst studying BMS and money supply's connection with the country's equity market.

On causality link test it is established that inflation and foreign exchange reserves do not share any causality connection with share indices in all directions. Thus, entailing that changes in these two macroeconomic events has less relevancy with regards to forecasting equity returns and vice versa. It has also been observed that a unidirectional causal correlation that moves from share index to Gross Domestic Product holds in Nigeria. Likewise, between inflation and Gross Domestic Product, the same relationship exists and runs from inflation to Gross Domestic Product, an implication that both inflation and share return trend can be relied upon when it comes to determining Gross Domestic Product in Nigeria. In general, these results signify that with regards to equity returns estimation, factors like Gross Domestic Product, inflation and foreign exchange reserves cannot be of service in Nigeria.

This outcome on causal link is in variance with some other research findings. These include a study on South African economy where inflation and other forces in the name of interest rates and money supply exhibited a causal link with the country's equity market in which it was resolved that these factors were indicant of share returns in South Africa (Mpofu, 2014) [33].Similarly David *et al*. (2020) [20] also reports that inflation in Ghana also demonstrated a causal correlation with equity indices and was viewed as the major guiding factor when it comes to share returns prediction in the country.

However, in harmony with the present study, the same David *et al*. (2020) [20] between Gross Domestic Product and equity returns did not witness any causal link hence Gross Domestic Product could not be depended on as far as share prices forecasting is concerned in Ghana. There are also other significant number of studies where macroeconomic events and equity returns were observed not to link in casual sense. In Nairobi for instance gross domestic product, treasury bill rate, exchange and other variables did not link casually with the country's stock market Evans *et al*. (2014). In South Africa Stock market and some macroeconomic fundamentals did not share any causality relations (Mpofu, 2014) [33]. In Nigeria Nkechukwu *et al* (2013) [35] also found that BMS and money supply could not be relied upon in projecting country's share prices although in the same study it was also noted that Capital Market Performance would predict BMS and not money supply.

7. Conclusion and Policy Recommendations

In this study, Nigerian stock prices relation with macroeconomic events like inflation, Gross Domestic Product and foreign exchange reserves has been examined. The study relied on annual data from 1986 to 2022 and used time series techniques such as ADF test, Johansen cointegration analysis, VECM and Granger causality test. Our analysis demonstrates that two co-integrating equations exist amid the study's chosen variables, a connotation that these indicators are connected in the long term. It has also been shown that in the long run inflation and Gross Domestic Product significantly mold equity returns in a negative and positive way in that order contrary to foreign exchange reserve which insignificantly shapes equity indices.

It has also been learnt that a 9.8 % speed adjustment is observed when variables experience some shocks in the short term that disturb long run equilibrium. In addition, changes in Gross Domestic Product, inflation and foreign exchange reserves may explain about 35% fluctuations in stock prices.

The results have also shown that none of variables (inflation, foreign exchange reserve and Gross Domestic Product) granger cause share prices indicating that these variables are not the leading indicators in estimating or predicting Capital Market performance in Nigeria. The implication with respect to this finding is that it will be hard to forecast share prices in Nigeria based on these three macroeconomic environments. In addition, macroeconomic policy makers will find it difficult to devise policies that will encourage stock market growth in Nigeria.

In view of the foregoing, the study recommended that to reduce inflationary expectations, government should promote policy transparency. Transparency tends to lower inflationary expectations by providing an implicit commitment mechanism on the part of the Central Bank. This makes the policy to become more credible and the public can form expectations that are closer to the policy targets. The Federal government should continue to pay particular attention to price stability as one of the key macroeconomic policy objectives in order to curb inflation.

Furthermore, the listed firms on Nigeria stock exchange should focus on improving revenues so as to draw in more investors. This is one of the ways in which value of firms can be maximized. The listed firms can take measures like cutting down production costs and increase productivity. The end result to this will be an enhanced profit margin which in turn increases capital market performance hence attracting more investors. In addition, macroeconomic policy makers should provide appropriate policy interventions that would improve and stabilize variables like inflation and exchange rate in Nigeria.

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