CAUSAL RELATIONSHIP BETWEEN NIGERIA'S ECONOMIC GROWTH AND THE CAPITAL MARKETREFORM: GRANGER CAUSALITY TEST OF SUP PLY-LEADING AND DEMAND-FOLLOWINGHYPOTHESES

By

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Abstract

One of the most enduring debates in Economics is the question; whether it is the financial sector or the real sector that leads the other. Countries' empirical studies reveal conflicting evidence concerning the direction of the causal mechanism. This paper therefore applied Granger Causality model to investigate the direction of relationship between capital and real sector growth in the context of the 2004capital market reforms in Nigeria. Two competing hypotheses relationship were investigated: Supply-leading (real sector growth had to wait for financial revolution) and Demand-following (where enterprise leads finance follows). Data were collected on annual time series covering the period 1986-2010 on real economy sector using real GDP and capital market performance indicators like; Market Capitalisation, Volume and Value of Shares Traded, All-share Index, number of Listed Companies and New Issues. Employing causality model, regression analysis, descriptive and inferential statistic the direction of causation between the two sectors was established. Also a review of the performance of the capital market was undertaken with respect to its problems and prospects. The major finding of the study largely supports the Supply-leading relationship. Thus, causation runs from finance to the real sector. It is also observed that despite the reforms and financial liberalization the Nigeria capital market faced a lot of problems that hindered the effective performance of this leading role. In recognition of the key role the capital market plays in economic growth the papers recommends therefore that the capital market reform experiments be improved on by among other things; expansion of the market size relative to the economy, improvement in liquidity, removing operating barrier and reform of the legal framework. These reforms will ensure that the capital market is placed on a better footing to bring about a rapid economic development.

Key words: Economic growth, Capital market, supply-leading hypothesis, demand following hypothesis, Granger causality.

Section I: Introduction

The poor growth performance of the Nigerian economy since 1986 has generated interest in issue of growth and development. From 1970 to 1985 there was financial repression. However, financial liberalisation was introduced to realise necessary finance to promote growth. This has made it necessary to study and understand the relationship between finance and growth. Research work from the financial sector, academia, the private and public sectors of the economy, as well as from the international financial community have focused on the issues of financial sector growth and economic growth.

Patrick in 1966 asked the question whether it is the financial sector or the real sector that leads the other. One thesis is that it is economic growth that leads to an expansion of the financial sector.

That is, the growth of the real sector of the economy automatically generates demands for financial services. Put differently, new financial services match with the growth of the real sector of an economy. With the growth of the economy there will be growth in the money and capital markets. As the economy grows the size of commercial banks, merchant banks, capital market and other non-banking financial institutions, like insurance discount-house, term finance and leasing, will grow. This is to say that the growth of an economy is the driving force of the financial sector growth according to this thesis. In a booming economy, all these growth and expansion in the banking and non-banking financial sector will naturally follow. *This is what is called the Demand-Following hypothesis.*

On the other hand, the other thesis posits that it is the growth and expansion of the financial sector that leads to economic growth. This is because the financial sector mobilises and channels resources from savers to investors thereby accelerating economic growth. And unless there is a strong financial sector to perform this vital function there will be no economic growth. *This is what is called the Supply-Leading hypothesis.* Perhaps, deregulation of the financial sector since 1986 could be said to reflect the belief of the federal government in the supply-leading hypothesis.
Therefore, the issue of sequencing becomes a problem for study. That is, which should come first; creating demand for financial services to achieve rapid economic growth or ensuring macroeconomic stability and growth which would eventually leads to expanded financial sector? This question is of paramount importance in Nigeria where a number of reform policies have been established since 1986 when Structural Adjustment Programme (SAP) was introduced. Financial deepening is considered a vital element of economic growth, as argued by some economists. Nevertheless, international experience revealed that considering financial deepening as one essential component of the economic growth engine depends on whether it has a long-run relationship with the economic growth. Countries' empirical studies reveal conflicting evidence concerning the relationship between financial deepening and economic growth.

Economists' interest in the relationship between financial sector development and economic growth is not as recent as it seems. Economists' interest on the debate dates back to Schumpeter (1911). It is one of the most enduring debates in economics i.e. the question whether financial development causes economic growth or whether it is a consequence of increased economic activity. Schumpeter (1911) argued that technological innovation is the force underlying long-run economic growth, and that the cause of innovation is the financial sector's ability to extend credit to the entrepreneur (see also Hicks, 1969). This supports the Supply-leading hypothesis.

Joan Robinson, on the other hand, maintained that economic growth creates a demand for various types of financial services to which the financial system responds, so that "where enterprise leads finance follows" (1952, p. 86). -Demand-following hypothesis. Empirical investigations of the link between financial development in general, and stock markets in particular, and growth have been relatively limited. Goldsmith (1969) reports a significant association between the level of financial development, defined as financial intermediary assets divided by Gross domestic Product (GDP), and economic growth. He recognised, however, that

in his framework there was "no possibility of establishing with confidence the direction of the causal mechanisms."

A number of subsequent studies have adopted the growth regression framework in which the average growth rate in per capita output across countries is regressed on a set of variables controlling for initial conditions and country characteristics as well as measures of financial market development (see Levine and Zervos, 1996, Harris, 1997, Levine and Zervos, 1998, and Levine, Loayza and Beck, 2000 among others). All of these studies face a number of potential problems. In particular, they must deal with issues of causality and unmeasured cross-country heterogeneity in factors such as savings rates that may cause both higher growth rates and greater financial-sector development (see Caselli et. al., 1996). A number of techniques have been adopted in an attempt to deal with these issues including (a) using only initial values of financial variables (King and Levine, 1993, (b) using instrumental variables (Harris, 1997), and (c) examining cross-industry variations in growth that should be. The studies cited are illustrative of many others looking at each potential determinant of growth. Others have used the Granger causality framework to examine the link between growth and factors such as privatization, literacy and defense spending. (Demirguc-Kunt and Maksimovic, 1996).

This work addresses issues of causality in the framework introduced by Granger (1969).

Granger causality tests have been widely used in studies of financial markets as well as several studies of the determinants of economic growth including savings Carroll and Weil, (1994); money supply (Hess and Porter, 1993); Aigbokan (1995); exports Odusola and Akinlo (1995); Jin and Yu, 1995); and price stability (Darrat and Lopez, 1989). A limited number of previous studies have used Granger causality to examine the link between financial markets and growth. Thornton (1995) analyses 22 developing economies with mixed results although for some countries there was evidence that financial deepening promoted growth. Luintel and Khan (1999) study 10 developing economies and find bi-directional causality between financial development and economic growth in all the sample countries. Spears (1991), reports that in the early stages of development, financial intermediation induced economic growth.

The results are quiet not the same. Some results support Demand-following hypothesis (i.e. economic growth precedes stock market growth). Thus, where enterprise leads finance follows. While others support supply-leading hypothesis (i.e. financial sector growth precedes economic growth), financial development causes economic growth. As will be discussed below, they apparently result from a different measure of real economic activity. In summary, previous empirical research has suggested a possible connection between stock market development and economic growth, but is far from definitive. Although the relationship postulated is a causal one, most empirical studies have addressed causality obliquely, if at all. Moreover, most studies have not adequately dealt with the fact that efficient markets should incorporate expected future growth into current period prices.

This paper applied Granger-Causality model to investigate the direction of relationship between real sector growth and financial sector growth, in view of recent financial sector reforms in Nigeria. Two competing hypotheses above namely, supply-leading and demand-following will

be used to determine the direction and the strength of causation running from financial sector to the real sector and vice versa. There may be evidence of no causal effect, weak causal effect or strong causal effect. This research conforms to the current trend in the relevant literature advising country case studies of the finance-growth relationship. It therefore focuses on the Nigerian experience with financial liberalisation in attempting to assess the extent of the role played by financial sector reforms in explaining the country's growth experience.

Section II: Empirical Literature of Causality Test

A common problem in economics is determining whether changes in one variable are a cause of change in another. For example, do changes in the money supply cause changes in GNP, or are GNP and the money supply both endogenously determined; one approach to questions like this is the test for causality introduced by Granger and Sims in (1969) and 1972 respectively.

The relationship between oil prices and economic growth was empirically studied by Hamilton. Hamilton (1983), using causality test demonstrated that the change in oil prices (over the year 1949 - 1972) have been a cause of change in real GNP and other key macroeconomic variable, throughout the post war period. Here we report on his causality tests relating changes in the price of oil APt, to percentage changes in real GNP, log (GNP/GNP t-1). He ran the OLS regression: Levine (1991), and Benchivenga, Smith and Starr (1996) emphasize the positive role of liquidity provided by stock exchanges on the size of new real asset investments through common stock financing. Investors are more easily persuaded to invest in common stocks, when there is little doubt on their marketability in stock exchanges. This, in turn, motivates corporations to go to public when they need more finance to invest in capital goods. Although some contrary opinions do exist regarding the impact of liquidity on the volume of savings, arguing that the desire for a higher level of liquidity works against propensity to save (Benchivenga and Smith, 1991), Japelli and Pagano (1994), such arguments are not well supported by empirical evidence. The second important contribution of stock exchanges to economic growth is through global risk diversification opportunities they offer. Deveraux and Smith (1994) and Obstfeld (1994) argue quite plausibly that opportunities for risk reduction through global diversification make high-risk-high return domestic and international projects viable, and, consequently, allocate savings between investment opportunities more efficiently. Whether global diversification might reduce the rate of domestic savings (Deveraux & Smith 1994) seems to be a weak argument to us as it is not convincingly evidenced. Stock prices determined in exchanges, and other publicly available information help investors make better investment decisions. Better investment decisions by investors mean better allocation of funds among corporations and, as a result, a higher rate of economic growth. If efficient capital markets prices already reflect all available information, and this reduces the need for expensive and painstaking efforts to obtain additional information (Stiglitz 1994). Stock markets are placed where corporate control mechanism is at work. As the economic performance of corporations is reflected in, and measured by, stockprices, corporate managers would try hard to minimize agency problems and to maximize shareholders' wealth. In a market economy the link between corporate profits and economic growth is quite obvious. Finally, stock exchanges are expected to increase the amount of savings channeled to corporate sector. Some evidence can be found in the work of (Greenwood and Jovanovich, 1990).

There is not much empirical research investigating causal relationships between stock exchanges and economic growth. One study worth mentioning here belongs to Levine and Zervos (1996). The authors applied regression analysis to the data compiled from 41 countries for the years

1976 through 1993 to see the relationships between financial deepening and economic growth. One of the financial deepening indicators used in the analysis was the level of development of stock exchange measured by a composite index combining volume, liquidity and diversification indicators. Economic growth indicator selected, on the other hand, was the real growth rate in per capita GDP. Levine and Zervos reported a very strong positive correlation between stock market development and economic growth. the most interesting aspect of this study was the decrease in the statistical significance of other financial deepening variables after stock market development index was included in regression equation. According to the authors this was the proof that stock market development was more influential than other financial deepening indicators on the growth of the economy.

Aigbokhan (1995) also employed causality test to study the Nigerian financial sector and economic growth. According to Aigbokhan (1995), following the rationalisation and liberalisation of licensing of new banks, the numbers of banks in Nigeria, (commercial and merchant) increase from 26 in 1980 to41 in 1986 and to 120 in 1993. In the same period, the number of branch offices increased in the respective years to 1294 and 2381. The expansion was particularly due to the more liberal bank licensing regulations consequent upon the introduction of Structural Adjustment Programme (SAP). In addition to liberal licensing, from July 1987 until December 1993, interest rates were fully deregulated, with market forces being allowed to determine the levels. Prior to liberalization there was financial repression, characterized by directed credit, interest rate ceilings, preferential credit to government and its parastatals as well as selected sectors. Following deregulation, lending rate rose rapidly.

The deregulation of the financial sector could be said to reflect belief in the "supply-leading" hypothesis. Reversal of deregulation in January 1994 with the return to what the government referred to as "managed deregulation" (i.e. administratively determined interest rate and a halt to liberal bank licensing), could suggest a weakening of the earlier belief. Could that reflect a belief in the "demand following" hypothesis? It is in this context that the objective of their paper becomes relevant and necessary.

Studies have investigated the relationship between real and financial sector growth using Granger- causality model. For example: Lyons and Murinde (1994) on Ghana, and Jung (1986) on 56 (19 developed and 37 developing) countries. Jung's sampled countries included Nigeria with data covering 1957-77, a period before financial sector reforms. This study, therefore, apart from updating the evidence on Nigeria, investigates the relationship in the context of financial sector reforms, which forms the basis of the competing hypotheses.

A broader focus on the contribution of financial sector reforms to economic growth in Nigeria was conducted by Aigbaokhan (1995). Also, performance of the sectors following reforms programme has been investigated by Soyibo and Adekanye (1992) and Soyibo (1996), while Soyibo (1994) and Anyanwu (1995) have investigated whether reforms have resulted in much financial deepening, Soyibo (1994) have found that the reforms have not resulted in much financial deepening. Using the M2/GDP measure, Soyibo found a decline in the index from 0.32 in 1986 to 0.27 in 1987, to 0.19 in 1989, rose only to 0.22 and 0.27 in 1990 and 1991 respectively, in spite of the increase in the number and types of banking institutions and products, and increases in nominal and real interest rates. This, he concludes contradicts the

prediction of the McKinnon-Shaw hypothesis. On the other hands, using M2/GNP measure, Anyanwu found the index to have risen from an average of 0.15 in 1960-70 to 0.9 in 1971-80, to 0.34 in 1981-86 and to 0.31 in 1987-92. Even then, a decline was recorded in the SAP years.

The monetary variables capture changes in savings behavior as people move onto bank and non-bank deposits following a financial reform. The currency ratio also captures changes in the financial sector. The ratio decreases following increased diversification of assets and liabilities induced by financial reform. The monetisation variable approximates the size of the financial sector. The ratio rises if the financial sector grows than the real sector.

Overall, the results indicate causality running from financial to real sector growth, using monetary aggregated and monetisation rate and this was consistent with the supply-leading hypothesis. Clearly, the causal link between real sector and financial growth (demand-following) hypothesis is not upheld by the results. Only in the case of MA3 can such a link be said to hold, if we accept 10 per cent confidence level.

His evidence is consistent with that from Jung (1986) which included Nigeria and which indicated that "Less Developed Countries (LDCs) are characterized by the causal direction running from financial to economic development", based on his results which indicated that "there exists some evidence indicating that LDCs have a supply-leading causality pattern more frequently than a demand- following pattern". The evidence is, thus, also consistent with Patrick's(1966) observation that financial development is able to induce real sector growth before sustained modern economic growth gets under way, and that as the process of real growth occurs, the supply-leading impetus gradually becomes less important, and the demand-following financial responses become more dominant.

His findings seem to suggest, therefore, that recent financial sector reform experiments in Nigeria may have yielded some of the desired results. Some policy implications of the findings are that there is need to ensure that interest rates (lending rates) are not at such levels as to discourage investment. The results suggest that growth rate has been declining throughout the period, which may suggest that mobilized saving are not fully channeled into investment necessary for growth. Also, too high inflation rate, usually above 25 per cent threshold, is general considered to inhibit growth.

Moreover, G.rsoy, and Al-Aaali, (2000) also tested the impact of financial deepening on economic growth and some meaningful .findings were presented for three Gulf countries. The establishment of Istanbul Stock Exchange (ISE) in 1986, and the large momentum it has gained since then, has provoked considerable academic curiosity about the causal relationships between ISE and the country's economic growth. Broadly speaking, stock exchanges are expected to accelerate economic growth by increasing liquidity of financial assets, making global risk diversification easier for investors, promoting wiser investment decisions by saving-surplus units based on available information, forcing corporate managers to work harder for shareholders interests, and channeling more savings to corporations. Although Levine and Zarvos study implies a causality direction from stock market to economic development, stronger evidence is needed to feel more confident about the existence and the direction of a causality relationship as such. Grsoy and Al.vsat (1998), employed Sims (1972) test, based on Granger's (1969)

definition of causality. In Sims approach, Granger causality relationship is expressed in two pairs of regression equations by simply twisting independent and dependent variables as follows:
Xt = q1,1 Xt-1 + ql,2Xt-2 + 6 + ql,tXt-p + q2,l Yt-1 + q2,2Yt-2 + É + q2,pYt-p + ul,t(l)
Yt - q2,l Yt-1 + q2,2 Yt-2 + É+ q2,p Yt-p + ql,l Xt-1 + ql,2Xt-2 + É + ql,t Xt-p + u2,t (2)
Xt = ql.l Xt-l + ql,2 Xt-2 + É + ql, tXt-p+ul,t (3)
Yt = q2,lYt-I +q2,2Yt-2 + É + q2,p Yt-p+u2,t(4)

Equations (1) and (2) are called unrestricted (3) and (4) restricted.
According to Granger's definition of causal relationships:
Y does not cause X, if q2,l = q2.2 =.....= q2,p = 0 (5) and
X docs not cause Y, if q 1.1 = ql,2= ..... = ql,p = 0 (6)
In order to judge whether these conditions hold, Sims employ the following

F-statistic to be applied to equations (1) and (2) relative to equations (3) and (4):
$F = [(R^2 UR - R^2R)/m] / [(l-R^2UR)/(n-2m-l)]$ (7) Where:
R^2 UR = the coefficient of determination of unrestricted equation
R^2R = the coefficient of determination of restricted equation n = the number of observations m = the number of lagged periods

With Sims test, the direction of causality is judged as follows: The result of F test
Direction of Causality
1) (5) holds, (6) does not hold: X causes Y (X ® Y)
2) (5) does not hold, (6) holds: Y causes X (Y ® X)
3) Both (5) and (6) hold: Feedback between X and Y (X « Y)
4) Neither (5) nor (6) hold: X and Y are independent

Economic growth indicator used in the research was the real per capita gross domestic product (GDP). Per capita GDP was calculated for the countries included in the analysis by dividing each year's GDP in constant dollars into the same year's population figure.

Nevertheless, relative number of cases reflecting unidirectional and feedback relationship is seemingly higher in medium and low income countries. The number of cases reflecting independency in high income countries, on the other hand, is overwhelmingly high. The results might be taken as an indication of stronger relationships between the stock market and the real sector in developing countries. In summary, Sims' test was applied to the data compiled from 20 countries in order to determine Granger causality relationships between stock market development and economic growth. The analysis based on the panel data covering all countries for the years 1 98 1-94 with a time lag of three years indicated a feedback phenomenon between stock market development and economic growth at 5 per cent level. With a two-year time lag, on the other hand, causation ran from economic growth to stock market development at 1 per cent a level. Time series analyses for individual countries have not yielded conclusive results. Nevertheless there was slightly stronger evidence supporting a closer link between stock market and real economic indicators in developing countries. The research work was constrained by insufficient data for some years in some countries, small number of developing countries included in the research, subjectivity in the selection of time-lag periods, and the shortness of time series used due to the lack of monthly or quarterly information. Hence findings of their research must be interpreted with caution The need for further research is obvious in order to get

more evidence about the impact of stock markets on economic growth or vice versa. This will be the focus of this study.

Section III. Research Methodology

To determine the relationship between the Nigerian capital market and economic growth, this study collected secondary data on some of the criteria of assessment of a capital market. These are the indicators of capital market performance. These indicators among others include;

- Market capitalization (capital mobilization)
- Volume of shares traded
- Value of share traded
- NSE all - share index
- Number of listed securities
- Number of listed companies
- Number of stock firm (dealing members)
- Number of trading floors
- Value of new issues
- Average Volume and Value Traded.

Data on the above ten variables or criteria of assessment were collected and analysed using statistical technique comprising both descriptive and inferential statistics. A causality test was conducted between the growth of the Nigerian economy and Capital market, using GDP for the real sector and the above criteria for the capital market. On the side of descriptive statistic, tables, percentage and graph were employed. Comparative study was undertaken on three different phases namely:

1986 - 1992----------Early take off of the SAP program
1993 - 1998----------Era of deregulation of the capital market
1999 - 2004----------Era of democratic government and renew effort at pursuing the privatization exercise.

More so, using the above indices, the exchange was compared with other Emerging Stock Exchange in Africa, Asia and Latin America for example, Egypt, South Africa, Jordan, Argentina, Venezuela, Indian, Brazil, Malaysia, Indonesia and Turkey. This approach has its limitations. It may show however if the Nigerian market is shallow and has the expected variety that characterized market in countries with similar level of development.

The Nigeria stock exchange had been influenced by various factors, which are associated with the level of development and structure of the Nigerian economy. For instance; the current posture of the government in the areas of privatisation and commercialisation, the on going bank sector reforms aimed at consolidating and recapitalisation of banks have continued to impact positively on the New Issues Market. In addition, excess revenue accruing from favorable international prices of oil and government policy on both domestic and external debt have effect on the national income which in turn improve level of activities on the Capital market. Nonetheless, the role of stock markets in economic development can not be over emphases. According to Emenuga (1998), there are strong theoretical justifications for the role of stock markets in economic growth. It is argued that stock market liquidity plays crucial role in the process of economic growth (Levine 1991) in a recent cross-country study Levine and Zervos (1996), document a strong empirical association between stock market development and long-

run economic growth (Emenuga 1998). Emenuga analysed Hicks work opined further that *"the industrial revolution of the eighteenth century is not attributable per se to new revolution in science during the century (since the underling scientific inventions took place much earlier) but to the liquidity of the financial markets (including stock markets, which aided the financing of capital intensive profitable investments".* Along this line of argument, Mckinnon (1973) demonstrated that appropriate configuration of the financial sector enhances the pace of economic growth and development. It is expected therefore, that the Nigerian capital market contributes to economic growth in Nigeria through its capital mobilisation process.

The Gross Domestic Product is hereby treated as a function of the Nigeria Market Capitalization and vice versa. Market Capitalisation *is the market value of a company's paid-up capital determined by multiplying the current quoted price by the total number of shares issued by the company and fully paid for by subscribers.* Based on a prior, economic theory, with increase in level of income, ceteris paribus, saving increases which invariably lead to increase in investment. Thus an increase in level of investment in the economy leads to more activities at the firm level thereby increasing level of activities on the capital market. Hence, we expected a positive relationship between market capitalisation and Gross Domestic Product.

Collecting data over the period of the study and using Econometric-View package, the model was estimated and necessary inferential statistic conducted i.e. causality testing to determine whether the Nigeria capital market is truly performing the function of capital mobilisation for investment to boost level of national output or it is the growth in the economy GDP that is responsible for development of the capital market.

Theoretical framework of the model

According to Johnson and DiNardo (1997), Granger causality or non-causality is concerned with whether lagged values of y do or do not improve on the explanation of x obtainable from only lagged values of x it self. A simple test is to regress x on lagged value of itself and lagged values of y. If the latter are jointly insignificant y is said not to Granger cause x. If one or more lagged value of y are significant then y is said to Granger cause x. They explain further that, the test however, is often very sensitive to the number of lags included in the specification. Changing lag length can result in changed conclusion.

The Granger (1969) approach to the question of whether x causes y is to see how much of the current y can be explained by past values of y and then to see whether adding lagged values of x can improve the explanation, y is said to be Granger-caused by x if x helps in the prediction of y, or equivalently if the coefficients on the lagged x's are statistically significant. Two-way causation is frequently the case; x Granger causes y and y Granger causes x.

It is important to note that the statement "x Granger causes y" does not imply that y is the effect or the result of x. Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term.

In general it is better to use more rather than fewer lags, since the theory is couched in term of the relevance of all past information. There is need to pick a lag length that corresponds to reasonable beliefs about the longest time over which one of the variables could help predict the other.

EViews runs bivariate regressions of the form
yt = á0 + ál t-1 + ...+ ák yt-1 + B_1 Xt-k+.....+ B_2 Xt-k 3.1
xt = á0 + al xt-1 + ...+ B_1Yt-k+.....+B_2Yt-k.....32
for all possible pairs of (x,y) series in the group. The reported F-statistics are the Wald statistics for the joint hypothesis
á1 = ...âk-0 .....3.3

for each equation. The null hypothesis is therefore that x does not Granger-cause y in the first regression and that y does not Granger-cause x in the second regression.

This paper applied Grangers causality model to investigate the direction of relationship between real and financial sector growth in the context of recent capital market reforms in Nigeria. The study is based on two competing hypotheses -*demand following* and *supply-leading*- relationship. These two hypotheses were tested using the Grangers causality model. The need to understand the direction of the relation between finance and economic growth was stressed by Patrick (1966) when he asked the question: *is it the financial sector or the real sector that leads the other?*

According to Wold (1954) the concept of causality is fundamental to all sciences. He pointed out that a regression relationship may or may not involve a causal hypothesis but the introduction of causal hypothesis makes the analysis more determinate and the resulting conclusion more specific. Feige and Fearce (1979) also argued that the causal relationship between economic variable are the "bread" and 'butter' of econometric analysis. The usefulness of this approach to economic analysis is also given due recognition by Yohannes (1994).

Causality model according to Odusola and kinlo (1995) is

$$\text{Yt} = \sum_{n}^{n} \alpha 1 i Yt-1 + \sum_{n}^{n} \beta 1 i Xt-1 + \mu t = 1 \text{.....} \text{.....} \text{.....} \text{....} 3.4$$

$$\text{Xt} = \sum_{n}^{n} \alpha 2 i Yt-1 + \sum_{n}^{n} \beta 2 i Xt-1 + vt = 1 \text{.....} \text{.....} \text{.....} \text{....} 3.5$$

And testing / (where i =1 , 2 ...) to show whether or not Xt fails to Granger cause yt and vice-versa, respectively. The error terms are assumed to be serially independent with mean zero and finite covariance matrix. From equation (1) x is said to Granger cause y if the coefficient of the lagged values of x as a group (βi) is significantly different from zero, based on a standard F-test.

The reverse is the case if; is significantly different from zero from equation (2).
Feedback relationship or bi-directional causality occurs if Xt Granger causes yt and yt Granger causes Xt.

The above model shows that economic growth induced an expansion of the financial sector. That is, growth in thereat sector will generate demand for financial service with new financial services growing with the growth of the real sector (Gurley and Show, 1967:257), This is the demand-following hypothesis that X = fl[Y) where Y= GDP and X is market capitalisation.

On the other hand supply-leading hypothesis says that the growth of the financial sector precedes economic growth. The financial sectors mobilized and channels funds from savers to investors and thereby induce real sector growth (Porter, 1966, Makinson, 1973 Show, 1973).
The deregulation of the financial sector may have resulted from a belief in the supply-leading hypothesis. Therefore, this study is necessary to determine the extent and direction of causation.
As noted earlier, in the literature review, devising an indicator for capital market development is not an easy task at all. Ideally, such an indicator should simultaneously reflect: liquidity, volume of transaction, informational efficiency, and degree of concentration, volatility, and depth, legal and institutional framework. That is all the factors that determine the overall performance of a capital market.

Lack of sufficient information constituted a limitation above will lead us to use a composite index comprising volume (size) and liquidity indicator only. We nevertheless believe that such an index would perform quite satisfactorily since both volume (size) and liquidity indicator have a strong positive correlation with other capital market indicators as reported by Demirguc, Kunt and Levine(1986).

Volume component of composite index that was employed is Total Market Capitalisation relative to GDP. For liquidity, two indicators were used. One is the Value of Transaction/GDP. This measures the size of capital market transaction relative to the size of the economy as a whole. Two is Turnover Ratio measures as Value of Transaction relative to Total Market Capitalisation.

The Causality Models

Based on the above explanations and example of causality modeling we now present our pair-wise bivariate causality model as below:

RGDPt - $\alpha 0 + \alpha 1$ RGDPt-1 + ... + αk RGDPt-1 + $\beta 1$ MKTt-1 + ... + βk MKTt-k.....3.31

MKTt $= \alpha 0$ + al MKTt-1 + ... + ak MKTt-1 + βi RGDPt-1 + . . . + βk RGDPt-k 3.32

This can be express in summation form as below;

RGDPt = $\Sigma \alpha$RGDPt - 1 + $\Sigma \beta$*iMKTt* -1 + εti = 1 t - 1.....3.33

MKTt = $\Sigma \alpha$tMKTr - 1 + $\Sigma \beta$ P iRGDPt - 1 + εti =1t -1.....3.34

Similarly for the other variables the causality models are

RGDPt = $\Sigma \alpha$tRGDPt - 1 + $\Sigma \alpha$£ P *iTORt* - 1 + εti =lt -1.....3.35

TORt = $\Sigma \alpha$tMK7t -1 + $\Sigma \alpha$iRGDPt -l + εti =1t-l.....3.36

RGDPt = $\Sigma \alpha$t RGDPt - 1 + $\Sigma \beta$*iVTRt* - 1 + εti = lt -1.....3.37

ITRt = $\Sigma \alpha$tMm -1 +$\Sigma \beta$1RGDPt -l + εti = lt – 1 .....3.38

Where;

RGDPt - Real Gross Domestic Product; at period t

MKTt = Market Capitalisation of Nigerian capital market at period t

TORt = Turn over Ratio at time t i.e. Value of Transaction relative to Total

Market Capitalisation. VTRt - Value Traded Ratio i.e. Value of Transaction/GDP

n = number of observations

et = error term which are assumed to be white-noise i.e. serially independent with zero mean and finite covariant matrix.

a and β are parameters to be estimated t-i and k-i are numbers of lags.

In Equations 3.6 and 3.8 current real GDP is related to its past values as well as past values of market capitalization. On the other hand equations 3.7 and 3.9postulate that current market capitalisation (as a proxy for growth in the capital market in term of size and depth of the market) is related to its past values as well as those of real GDP. Equations 3.10 to 3.13 are similarly explained in term of the irrespective variables.

Section IV: Results and Discussions

Table 4.1 Causality Test Results

Pairwise Granger Causality Tests									
Null Hypothesis:	**LAGS 2**			**LAGS 3**			**LAGS 2**		
		F-Obs	Statistic		F-Obs	Statistic		F-Obs	Statistic
MKTCAP does not Granger Cause VTR	18	26.4865	1.68549	17	21.1884	8.06572	16	04.5622	2.48242
RGDP does not Granger Cause		0.13352	0.89629		0.17117	0.91343		0.27411	0.88574
For does not Granger Cause RGDP	18	1.607	0.23787	17	0.38448	0.76657	16		
RGDP does not Granger Cause TOR		1.78723	0.20619		4.89419	0.02403		2.49796	0.13723
VTR does not Granger Cause RGDP	18	29.0043	1.60E-05	17	19.681	0.00016	16	19.7298	0.00065
RGDP does not Granger Cause VTR		3.48029	0.06159		1.35858	0.31079		0.66577	0.63564
TOR does not Granger Cause MKTCAP	18	1.93588	0.18369	17	1.46904	0.28143	16	1.20954	0.3864
MKTCAP does not Granger Cause TOR		0.42469	0.66273		1.13725	0.38053		0.49974	0.73785
VTR does not Granger cause MKTCAP	18	38.4181	3.50E-06	17	57.4226	1.30E-06	16	34.8209	0.0001
MKTCAP does not Granger Cause VTR		6.90291	0.00906		1.72053	0.22564		4.1294	0.04975
VTR does not Granger Cause TOR	18	0.1644	0.85014	17	0.60983	0.62376	16	0.51406	0.72864
TOR does not Granger Cause VTR		0.62693	0.54963		0.28547	0.83485		0.07632	0.98718

From the Granger causality table result we observed the following direction of causation. We have six pair-wise causality tests which amount to twelve null hypotheses in the first column. That is, each of the four variables was combined in pairs (i.e. four combinations two which equals six).

From the above result, there is a unidirectional (one way) causality between market capitalisation MKTCAP and Real GDP in Nigeria, with the direction of causality running from market capitalisation to real GDP. This is because the null hypothesis MKTCAP does not Granger cause RGDP was rejected while the second null hypothesis, RGDP does not Granger Cause MKTCAP was accepted even for the three different Lags considered. Thus the F-statistic for lags 2, lags 3 and lags 4, 28.4089, 21.1084 and 54.3622 respectively are all greater than the F-critical value of 3.55, 3.20 and 3.01 at 5 per cent Level Of Significance (LOS) and of 6.01, 5.18 and 4.77 at 1 per cent LOS for the three different lags respectively. Similarly the associated probability level is very low.

This outcome supports a Supply-leading hypothesis i.e. it is the growth in the capital market that lead growth in the real economy. This supports Hicks (1969), Bencivenga (1996) that "the industrial revolution had to wait for the financial revolution." This was also consistent with Aighokan money market result. Thus the causality link between real sector and financial growth i.e. Demand-following hypothesis was not upheld. The result also support Jung (1986) which

indicates that LDCs are characterised by the causal direction running from financial to economic development.

Now considering the second pair-wise causality Turnover Ratio and Real GDP, the second indicator for capital market i.e. the liquidity indicator, there is no causality running between TOR and RGDP except for the third lags where RGDP Granger cause turnover ratio at the 5 per cent LOS i.e. 4.89419 is greater than 3.20. This perhaps may be due to high illiquid nature of the Nigerian stock market. The "buy and hold attitude" of the Nigerian investors and that large chunks of the investments are rarely traded.

However, VTR Granger Cause RGDP but RGDP does not Granger Cause VTR in all the three lags periods considered. Thus, the F-statistic of 29.0043,19.681 and 19.7298 for the second, third and fourth lags respectively all exceed the critical values of 3.55,3.20 and 3.01 for the 5 per cent LOS and 6.01,5.18 and 4.77 for the 1 per cent LOS for the three lag periods respectively. This result further reinforces the above market capitalisation and real GDP result. Hence, indicating that there is a unidirectional causation from finance to real economy therefore supporting the Supply-leading hypothesis discussed above.

Thus one can conclude that except for the liquidity indicator TOR which does not support the argument of Supply-leading perhaps due to the low level of liquidity in the Nigerian capital market, the other indicator, market capitalisation and value traded ratio strongly support unidirectional causation running from finance to growth i.e., Supply-leading hypothesis.

The other results obtained from the table are causation between the capital market indicators. It is observed that only VTR Granger Cause market capitalisation but no causation between market capitalisation and turnover ratio. Similarly, there is no causation running from VTR to TOR and vice versa.

This supply -leading and demand -following hypothesis has been tested and validated for Nigeria. The hypothesis is valid when one considers recent reform of the banking sector of recapilisation of ₦25 billion minimum amounts. Also the reforms in the capital and money market, the insurance sector and other finance house in recent time have actually confirm that financial revolution is an impetus for economic revolution in Nigeria. This implies that the financial sector led growth is veritable mechanism to ginger the Nigeria economic growth. A viable financial system through banking and other financial reforms would create an enabling economic environment for both domestic and foreign direct investment which are major agents of economic growth.

Section V: Conclusion

The capital market remain an important component of the Nigerian economic development based on the results of the findings, as it plays a crucial role in the process of capital mobilisation when public awareness and confidence in the market is sufficiently put in place. However, this vital role is not felt to the fullest due to major constraint of the market. Hence, effort should therefore be made to ensure its viability to further enhance its contribution to the overall development of the economy.

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APPENDICES APPENDIX 1: NIGERIA'S GROSS DOMESTIC PRODUCT 1986-2010

YEAR	GDP at Currant Basic Prices	GDP it 1984 Constant Factor Cost	GDP it 1884 Constant Facior Cost	GDP at 1990 Constant Basic Pricts	Growth Rats of GDP at 1990 Constant Basic Prices	GOP at Currant Basic Prices	GDP at Current Market Prices
	N'Billion	N'Billion	N'Billion	N'Billion	N'Billion	N'Billion	N'Billion
1986	73.06	71,075.9	70,806.4	205,971.4	2.5	69,147.0	72,792.7
1987	108.89	70,741.4	71,194.9	204,306.5	-0.6	105,222.9	110,184.6
1988	145.24	77.752.5	77,733.2	219,875.6	7.4	139,085.3	145.183.1
1989	224.80	83,495.2	83,179.0	236.729.6	7.7	216,797.5	222,539.1
1990	260.64	90,342.1	92,238.5	267,550,0	13.0	267,550.0	274.672.1
1991	354.01	94,614.1	94,235.3	265,379.1	-0.8	312,139.8	320,432.9
1992	549.01	97,431.1	97,019.9	271,365.5	2.3	532,613.8	541.783.2
1993	695.99	100,015.2	99,604.2	274,833.2	1.3	683,869.8	693,623.4
1994	911.07	101,330.0	100,936.7	275,450.6	0.2	899,863.2	907,875.4
1995	1,960.69	103,510.0	103,078,6	281,407.4	2.2	1,933,211.6	1,951,884.8
1996	2,704.46	107,020.0	106,600.6	293,745.4	4.4	2,702,719.1	2,787,283.7
1997	2,835.00	110,400.0	109.972.5	302,022.5	2.8	2,801,972.6	2,906,624.9
1998	2,721.51	113,000.0	113,509.0	310,890.1	2.9	2,708,430.9	2,836,814.2
1999	3,194.03	116,400.0	116,655,5	312,183.5	0.4	3,194,023.6	3,440,204.1
2000	4,537.04	121,207.8	121,207.8	329,178.7	5.4	4,537,640.0	4,866,280.0
2001	6,895.20	126,323.8	126,323.8	344,285.8	4.6	4,685,912.2	5,526,204.9
2002	7.795.76	131,489.8	131,489.8	356,305.8	3.5	5,403,006.8	6.398.907.7
2003	9,913.52	136,470.0	136,460.0	392,767.0	10.2	6,947,819.9	6,255,407.0
2004	11,411.07	145.380.0	145.380.0	416.704.5	6.1	8,264,959.4	6.665.040.0
2005	14,610.88	150,207.8	147,331.0	451,112.0	6.2	8,685,912.2	6,722.101.1
2006	15.111.00	152,116.0	152,100.1	532,111.5	7.0	9112,912.0	6,811,002.3
2007	15,001,11	156,001.1	153,I23.0	552,101.2	7.1	10,231,722.2	6,955,112.5
2008	16,212.01	160,111.4	155,121.3	591,234.1	7.1	11,222,006.8	6.398.907.7
2009	16,312.31	162,331.2	156,601.1	623.122.0	6.3	12.311.033.9	6.255.407.0
2010	17,511.98	165,122.9	167.122.0	711,655.9	6.3	12,345,112.5	6,665,040.0

Source: CBN Statistical Bulleting and Annual statement & Account Various Issues

APPENDIX 2: Growth in the Number of Listed Securities 1986 -2005

Year	Government stock	Industrial bond	Equities including SSM	Total
1986	58	29	99	186
1987	54	31	100	185
1988	51	35	102	188
1989	47	40	111	198
1990	43	43	131	217
1991	40.	57	142	239
1992	36	62	153	251
1993	32	66	174	272
1994	35	64	177	276
1995	28	67	181	276
1996	24	69	183	276
1997	22	60	182	264
1998	19	59	186	264
1999	15	58	196	269
2000	12	53	195	260
2001	11	56	194	261
2002	10	53	195	258
2003	14	51	199	264
2004	17	52	207	276
2005	17	52	214	288
2006	18	54	214	286
2007	21.	54	217	292
2008	23	57	219	299
2009	23	58	223	304
2010	25	58	227	310

SOURCE: The Nigerian Stock *Exchange FactBook and Annual Report &****Accounts various*** *issues*

Appendix 3: Comparative Trading Activities (Value Traded) 1986-2005

S/No.	Year	Government stock (#)	Industries equities (#)	Total (#)
1	1986	475,846,312	11,986,021	487,832,333
2	1987	282,251,808	4,045,706	286,297,514
3	1988	215,829,622	34,485,043	250,314,665
4	1989	582,430,369	71,129,746	653,560,115
5	1990	172,801,696	133,540,209	306,341,905
6	1991	92,675,151	141,854,629	234,539,780
7	1992	85,020,960	406,547,508	491,568,468
8	1993	84,258,773	577,796,580	662,055,353
9	1994	15,202,218	970,679,018	985,881,236
10	1995	0	1,838,838,622	1,838,838,622
11	1996	90,033,365	6,972,754,416	7,062,787,781
12	1997	140,006,265	10,932,044,322	11,072,050,587
13	1998	15,558,832	13,555,289,669	13,570,848,501
14	1999	827,121	14,081,521,735	14,082,348,856
15	2000	8,120,399	28,146,458,410	28,154,578,809
16	2001	24,591,381	57,612,604,539	57,637,195,920
17	2002	1,009,564,210	59,311,332,162.08	60,320,896,372.08
18	2003	281,160,000	120,421,876,169.36	120,703,036,169.36
19	2004			0
20	2005			0

SOURCE: The Nigerian Stock Exchange Annual Report *&Accounts 2005*

APPENDIX 4: NEW ISSUES SUMMARY 1986-2005

Year	1986	1987	1988	1989	1990	1991	1992
Offer for Subscription N'000	22.258	2.365	159.540	251.704	164.913	375,405	1,307.762
Right Issue N'000	0	13,500	15,750	253,723	155,109	242,960	565,673
Offer for sale N'000	0	795	0	237,486	342,000	34,926	1,235,979
Corporate Bonds N'000	608.720	97,500	45,626	305,000	680,000	636,500	703,500
Govt Bonds N'000	0	0	0	0	0	0	0
Listing by Introduction N'000	0	0	0	0	0	12,000	255,000
Memorandum Quotation N'000	0	0	0	0	0	41,000	52.500
Mergers & Acquisition N'000	0	0	0	0	0	3,200	0
Foreign Listings N'000	0	0	0	0	0	0	0
Supplementary Listing N'000	0	0	0	0	0	0	0
Total N'000	**630.978**	**114,160**	**220,916**	**1,047.913**	**1,342,598**	**1,345,991**	**4,120,414**

1993 – 1998

Year	1993	1994	1995	1996	1997	1998
Offer for Subscription N'000	1,266,659	562,318	1,233,225	5,127,082	6,114,345	13,871,433
Right Issue N'000	1,591,710	401,297	2,872,778	1,621,884	1,914,404	1,452,820
Offer for sale N'000	22,026	833,617	0	399,473	0	1,452,820
Corporate Bonds N'000	1,005,000	780,000	15,000	0	350,000	200,000
Govt Bonds N'000	0	0	0	0	0	0
Listing by Introduction N'000	0	42,984	60,108	4,000,000	716,000	0
Memorandum Quotation N'000	0	50,000	0	0	0	0
Mergers & Acquisition N'000	104,227	2,040	2,902,500	10,304,740	16,568	0
Foreign Listings N'000	0	0	0	0	0	0
Supplementary Listing N'000	0	0	0	0	0	0
Total N'000	**3,989,622**	**2,672,256**	**7,083,611**	**21,453,179**	**9,111,317**	**17,279,252**

1999 – 2005

Year	1993	2000	2001	2002	2003	2004	2005
Offer for Subscription N'000	3,450,472	4,075,104	7,516,415	27,236,789	9,794,333	120,789,072	
Right Issue N'000	6,744,982	3,781,639		12,498,896	15,153,404	18,152,681	
Offer for sale N'000	4,205,982	15,354,189		1,419,975	0	0	
Corporate Bonds N'000	150,000	7,000,000		3,500,000	650,000	0	
Govt Bonds N'000	500,00	5,500,000		15,000,000	157,600,000	6,000,000	
Listing by Introduction N'000	2,032,485	0	0	0	1,276,848	41,100,000	
Memorandum Quotation N'000	0	0	0	2,000,000	500,000	750,000	
Mergers & Acquisition N'000	1,210,698	0	5,822,788	3,667,940		0	
Foreign Listings N'000	26,145,446	0	0	0		0	
Supplementary Listing N'000	0	0	0	0		40,591,628	
Total N'000	**44,440,019**	**35,710,932**	**44,167,076**	**65,323,600**	**184,974,585**	**227,383,381**	**0**

Sources: The Nigerian Stock Exchange Annual Report &Accounts various issues