Empirical Analysis of Impact of Capital Market Development on Nigeria's Economic Growth (1981 – 2008)
(Case Study: Nigerian Stock Exchange)

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This study empirically examined the impact of capital market development on economic growth in Nigeria for the period 1981-2008. The major tool we employed for empirical analysis is a multiple regression analysis model specified on the basis of hypothesized functional relationship between capital market development and economic growth. For capital market development indicators, we considered ratios of value of shares traded, market capitalization, gross capital formation and foreign private investment, to gross domestic product, as explanatory variables, while we used growth rate of gross domestic product as the dependent variable. We introduced an error correction term to capture the flexibility in adjustment to long-run equilibrium. We estimated the model via the ordinary least squares (OLS) techniques. Further, we evaluated the model using relevant statistics. The results showed that while market capitalization, gross capital formation, and foreign private investment individually exerted statistically significant impact on growth of the economy, value of shares traded exerted positive but statistically insignificant impact during the review period. However, the variables jointly exerted statistically significant impact on growth of the economy. In addition, the model exhibited a very high explanatory power and high flexibility in adjustment to long-run equilibrium. The variables time series were stationary at second difference, showed existence of long-run relationship between the two sets of variables, and exhibited stability for the study period. Based on the findings, the study recommended, among others, sustainable development of the capital market to enhance faster rates of capital accumulation for greater productivity gains and economic growth as well as the need to complement market development with real sector macroeconomic policy thrust like significant reduction in lending rates to stimulate investment and manufacturing activities in the real sector and translate capital market gains to real sector output growth.

Keywords: Capital Market, Development, Economic Growth

In the early 1990s, economists and policymakers had high expectations about the prospects for capital market development in emerging economies. As a result, many economies embarked on significant reforms like financial liberalization, establishment of stock exchanges and bond markets, and development of regulatory and supervisory frameworks. These reforms, together with improved macroeconomic fundamentals and capital market-related reforms like privatization of state-owned enterprises and shift to privately-managed and defined contributory pension systems, were expected to foster financial and economic development. Despite these reforms, performance of domestic capital markets in many emerging and developing economies has been disappointing. Although some emerging and developing economies experienced growth in their domestic markets, as Nigeria did in last three years of the study period, in most cases such growth had not been as significant as that in the industrialized nations. Their stock markets remain highly illiquid and segmented, with trading and capitalization concentrated on few stocks. Also, bonds tend to be concentrated at the short-end of the maturity spectrum and denominated in foreign currency thereby exposing governments and firms to maturity and currency risks. Numerous policy initiatives and disappointing performance of capital markets have left policymakers without clear guidance on how to revise the reform agenda, and many do not envision a bright future for domestic capital markets in developing countries.

The need for capital market development has been supported by various empirical studies. Levine and Zervos (1996, 1998), and Atje and Jovanovic (1993), Rousseau and Wachtel (2000), and Beck and Levine (2003) showed the importance of stock [capital] market development in the growth process. A well-developed capital market creates liquidity and, hence, spurs economic growth. Stock markets are the catalysts for enhancing the operations of the entire domestic financial system and the capital market in particular (Kenny & Moss, 1998). Obviously, this has not been the case in Nigeria and other developing countries in Africa. Declining investments and rising unemployment characterize these economies despite their seemingly thriving capital (stock exchange) markets.

Among the several developments and reforms in the capital market are the establishment, in April 1985, of the Second-Tier Securities Market (SSM) to cater for the small to medium scale enterprises (Ahmed, 1992); the repeal in 1995 of the Nigerian Enterprises Promotion Degree and its subsequent replacement with the Nigerian Investment Promotion Commission Decree (NIPCD) of 1995 to allow for unrestricted foreign interest in Nigerian quoted companies; the introduction of an automatic clearing, settlement, and delivery system - Central Securities Clearing System (CSCS) - in 1997 to ease transactions and foster investors' confidence in the capital market; codification of all myriad laws relating to the capital market into a single document called the Investment and Securities Decree (ISD) in 1999; introduction of the Unit Trust Scheme, the first of which commenced operation in December, 1990. Equally important is the linking of performance information on the NSE to Reuters International System in order to disseminate relevant market information to subscribers. The SEC approved its establishment in 2000, and is now in operation.

The need to examine the impact of these and other developments of the capital market on economic growth in Nigeria spurs this research interest. Against this backdrop, the major objective of this paper is to examine, via empirical econometric analysis approach using relevant growth and capital market development indicators, the impact of capital market development on growth of the Nigerian economy for the period 1981-2008. Consequently, the study examines the linkage path of capital market development indicators that facilitate and stimulate research into the links between capital market and economic growth within the Nigerian context, and the linkages between foreign private investment and gross capital formation in relation to capital market development and economic

growth in order to enhance the robustness of the empirical analysis. The paper is divided into five sections. Following this introduction is section two which is a review of related literature. Methodology is discussed in section three while section four is the empirical analysis, and section five concludes the study and proffers appropriate recommendations.

REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK

Conceptual Clarification

Kalra (2006) defines capital market as "the market which specializes in giving long term loans to the industry" (p. 41#). This definition limits the conceptual scope of capital market. A more appropriate definition incorporates intermediary institutions, capital formation, mobilization and channeling of long-term capital, as well as regulatory authorities. In this wise, while Alile (1986) describes the capital market as the part of the financial system that is responsible for efficient channeling of funds from surplus to deficit areas of the economy, Austin (2003) conceptualizes it as comprising financial intermediary institutions that facilitate capital formation, mobilization and channeling of capital funds to various end users on long-term basis. Alile (2007) further clarifies that the capital market is made up of markets and institutions which facilitate the issuance and secondary trading of long-term financial instruments. Aligning with this, Osaze (2007) simply sees it as the market responsible for long-term-growth capital formation. Ologunde, Elumilade and Asaolu (2006) conceptualize capital market as a collection of financial institutions set up for the granting of medium and long-term loans. Further, they considered the stock market as neither single nor even a dual market but rather a network of specialized financial institutions which, in various ways, help to bring together suppliers and users of long-term capital fund. However, this study conceptualizes the Nigerian capital market as institutional arrangement encapsulated in efficiently mobilizing and channeling long-term financial resources through a set of comprehensive professional financial services aimed at balancing financial and real aspects of growth of the Nigerian economy.

On the other hand, economic growth is the increase in a country's output over a long period of time. Ogho (2007) opines that economic growth is the increase in the value of goods and services produced by the economy, generally referred to as the increase in Gross Domestic Product (GDP). This study conceptualizes economic growth as the increase in output of Nigeria over the review period. It is measured by the GDP in the respective years of the review period. Therefore, the study aligns with the proposition that economic growth has built-in exponential characteristic, which can exacerbate differences across nations. For instance, it has taken the Asian Tigers less than two decades to develop whereas it took the US and Europe before them about half a century. Economic growth that will translate to development must be accompanied by efficient financial resources mobilization, channeling, and utilization on long-term basis. This is the challenge for the Nigerian capital market.

Review of Related Literature

The World Bank (2001) in its publication, "Finance for Growth", concludes that "getting the financial systems of developing countries to function more effectively in providing the full range of financial services … is a task that will be well rewarded with economic growth" (p. 2). A study by Applegarth (2004) on levels of capital market development and economic growth in Asia and Sub-Saharan Africa shows that capital markets in Asia which continued to add several hundred companies to their exchanges annually experience sizeable increase in the momentum of private sector development, while the reverse was the situation in Sub-Saharan Africa that added fewer than 10 to their exchanges, except South Africa. Thus, using private sector development, liquidity,

local savings, bank competition, remittances, corporate governance, and enhanced economic policy as capital market development indicators, he showed that capital market development drives economic growth.

Specifically, empirical evidence strongly suggests that greater stock market liquidity boosts, or at least precedes, economic growth. In a cross-country study, Levine (1995), using total value of shares traded on a country's stock exchange as a share of GDP, the value of traded shares as a percentage of total market capitalization and ratio of value-traded-ratio to stock price volatility as market liquidity indicators, found that stock market development explains future economic growth. He demonstrated empirically that it is not the size or volatility of the stock market that matters for growth but the ease with which shares can be traded and, thus, established that stock market liquidity is positively related to economic growth. On this basis, he concluded that countries with liquid capital markets experience faster rates of capital accumulation and greater productivity gains and economic growth.

In earlier study, Levine (1991), exploring Douglas Diamond and Philip Dybvig's (1983) seminal model of liquidity, argues that savers experiencing liquidity risk (pre-investment maturity liquidity need) can sell their equity claims to others via the stock market. Thus, with liquid stock markets, equity holders can readily sell their shares, while firms have permanent access to the capital invested by the initial shareholders. He submitted that if illiquid projects enjoy sufficiently large externalities, then greater stock market liquidity induces faster steady-growth.

Using stock market capitalization rate, government development stock rate, and interest rate in the market as capital market development indicators, Ologunde et al. (2006) analyzed the relationship between stock market capitalization rate and interest rate in Nigeria via simple regression analysis technique on time series data on the indicators. Their results showed that while interest rate exerts positive influence on stock market capitalization rate, government development

stock rate exerts negative influence on stock market capitalization rate, and interest rate exerts a negative influence on government development stock rate. Hence, they submit that rising interest rate in the market increases market capitalization rate but suppresses government development stock rate and size of the market, and retards economic growth and development. However, their models exhibited weak explanatory powers and the influence of the variables they employed in measuring the relationship are statistically insignificant. Adeyemi (2009), using gross capital formation and number of quoted companies as measures of capital market development, found that capital market development has positive significant impact on economic growth.

Basically, a more reliable measure of the relationship would need inclusion of appropriate stock market development indicators since, according to Alile and Anao (1986), the extent to which the Nigerian Stock Exchange fulfills its expected roles depends on the peculiar circumstances of the Exchange, its specific objectives and constituted organizations. To bridge this gap, this paper includes such other capital market indicators as gross domestic product, value of shares traded, market capitalization, gross capital formation, and foreign private investment in the functional relationship.

Udegbunam (2002), in an attempt to estimate the impact of openness to trade and stock market development on industrial growth in Nigeria for the period 1970-1997, related industrial output growth to openness to world trade, stock market development and a set of control variables in a simple model he adapted from the stock market and economic growth model formulated independently by Levine and Zervos (1996), and Demirguc-Kunt and Levine (1995). Udegbunam's empirical evidence strongly suggests that openness to world trade and stock market development are among the key determinants of industrial output growth in Nigeria. By implication, this translates to economic growth via sustained increases in GDP. However, he identifies other important factors as human capital input, non-military expenditure,

GDP, which reflects the size of physical capital and inflation. The variables included in his model were industrial output, stock market capitalization-GDP ratio, Non-military expenditure-GDP ratio, school enrolment, inflation rate, maximum lending rate, openness to international trade, and GDP. To measure the impact of openness and stock market development on industrial output, he regressed industrial output growth on the rest of the indicators. The result provided a strong support for openness and financial development hypothesis which posits that industrial growth is strongly motivated by trade liberalization. The result also shows evidence of a strong positive relationship between stock market development and industrial production. This result is consistent with recent empirical findings by King and Levine (1992, 1993), Levine and Zervos (1996), and Fernandez and Galetovic (1994).

In a study on domestic market development and internationalization, Stijn, Daniela, and Schumkler (2004), using market capitalization, trading volume, and amount of new equity capital raised as measures of domestic stock market activity; depository receipt (DR) programmes (for data on cross-listed stocks), DR value traded (for data on trading abroad), and capital raised abroad, found that as a country's macroeconomic and institutional environment improve, domestic stock exchange activity increases, and so does activity abroad; thus suggesting that better fundamentals do not only help local markets to develop, but also allow for an increase in the use of global markets and international stock exchanges. They also found that the impact is greater on the internationalization process – internationalization accelerates as fundamentals improve. Further, they used equity flows, including foreign direct investment (FDI) flows, relative to GDP as measures of integration with international capital markets and de-facto openness of the stock market; interest differentials, degree of corruption and trading costs, and found that, in general, internationalization is affected in the same direction and by the same economic fundamentals that drive the development of stock markets.

Thus, their findings cast doubts on the hypothesis that countries with worse fundamentals are the ones that seek more stock exchange activities in international markets. Rather, the findings support the views that better fundamentals facilitate the access to foreign markets, with firms tapping foreign investor bases as their countries become more attractive.

Torre, Gozzi and Schmukler (2007), examined the impact of reforms of capital markets on economic development in Latin American countries. For measures of capital market development they used market capitalization, value traded, and capital raised. They used annual inflation rate and ratio of government deficit to GDP as alternative indicators of macroeconomic soundness. They included ratio of equity flows (portfolio equity flows and foreign direct investment [FDI]) to GDP as a measure of openness or effective integration with international capital markets. The equity flows are intended to measure foreign demand for domestic equity. The FDI represents purchases of existing equity in global capital markets. They established that GDP per capita, openness, shareholder rights, and the size of the economy are positively and significantly associated with market capitalization, while government deficits are negatively related to stock market development. The results of their analysis further show that capital market development and openness have positive significant impact on economic development. Countries with sounder macroeconomic policies, and more financial openness, tend to have better growth opportunities, higher trading activities, more capital raising, and attracts more net foreign direct investment. However, they submitted that despite numerous reforms, Latin American and other developing countries' capital markets have not lived up to expectations.

In an attempt to address the crucial issue of whether or not stock markets promote economic growth, Filer, Hanousek and Campos (1999) pointed out potential defects with the works of Goldsmith (1969), and King and Levine (1993), Atje and Jovanovic (1993), Levine and Zervos

(1996), Levine and Zervos (1998), among others. Filer et al. (1999) argued that those studies failed to deal with the issues of causality and unmeasured cross-country heterogeneity in factors such as savings rates. Therefore, though the empirical research suggests a connection between stock market development and economic growth, it is far from definitive. They argued further that since earnings growth should be closely related to overall economic growth, growth in current prices will portray market capitalization as preceding and, therefore, causing economic growth even if the true link runs in the reverse direction. Thus, they substituted indicators of market development that are independent of stock prices. Given that the role of a market is to reallocate capital to its most productive use, they considered such indicator to be turnover velocity (ratio of turnover to market capitalization), because it has been purged of forwarding-looking price effects. They also used annual percentage increase in the number of listed companies as an indicator of financial deepening. Further, they posit that financial markets promote growth better when not distorted by government policy. They divided countries into three groups based on per capita income, since impact of stock market development on growth varies across levels of development. They observe, over the period, that markets in lower income countries grew more rapidly than higher income ones; freer markets appeared to grow less rapidly than less free ones. Both market capitalization-GDP ratio and turnover-market capitalization ratio are higher for higher income markets. Their study further reveals that lagged growth rates are, in general, significant predictors of current rates, with the effect being quite strong for high and middle income countries and relatively weak for lower income countries. For the financial variables, they found a positive link between market capitalization and future growth. They posit that the positive link is likely to be because efficient markets incorporate anticipated future growth into current period prices and, therefore, market capitalization.

Considering turnover velocity as a better indicator of effect of stock markets on growth,

their results suggested that a higher turnover velocity Granger-causes growth for high and low income countries; and that the effect is entirely within countries for high income countries, while for low income countries, the linkage is found between countries. This result is particularly important in that, for low-income countries, having a more active stock market is associated with substantially higher rates of growth. Thus, they submit that an active stock market is crucial in reallocating capital to high value uses in developing countries; without such a market, growth in low and lower middle income countries is substantially lower than it could be were such an active stock market to be present.

Some findings of this study have relevance for Nigeria and other developing low-income countries. First is the positive link between market capitalization and future growth since, according to the study, the link exists within countries, and efficient markets incorporate anticipated future growth into current period prices and, therefore, market capitalization. Second is that a higher turnover velocity causes growth for low income countries; and that the effect constitutes a linkage between low income countries. The third relevance is that for low-income countries, having a more active stock market is associated with substantially higher rates of growth.

Demirguc-Kunt and Levine (1995), in an attempt to unravel some stylized facts on stock market development and financial intermediaries, included more indicators in their study. They argued that each indicator has statistical and conceptual shortcomings and, thus, used different measures of stock market size, liquidity, concentration, and volatility, of institutional development, and of international integration. Their goal was to summarize information about a variety of indicators for stock market development, in order to facilitate research into the links between stock markets, economic development, and corporate financing. They studied 41 countries, for the period 1986-2003, and found that there are enormous cross-country differences in the level of stock market development for each indicator. The level of stock market development is highly

correlated with the development of banks, non-bank financial institutions, insurance companies and private pension funds. Their study shows that the three most developed markets are in Japan, the United Kingdom, and the United States. The most underdeveloped markets are in Columbia, Nigeria, Venezuela, and Zimbabwe.

For empirical evidence from developing, Mohtadi and Agarwal (2001), argued that the study by Levine (1991) suffers some empirical limitations in that it relies on cross-sectional approach and aggregated data on measures (single composite measure) of stock market development, which do not reveal country-specific and other time related effects. This limits the potential robustness of their findings. To address the shortcoming, Mohtadi and Agarwal (2001) used disaggregated panel data on measures (several measures) of stock market development to re-examine the long-run impact of stock market development on economic growth. They focused exclusively on emerging stock markets using a sample of 21 developing countries over 21-year (1977-1997) period. Using the disaggregated measures such as market capitalization ratio, total value of shares traded ratio, turnover ratio growth, foreign direct investment, investment and secondary school enrollment, they found turnover ratio to be an important and statistically significant determinant of investments by firms which, in turn, are significant determinant of aggregate growth. They found that foreign direct investment has a strong positive influence on aggregate growth, and that both market capitalization and turnover ratio are important variables as determinants of economic growth. Their findings also suggest that value of shares traded ratio is not an effective measure of stock market liquidity, especially in developing countries where stock markets are highly volatile, causing the value of shares traded to be a misleading indicator of liquidity. In conclusion, they submitted that market liquidity has a positive direct impact on economic growth, and capitalization or market size impacts positively on growth but through investments.

Focusing on the creation of stock exchanges, Baier, Dwyer, and Tamura (2003) examined the connection between economic growth and the development of institutions that support the financial sector of economies. The study used a new dataset that spanned over 100 years for many countries. Specifically, the study examined whether there is a significant change in a country's growth rates of output, physical capital, human capital, or total factor productivity after the creation of a stock exchange. Besides comparing growth before and after a stock exchange opens, they compared countries' growth rates. Analysis was based on data on growth of physical capital, human capital, total factor productivity, and real income growth. Result supports the proposition that growth in a country is higher following the creation of a stock exchange. It provides evidence that economic growth reflects increase in growth rate of productivity, not capital. The result also showed that financial deepening – growth of a broad monetary aggregate relative to income – is rapid before the creation of a stock market and slows down subsequently. Thus, they submitted that higher economic growth occurs because the exchange increases the economy's efficiency, either the informational efficiency, physical capital allocation efficiency, both, or in some other way.

The reviewed studies, except those by Adeyemi (2009), Ologunde et al. (2006) and Udegbunam (2002), are not country and time related specifics; each focused on a group of countries using either cross-sectional or time series data. Similarly, to narrow down the study and re-examine for country specific, this study adapts their indicators and methodology to examine the relationship between capital market development and economic growth in Nigeria.

THEORETICAL FRAMEWORK

There is dearth empirical investigation of the link between financial development, in general, and stock market, in particular; and growth, especially for the developing countries. However,

available studies establish a significant positive relationship between capital market development and economic growth. Such studies include King and Levine (1993), Torre et al , Mohtadi et al (2001), and Adeyemi (2009). This subsection theoretically explores the link between capital market development and economic growth. For the purpose, the study adapts the model specified by Baier et al. (2003) in their study of "Impact of Opening a Stock Market on Economic Growth". The relationship between gross domestic output (Y) and aggregate capital market resources (indicators of capital market development as well as human capital development) is hereby summarized by an aggregate production function, and expressed as

$$Y_t = A_t f(K_t, H_t) \text{ ---------------------------- (1)}$$

where Y_t, K_t and H_t are output, physical capital (denoting a vector of capital market resources) depicted by capital market development measures or indicators, and human capital at time t. The parameter A_t represents the level of technology or total factor productivity at t. Assuming perfect competition and equality of social and private marginal products, then equation (1) implies that

$$y_t = \lambda k_t + (1 - \lambda)h_t + a_t \text{ --------------------- (2)}$$

where λ and $(1 - \lambda)$ are respective shares of physical and human capitals in national income. y, k, h and a are the growth rate of the respective variables. Generally, factor shares, λ and $(1 - \lambda)$, vary over time. But here such variation is assumed unimportant, thus we leave out time subscripts on λ in equation (2). It is further assumed that capital market development encompasses human capital development. Thus, the growth of human capital is relevant to capital market growth and development. Combining the growth rates of physical and human capital into aggregate input, denoted as x_t, we obtain a composite input growth rate function expressed as

$$x_t = \lambda k_t + (1 - \lambda)h_t, \text{ -------------------------- (3)}$$

Substituting equation (3) into equation (2) yields the growth rate of output as a function of growth rate of aggregate input and technology or total factor productivity. This is specified as

$$y_t = x_t + a_t \text{ -------------------------------------- (4)}$$

The growth rate of technology, a_t, in equation (4) is a residual, which is computed from the other observable variables. Thus, equation (4) can be used to estimate the growth rate of technology or productivity as well as its variations over time. However, since the focus of this study is on capital market development and economic growth, we step down the growth rate of technology or total factor productivity component of equation (4) and disaggregate x_t into appropriate variable indicators of capital market development for empirical analysis of the link between capital market development and economic growth in the context of the Nigerian economy.

Capital market development can affect the growth rate of output by increasing the growth rate of aggregate input or total factor productivity. If a capital (stock exchange) market increases the growth rate of physical capital by providing investors with a more desirable liability than without a stock exchange, then the growth rate of aggregate input, x, will increase. Alternatively, as in Greenwood and Jovanovic (1990), intermediaries in general and stock market in particular may provide investors with a payoff with higher prospect because intermediaries' aggregate information permits a more efficient allocation of investments. In terms of equations (2) and (4), this analysis indicates an increase in the growth of physical capital and aggregate inputs.

Brief History of the Nigerian Stock Exchange

The Nigerian Stock Exchange (NSE) came into existence in 1977 from the Lagos Stock Exchange (LSE) established in 1960. In 1961, the NSE/LSE commenced operations with 19 securities listed for trading. As at 2008, there were more than 320 listed securities on the Exchange. The NSE has

a head office (Lagos, 1961) and seven branches established in some of the major commercial cities in Nigeria: Kaduna (1978), Port Harcourt (1980), Kano (1989), Onitsha (1990), Ibadan (1990), Abuja (1999), and Yola (2002). Each branch has a trading floor. The NSE creates a market place for companies to raise equity capital, and for shareholders to trade on existing stocks. In 1998, the management of the NSE protested against a committee's recommendations for the government to include in its reform agenda establishment of a parallel stock exchange, Stock Exchange of Nigeria (SEN), and reversion of the NSE to its former name LSE. However, the Securities and Exchange Commission (SEC), the apex regulatory body of the capital market in Nigeria, favoured a multiple exchange system which it views as a better option for attracting investors to cities other than Lagos, where capital market activities are concentrated. Presently, the NSE operates multiple exchange system with Automated Trading System. Data on listed companies' performance are published daily, weekly, monthly, quarterly and annually by the NSE and some media outfits in Nigeria. Several reforms and developments have taken place in the market.

METHODOLOGY

This study employs investigative and empirical analysis approach. A stochastic model of causal link between capital market development and economic growth is specified based on perceived linear functional relationship between capital market development and economic growth. This enables us to explore empirically the link between capital market development and economic growth. For the purpose, we adapted for country and time related specifics, the model specified by Baier et al. (2003) in their study of impact of opening a stock market on economic growth. We used GDP, a proxy for economic growth, as the explained variable. For explanatory variables, a matrix of capital market performance indicators was used to capture the effect of various capital market developments. Distinct from majority of

the studies reviewed in section two, this model is country (Nigeria) specific. Since data span the entire study period, we consistently use data for each time period according to classification from data sources. Thus, variables included in the model are those considered appropriate indicators of Nigerian capital market development and economic growth over the relevant period, without cross-country comparisons. For uniformity in relative values of the indicators, the study considers the indicators as ratios of economic growth indicator (GDP).

Employing multiple regression analysis, via ordinary least squares (OLS) techniques, we confronted the model for estimates of its parameters using the software for empirical econometric analysis, Econometric Views (E-Views). In addition to numerical values of model parameters, the OLS model estimation techniques yield other relevant statistics that enhance further analysis and evaluation. The estimated model is discussed vis-à-vis a priori expectations for an insight into the nature of the relationship between the explained and respective explanatory variables. To incorporate dynamism into the model, we introduced the one-period lagged error correction term to accommodate effect of changes in variables values over time, and capture the adjustment from short-term to long-term equilibrium situations in the capital market.

Further, the estimates are evaluated for statistical significance and acceptance or rejection of research hypothesis. Basis of evaluation are the t-stat and F-stat respectively. The explanatory power or goodness of fit of the estimated model is determined using the coefficient of multiple determination. We tested for stationarity in the variables time series using Augmented Dickey Fuller (ADF) unit root test at specified level of differencing; existence of long-run relationship between the two sets of variables using cointegration test; and stability of the model by examining the recursive residuals (cum test) of the estimates for the study period. In the light of the theoretical framework, we used the Error Correction Mechanism (ECM) to test the

theoretical validity or empiricism of the impact of capital market development on the growth, based on the selected indicators, and captured the flexibility of the model in adjustment to long-run equilibrium. We discussed the economic implications and policy relevance alongside the findings from the empirical analysis.

Data and Sources

Data for analysis are those considered relevant indicators of economic growth and performance of capital market. Such are GDP, market capitalization (MKC), value of shares traded (VST), foreign private investment (FPI), and gross capital formation (GCF) extracted from publications of the Nigerian Stock Exchange (NSE) and Central Bank of Nigeria (CBN).

Research Hypothesis

For empirical investigation and analysis of the impact of capital market development on economic growth in Nigeria, we operationalized the research hypothesis below:

H_0:   Capital market development has no significant impact on economic growth in Nigeria.

H_1:   Capital market development has significant impact on economic growth in Nigeria.

Functional Relationship and Model Specification

Theoretically, the model says that growth rate of the economy depends on shares of market capitalization, value of shares traded, foreign private investment, and gross capital formation respectively in gross domestic product. Thus, the functional relationship is:

$$GrGDP = f(RMCP, RVST, RFPI, RGCF)$$

where:

GrGDP = Growth Rate of Gross Domestic Product at current basic prices

RMCP = Market Capitalization-GDP Ratio at annual market value.

RVST = Value of Shares Traded-GDP Ratio at annual market value

RFPI = Foreign Private Investment-GDP Ratio (cumulative)

RGCF = Gross Capital Formation-GDP Ratio at annual nominal value

Model: $GrGDP = \beta_0 + \beta_1 RMCP + \beta_2 RVST + \beta_3 RFPI + \beta_4 RGCF + ECM_{t-1} + \mu$

where ECM_{t-1} is one period lagged error correction term.

A Priori Theoretical Expectations

From economic theoretical expositions and conventions, we expect each model parameter estimate to have a positive sign. Thus, β_i (i = 0, 1, 2, 3, 4) > 0.

Estimated Model and Discussion of Empirical Econometric Analysis Results

Estimation of model parameters is based on data in Table A (see Appendix I). The estimated model and relevant statistics are presented below (see Appendix II for regression output).

GrGDP = -38.74 + 27.80RVST - 3746.85RMKC + 7.99RGCF - 23.32RFPI - 0.784177
SE: (22.78)   (1759.68)   (0.66)   (2.46)   (-0.78)
T-stat (1.22)   (-2.12)   (12.04)   (-9.44)   (-0.87)
   R^2 = 0.957629 $\bar{R}^2$ = 0.946479   F-stat = 85.88447   Dw-Stat = 1.890329

Discussion of Empirical Statistical Analysis

Estimates of model parameters are consistent with theoretical expectations for β_1 and β_3, but not for β_2, and β_4. The estimated model shows that negative growth obtains at zero value of the respective explanatory variables. However, we disregard this since the negative value makes no economic sense. The numerical values of the coefficients β_1 = 27.80466, β_2 = -3746.853, β_3 = 7.998454, and β_4 = -23.3282, indicate that while RVST and RGCF each correlates positively with GrGDP, RMKC and RFPI each correlates negatively with GrGDP. Positive correlation of values of shares traded enhances the liquidity of the capital market, and substantiates Levine's (1991) view that with liquid [capital] markets, equity holders can readily sell their shares while firms have permanent access to the capital invested by the initial shareholders

At 0.05 level of significance, the coefficients of RMKC, RGCF and RFPI are individually statistically significant while the coefficient of RVST is not. This implies that market capitalization, gross capital formation, and foreign private investment are each an important determinant of growth. Therefore, we accept the alternative hypothesis in terms of market capitalization, gross capital formation, and foreign private investment. The significant positive impact of value of shares traded rekindles the need for sustainable improvement and development of the capital market in line with Levine's (1995) view that countries with liquid capital markets experience faster rates of capital accumulation and greater productivity gains and economic growth. However, the statistically significant negative impact of market capitalization is not out of place since capital market instruments are nominal assets, and trading on them are mere transfer of financial assets. Thus, they are not subject to "value added" but increase in market value due to increasing speculative activities. Therefore, rapid increases in their market value do not translate to increase in real gross domestic product. This is in line with Mohtadi

and Agarwal's (2008) study which submitted that market capitalization impacts positively on growth but through investment. As policy relevance, this underscores the need to complement capital market development with real sector macroeconomic policies to engender environment conducive for investment and competitiveness. Further, the statistically significant negative effect of foreign private investment can be explained in the context of remittances by foreign investors who would normally remit returns on their investment in Nigeria to their home countries. This underscores the need for appropriate policies allowing only specified proportions of returns on foreigners' investment in financial assets in Nigeria to be remitted to the foreign investors' home countries.

At 0.05 level of significance, the overall impact of the explanatory variables on the response variable is statistically significant. This implies that these capital market development indicators are collectively important determinants of economic growth. Therefore, capital market development induces investment and accelerates economic growth via aggregate productivity. The coefficient of multiple determination (R^2 = 0.957629) implies that the model exhibited high explanatory power, and is a good fit. That is, within the context of the model, about 95.8% of total variations in growth rate of the economy is explained by capital market development, and only 4.2% unexplained variations can be attributed to other factors outside our model. The adjusted r-squared (R^2 = 0.946479) shows high explanatory power still after adjustment for degree of freedom. The relevance is the need to emphasize capital market development and investment as critical factors to increase productivity and further enhance economic growth.

The computed Durbin-Watson statistic (d_{Cal} = 1.890329) is greater than the critical upper value (d_U = 1.886) at 0.05 level of significance and shows that there is no evidence of positive first-order serial correlation. Consequently, from a dynamic perspective, we conclude that capital

market development has impacted significantly on growth of the Nigerian economy.

The error correction term (ECM(-1) = -0.784177) is appropriately negative. This shows that the model is able to correct any deviations from the long-run equilibrium relationship between growth rate of the economy and capital market development. It implies that flexibility in adjustment of the capital market to long-run stable state in response to disequilibrating forces is about 78.4%.

Stationarity, Cointegration and Stability

RVTS and RMKC exhibited trends in time series values while RGCF, RFPI and GrGDP fluctuated in values over time (see Figures a - e). These imply that while each of VTS MKC sustained increasing contributions to nominal GDP, contributions of GCF and FPI to nominal GDP fluctuated during the period, and growth rate of the economy also fluctuated. However, Augmented Dickey Fuller (ADF) unit root test shows that all the variables are stationary at second difference (see Table B). Cointegration test shows that the residuals are stationary at 5% critical value and zero level of differencing, $I(0)$ (see Table C). This implies existence of long-run relationship between the two sets of variables. Therefore, growth rate of the economy can be predicted in the long-run with great accuracy using the selected explanatory variables. The recursive residuals (cum test) of the estimates are within bounds (see Figure f), implying that the model exhibits relevance and stability for the review period.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This paper has employed theoretical and empirical apparatus to explore the link between, and impact of, capital market development and economic growth in Nigeria. Empirical analysis is anchored on model and techniques used in previous studies. However, the model is adapted for Nigeria and time related specifics. The study uses two measures of domestic capital market development, and two alternative indicators of economic growth.

However, this study comes with a caveat that, although we used as explanatory variables what we considered the main drivers of capital or stock market development, some variables were not included for one reason or the other. For example, number of companies listed, all shares index, capital raised, institutional and regulatory framework, and capital market infrastructure may be important determinants of domestic capital market development. Therefore, we believe that further research is needed to identify the factors behind the low level of capital market development in Nigeria and some other developing countries.

Nevertheless, our findings show that capital market development exerts statistically significantly impact on the growth rate of the economy during the review period. Based on our findings, we have proffered some policy recommendations which we believe, if considered by appropriate authorities, will further enhance the development and efficiency of the capital market and, thus, engender two-digit growth rate of the economy and ultimately translate to sustainable economic development in Nigeria.

We recommend sustainable improvement and development of the capital market to enhance faster rates of capital accumulation and greater productivity gains and economic growth. The need to complement capital market development with real sector macroeconomic policies calls for policy action to significantly reduce lending rates by the banks and stimulate investment and manufacturing activities in the real sector. This lies in the domain of monetary authorities. To reverse the remittance-induced negative effect of foreign private investment on the economy, we see the need for appropriate policies allowing remittance of only a specified proportion of returns on foreigners' investment in financial assets in Nigeria to foreign investors' home countries. Finally, we see the need for increased awareness

to keep investors abreast of happenings in the market, and bring to the knowledge of potential investors, within and outside the cities and urban centres, the business opportunities available in the market via public enlightenment and information dissemination.

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APPENDIX I

Table A
Empirical Econometric Analysis Data

Year	GDP at Current Basic Prices (₦'Million)	Total Value of Shares Traded (₦'Million)	Market Capitalization (₦'Billion)	Foreign Private Investment (Cum) (₦'Million)	Gross Capital Formation (₦'Million)
1981	47619.7	304.8	5.0	3757.9	12215.0
1982	49069.3	215.0	5.0	5382.8	10922.0
1983	53107.4	397.9	5.7	5949.5	8136.0
1984	59622.5	256.5	5.5	6418.3	5417.0
1985	67908.6	316.6	6.6	6804.0	5573.0
1986	69147.0	497.9	6.8	9313.6	7323.0
1987	105222.8	382.4	8.2	9993.6	10661.1
1988	139085.3	850.3	10.0	11339.2	12383.7
1989	216797.5	610.3	12.8	10899.6	18414.1
1990	26755.0	255.4	16.3	10436.1	30626.8
1991	312139.7	242.1	23.1	12243.5	35423.9
1992	532613.8	491.7	31.2	20512.7	58640.3
1993	683869.8	804.4	47.5	66787.0	80948.1
1994	899863.2	985.9	66.3	70714.6	85021.9
1995	1933211.6	1838.8	180.4	119391.6	114476.3
1996	2,702719.1	6979.6	285.8	122600.9	172105.7
1997	2801972.6	10330.5	281.9	128331.9	205553.2
1998	2708430.9	13571.1	262.6	152410.9	192984.4
1999	3194015.0	14072.0	300.0	154190.4	175735.8
2000	4582127.3	28153.1	472.3	157508.6	268894.5
2001	4725088.0	57683.8	662.5	161441.6	371897.9
2002	6912381.3	59406.7	764.9	166631.6	438114.9
2003	8487031.6	120402.6	1359.3	178478.6	429230.0
2004	11411066.9	225820.0	2112.5	249220.6	456970.0
2005	14572239.1	262935.8	2900.1	324656.7	1373586.8
2006	18564594.7	470253.4	5121.0	481239.1	1755725.9
2007	20657317.7	1076020.4	13294.6	552498.6	2497971.9
2008	23842170.7	1679138.7	9516.2	586309.8	N/A

Sources: Central Bank of Nigeria Statistical Bulletin (50 Years Special Anniversary Edition, 2008), Nigerian Stock Exchange Fact Book (various issues).

N/A = Not Available

APPENDIX II
ECM Regression Output

Dependent Variable: GRGDP
Method: Least Squares
Date: 20/03/10   Time: 14:35
Sample (adjusted): 1983 2007
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-38.74676	13.52307	-2.865235	0.0099
D(RFPI)	-23.32828	2.469165	-9.447843	0.0000
RGCF	7.998454	0.663876	12.04811	0.0000
D(RMKC)	-3746.853	1759.685	-2.129275	0.0465
D(RTVS,2)	27.80466	22.78574	1.220265	0.2373
ECM(-1)	-0.784177	0.055286	-0.871409	0.3944

R-squared	0.957629	Mean dependent var		67.01761
Adjusted R-squared	0.946479	S.D. dependent var		211.1239
S.E. of regression	48.84267	Akaike info criterion		10.82065
Sum squared resid	45326.52	Schwarz criterion		11.11318
Log likelihood	-129.2581	Hannan-Quinn criter.		10.90178
F-statistic	85.88447	Durbin-Watson stat		1.890329
Prob(F-statistic)	0.000000			

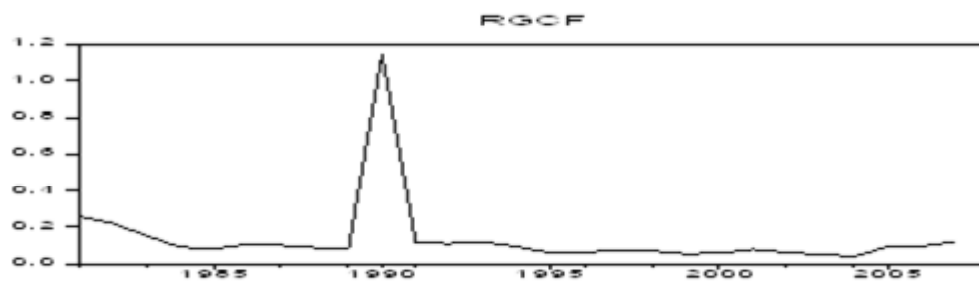Source: E-Views Output

APPENDIX III

Critical Values of Mackinnon Test Statistic

Critical Value	Prob.	Level	1st Difference	2nd Difference
GrGDP	1%	-3.711457	-3.720470	-3.769597
	5%	-2.981038	-2.986225	-3.004861
	10%	-2.269906	-2.632604	-2.642242
RVST	1%	-4.339330	-4.356068	-4.394309
	5%	-3.587527	-3.595026	-3.612199
	10%	-3.229230	-3.233456	-3.243079
RMKC	1%	-4.339330	-4.356068	-4.416345
	5%	-3.587527	-3.595026	-3.622033
	10%	-3.228230	-3.233456	-3.248592
RGCF	1%	-3.711457	-3.724070	-3.769597
	5%	-2.981038	-2.986225	-3.004861
	10%	-2.629906	2.632604	-2.642242
RFPI	1%	-3.699871	-3.737853	-3.769597
	5%	-2.976263	-2.991878	-3.004861
	10%	-2.627420	-2.635542	-2.642242

Source: E-Views Output

APPENDIX IV

Graphs of Time Series Variables in the Model

GRGDP

Figure a: Growth Rate of GDP

RTVS

Figure b: Shares Traded-GDP Ratio

RMKC

Figure c: Market Capitalization-GDP Ratio

RGCF

Figure d: Gross Capital Formation-GDP Ratio

RFPI

Figure e: Foreign Private Investment-GDP Ratio
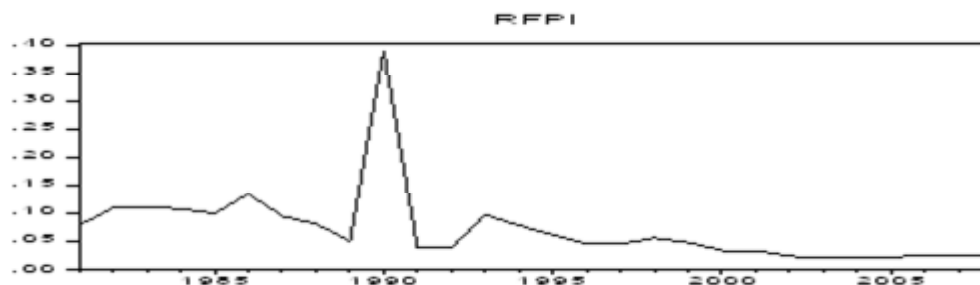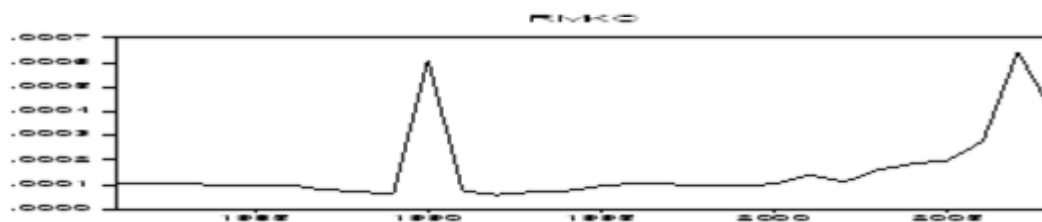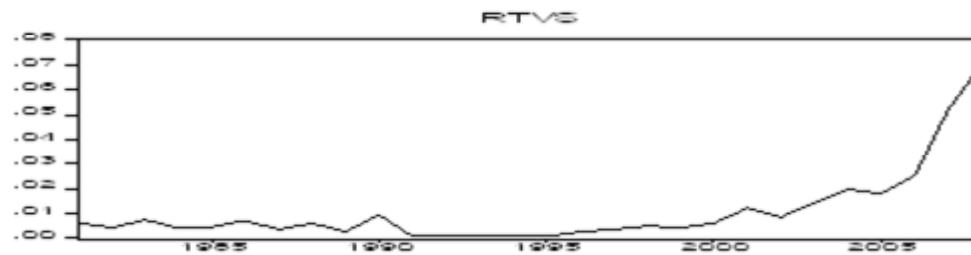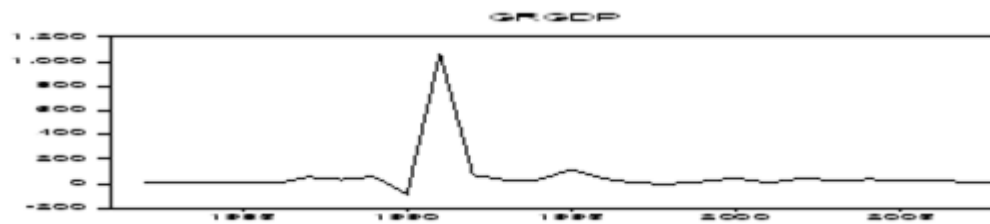
Source: E-Views Output

APPENDIX V

Stationarity, Cointegration and Stability Tests

Table B
Result of Unit Root Test

Variable	At Level	1st Difference	2nd Difference
GrGDP	-5.443473**	-8.806101**	-6.007768**
RTVS	2.487875	-3.683032*	-5.921628**
RMKC	-3.910456*	-7.966718**	-5.526192**
RGCF	-4.904371**	-8.237301**	-5.646546**
FPI	-4.587388**	-5.775183**	-5.542307**

**Significant at 1% level
*Significant at 5% level
Note: See Appendix III for critical values of Mackinnon test statistic.
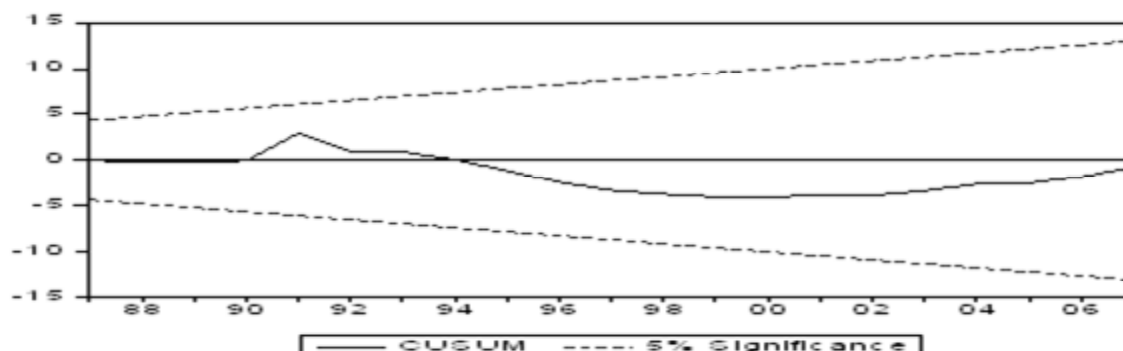*Source: E-Views Output*

Table C
Result of Co-integration Test on Residual Terms

Augmented Dickey Fuller (ADF) Test Statistic	-2.425190
1% Critical Value	-1.752946
5% Critical Value	-2.998064*
10% Critical Value	-1.638752

Stationary at 5% level
Source: E-Views Output

Figure f. **Recursive Residuals Test for Stability**

Source: E-Views Output