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Stock Market Development and Welfare in Nigeria: A VECM Approach

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Abstract
This study examined both long run and short run causality between stock market development and welfare in Nigeria. The indicators of stock market development were; market capitalization (CAP) and All Share Index (ASI) while the indicator for welfare was Human Development Index (HDI). Time series data for 34 years (1980 - 2014) were used. The variables were stationary at first difference I(1) which necessitate the use of Johansen co-integration test. Vector Error Correction Models (VECM) was used. The study found out that there was a long run causality running from stock market development to welfare in Nigeria with the speed of adjustment of about three years. The results of Wald test showed that short run causality runs from market capitalization to welfare and short run causality runs from All Share Index to welfare in Nigeria. We therefore recommended that policy makers should take note of the speed of adjustment in making policies relating to stock market in Nigeria in order to achieve improved welfare of Nigerians.
Keywords: Nigerian Stock Market, Welfare, VECM, Market Capitalization

1. Introduction

Over the years, stock markets around the world have experienced phenomenal expansion. The process of growth in global equity markets is still imperfectly understood. Understanding the process of growth in equity market is important to taking financial and investment decisions. The growth of equity markets can be thought of in terms of three different components: such as reduction in market inefficiency (i.e. decreases in under-pricing), changes in valuation technology, and improvement in market fundamentals. Equity from the view point of a company is the shareholders' funds which amount to their welfare. It consists of share capital, share premium account, revaluation reserve and retained earnings (Collins, 2012).

One of the most debatable issues in economics was whether the stock market can serve as an important indicator for the prediction of future economic growth or vice versa. Many believe that large decrease in stock prices were reflective of future recession, whereas large increase in stock prices may reflect the expectation towards future economic growth. In the opinion of Mum, Siong and Thing (2008), there were controversy issues to doubt the stock market's predictive ability of economic growth. Domestic stock market is expected to have significant relationship with the economic growth in which this if well administered will improve standard of living of the citizens. It has been established that a more developed equity market may provide liquidity that lowers the cost of the foreign capital essential for development, thus, nation with greater development of equity market tends to generate more domestic savings for economic growth. As cited in Rousseau and Wachtel (2011) early researchers that established the growth-finance link were: Barro (1991); and King and Levine (1993).

The traditional valuation model of stock price explains that stock prices reflect the expectation of public towards the future economy activities. Besides that, concept of "wealth effect" suggested that changes in stock prices cause the variation in the real economy. Stock market can play a role to promote economic growth in less-developed countries (Mum, et al, 2008).

According to Adegbite (2013), capital market is a financial market that provides facilities for mobilizing and dealings in medium and long term funds. The players on the capital market are the operators who act as intermediaries between the providers of the funds and the fund users. They include, securities exchanges, brokers/dealers, issuing Houses, Registrars and Investment Advisors. Stock market has been associated with economic growth through its role as source for new private capital. Mum et al (2008) conclude that the evolution of financial sector in particular the stock market tends to be more likely to stimulate and promote economic growth when monetary authorities adopt liberalized investment and openness policies, and improve the size and the regulations of the stock market and macroeconomic stability. Okey (2012) opines that stock market is expected to accelerate economic growth by providing an avenue for growing companies to raise capital at lower cost.

The capital market is subdivided into the primary and the secondary market. The primary market or the new issues market provides the avenue through which government and corporate bodies raise fresh funds through the issuance of securities which is subscribed to by the public or selected group of investors. The secondary market provides an avenue for sale and purchase of existing securities. Sule and Momoh (2009) found

that the secondary market activities have impacted more on Nigeria per capita income by tending to grow stock market earnings through wealth than the primary market. Donwa and Odia (2011) argue that the capital market has been identified as an institution which contributes to the socio-economic growth and development of emerging and developed economies. Whereas, Mum, et.al (2008) opine that a more developed equity market may provide liquidity that lowers the cost of the foreign capital essential for development, thus nation with greater development of equity market tends to generate more domestic savings for economic growth. They further assert that the decline in the impact of finance on growth in recent years is found in both developed and developing countries. This is made possible by the intermediary role played by the capital market in mobilizing funds from surplus units to deficits units to be invested into projects with positive Net Present Value (NPV) which may enhance economic growth of the nation. Without an efficient capital market, the economy may be starved of the required long-term fund for sustainable growth (Adegbite, 2013).

Oke and Adeusi (2012) submit that a major engine of economic growth and development of a nation is its capital. It impacts positively on the economy by providing financial resources through its intermediation process for the financing of long term projects. In line with this, Ogege and Ezike (2012) assert that Capital market is an indispensable tool for enhancing productivity, investment activities and stimulating rapid industrial as well as economic development.

Countries with developed stock markets provide alternative sources of financing to companies there by making them less dependent on bank financing, which in turn mitigate the risk of credit crunch. In this way, stock markets are able to positively influence economic growth by encouraging savings amongst individuals and providing avenues for firms financing (Levine & Zervos, 1998; as cited in Okey 2012).

Several works have been done on interrelationship between stock market and economic growth in Nigeria. Few of the recent ones are; Adenuga (2010), Kolapo & Adaramola, (2012), Ogboi & Oladipo, (2012), Alajekwu & Achugbu, (2012), Onakoya (2013), Okodua & Ewetan, (2013), Adegbite, (2013), Fasanya, Onakoya & Ofoegbu, (2013), Okonkwo, Ogwuru & Ajudua (2014), Osho, (2014) and Jibril, Salihi, K/Wambai, Ibrahim, Muhammad & Ahmad (2015). There is no doubt that stock market development affects economic growth in Nigeria but whether this effect translates to improvement in standard of living is yet to be fully explored in Nigeria. The work of Sule and Momoh (2009), explores this direction with the conclusion that activities in the secondary market seem to increase stock market earnings but that of primary market did not. However, they assert that stock market earnings have the tendency of affecting standard of living in Nigeria. Hence, this study seeks to determine the effect of stock market development on welfare of Nigerian citizens but deviating a little from what Sule and Momoh (2009) did in that, the market activities will not be segregated into primary and secondary. Instead of using per capita income to capture standard of living, human development index was used in this study to capture welfare. The rest of the paper is divided into four major parts: Literature Review, Methodology, Analysis and discussion of findings, conclusion and policy implication.

2. Literature Review

The capital market is primarily established to boast the industrial growth and economic development of Nigeria economy by mobilizing long-term funds and capital formation for investment and productive purposes (CBN, 2010). Stock market also provides an avenue for the savings of surplus unit to be transformed into medium or long term investment of the deficit unit in the society (Adenuga, 2010). The NSE provides a mechanism for mobilizing public and private savings, and makes such funds available for productive purposes. The Exchange also provides a means for trading in existing securities (CBN, 2010).

The stock market institution is critical to the economic growth of any nation which, should impact positively on the welfare of the citizens. The stock market is a network of specialized financial institutions, series of mechanisms, processes and infrastructure that, in various ways, facilitate the bringing together of suppliers and users of medium to long-term capital for investment in socio-economic developmental projects (Al-Faki, 2006; as cited in Adegbite 2013).

They opine that fluctuations in stock prices raise and lower wealth, which in turn, raises and lowers aggregate consumption. As a result, economic activity is affected or caused by fluctuations in the stock market. Another possible explanation for why stock prices "Granger cause" economic activity is that the stock market is forward-looking. If investors are truly forward-looking, then stock prices reflect expectations about future economic activity. The economy does not predict stock prices.

Goudarzi and Ramanarayanan (2011) opine that capital inflows are necessary for macroeconomic variables such as exchange rates, interest rates foreign exchange reserves, domestic monetary conditions as well as savings and investment. Bekaert, Ehrmann, Fratzscher, and Mehl (2011) assert that the financial crises of 2007-2009 has affected equity market worldwide, with many countries experiencing even sharper equity market crashes than the United States, making it an ideal laboratory to revisit the debate about the presence and sources of "contagion" in equity markets.

An empirical study was carried out by Kolapo and Adaramola (2012) on the impact of capital market on

Nigeria's economic growth in which they used GDP as a proxy for economic growth and indicators such as; market capitalization, total new issues, values of transaction and total listed equities and government stocks to proxy capital market and they assert that a long run relationship exist between Nigeria's capital market and its economic growth. They observe that a bi-directional causation exists between GDP and value of transaction using Johansen co integration and granger causality tests. Similarly, Ogboi and Oladipo (2012) examine the stock market in Nigeria with a little variation of including banks total asset and leaving out total listed equities and government stocks which was used by Kolapo and Adedamola (2012). In the same vein, Alajekwu and Achugbu (2012) examine stock market development and economic growth in Nigeria using Ordinary Least Square (OLS) techniques and found out that market capitalization has a very weak correlation with economic growth. Onakoya (2013) examines the relative contributions of stock market volatility to economic growth in Nigeria using Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH). He asserts that volatility shocks are persistent in Nigeria which pose a distortion to the economic growth and advise that Securities and Exchange Commission (SEC) should pay special attention to independent research, monitoring mechanism and prompt decision making. In terms of Methodology, Okodua and Ewetan (2013) used Bounds test also known as Autoregressive Distributed Lag (ARDL) procedures and found a long run relationship between economic growth and stock market development. Also, Adenuga (2010) applied Vector Error Correction Model (VECM) and found almost the same result that stock market promotes economic growth in Nigeria as well as Oladokun, Adeagbo and Abiola (2015) who employ Wald test analysis to test the impact of Nigerian stock market on economic growth and found a positive effect and recommend encouragement of more private limited liability companies.

3. Methodology

The theoretical underpinning adopted for this study is Cobb – Douglas production function as used in Fasanya et al (2013) with a little adjustment. Cobb – Douglas production function specifies that labour and capital affect output level or productivity of a nation as stated in the model below.

In functional form;

$$Y = f(L, K) \quad \text{---------- (1)}$$

Where Y is the output, L is Labour contribution to output and K is the capital input. In general form, the function is stated as;

$$Y = L^{\alpha} K^{1-\alpha} \quad \text{---------- (2)}$$

The model as stated by Fasanya et al (2013) is $Q = K^{\alpha} L^{\beta}$ where Q stands for economic growth, K for capital and L for labour input.

Since economic growth is the pre-requisite for welfare in an economy, Human development index (HDI) is used in place of economic growth, L still remains Labour input and K stands for capital input.

Therefore, the model becomes;

$$HDI = AL^{\alpha}K^{1-\alpha} \quad \text{---------- (3)}$$

We introduced transcendental logarithm to change equation 3 to linear form and arrive at;

$$lnHDI = \alpha lnAL + 1 - \alpha \, lnK \quad \text{---------- (4)}$$

The capital K is represented by market capitalization (CAP), all share index (ASI) and development stocks (DS). Welfare is proxied by HDI while labour is captured by labour participation rate (LAB). Represent 1-α by β hence forth.

Hence the model for this paper is specified as follows:

$$lnHDI = \varphi_0 + \alpha LAB + \beta_1 CAP + \beta_2 ASI + \beta_3 DS + \varepsilon \quad \text{---------- (5)}$$

It is expected that all the coefficients have positive values.

4. Analysis and Discussion of Findings

Group unit root test was conducted to determine the stationarity of the data, Schwarz info criterion (SIC) was used to select the lag length and the results show that the data were not stationary at level using Levin, Lin and Chu criterion, but the variables were stationary at first difference meaning that they are I(1). On the average, between 1980 and 2014, human development index in Nigeria is 0.64% with the maximum value of 0.98 in 2003 and minimum value of 0.40 between 1994 and 1995 the data on HDI is positively skewed and leptokurtic. Also, the average labour participation rate, over the period under examination was 55.8% with the maximum value of 56.8% and the minimum value of 54.6%. Furthermore, the labour participation rate data is negatively skewed and leptokurtic. Market capitalization, All share index and development stocks data are positively skewed and platykurtic.

Lag selection test was carried out and according to all the criteria such as LR, FPE, AIC, SC and HQ, the maximum lag length selection was 2 as shown in table 1.

Table 1: Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-570.4801	NA	1.40e+20	60.57686	60.82539	60.61892
1	-495.6865	102.3492	8.28e+17	55.33542	56.82664	55.58779
2	-403.3577	77.75052*	1.40e+15*	48.24818*	50.98209*	48.71087*

This lag length was used subsequently in running the VECM. Since all the variables were stationary at first difference and cointegrated, we carried out the analysis to test both the long run and short run causality between the stock market development and welfare in Nigeria.

In order to test for cointegration among the variables, we employed trace and maximum Eigen tests and the results are shown in table 2.

Table 2: Cointegration Test

No of CE(s)	Trace Statistic		Max- Eigen Statistic	
	Critical value	Probability	Critical Value	Probability
None	69.81889	0.0000*	33.8769	0.0000*
At most 1	47.856	0.0000*	27.5843	0.0003*
At most 2	29.7971	0.0154*	21.1316	0.0768
At most 3	15.4947	0.0762	14.2646	0.0744

From table 2, Trace statistic criterion suggests that we do not reject the hypothesis of at most 2 cointegration equations in the model while Maximum Eigen statistic shows that we do not reject the hypothesis of at most 1 cointegration equation in the model. Based on the results from the table, we have established that the variables have long run association or relationship.

Redundancy test was carried out on the variables in which labour participation rate and development stocks were found redundant. This made us to remove the variables from the model and the working model from here is as stated in equation 6;

$$lnHDI = \varphi_0 + \beta_1 CAP + \beta_2 ASI + \varepsilon \quad ----------(6)$$

The VECM coefficient depicts a long run causality running from market capitalization and all share index indicating stock market development to Human development index (HDI) indicating welfare in Nigeria. The speed of adjustment is about 3 years. This means that, in the long run, activities in the stock market can predict an improvement in the welfare of citizens in Nigeria. Though the effect of activities may take about three years before improving welfare, it still means that effort should also be directed towards the stock market development as it will affect the economy positively. This results support that of Adenuga (2010), Okodua and Ewetan (2013) and Kolapo and Adedamola (2012) while establishing the effect of stock market indicators on economic growth in Nigeria using diverse methodology. The results however are at variance with that of Alajekwu and Achugbu (2012) and Okonkwo et al (2014).

After establishing the long run causality between stock market development and welfare in Nigeria, Wald test was carried out on each of the independent variables to check for short run causality. The chi-square value of Wald test concerning the effect of market capitalization on welfare is 8.4076 and the probability is 0.0149. Since 0.0149 is less than the level of significance (0.05), we conclude that there is a short run causality running from market capitalization to welfare (HDI).

Also, the short run causality running from all share index to welfare was tested using Wald test and the probability attached to it is 0.018 which is equally lower than 0.05. This indicates that there is a short run causality running from all share index to welfare in Nigeria.

The model is stated as follows

$$DHDI = -0.112 + 0.00016DCAP - 0.000018DASI \quad ----------(7)$$

Adj $R^2 = 0.4937$

From equation 7, if there is no activity in stock market, welfare in Nigeria will reduce by 11.2%. the relationship between market capitalization and welfare (HDI) in Nigeria is positive and an increase in market capitalization will improve welfare in Nigeria in the long run by 0.002%. However, All Share Index has an inverse relationship with HDI. Adjusted R2 depicts that 49.3% variations in welfare in Nigeria are explained by variations in stock market development.

For a model to be efficient, there should be no serial correlation among the residuals, there should be no heteroskedasticity and the residuals should be normally distributed. There is need for these tests to be carried out as noticed by Umar, Ismail and Solung (2015) in order not to have a spurious result. The next section takes care of this.

The test for serial correlation was conducted to ascertain the efficiency of the model using serial correlation LM – test. The value of the test was 9.78 while the probability attached to the value was 0.3685. Since 0.3685 is greater than 0.05, we cannot reject the null hypothesis, rather we accept it and conclude that there is no serial correlation among the variables.

The P-value to test for heteroskedasticity is 0.1186 which is greater than 0.05. Also, we do not reject the null hypothesis; rather we accept it and conclude that the model does not have heteroskedasticity. The model is homoskedastic.

Jarque Bera test for normality shows that the residual is normally distributed since the probability attached to it is 0.1123 which is greater than 0.05. In conclusion, the residual is normally distributed.

5. Conclusion and Policy Recommendations

The uniqueness of this study cannot be over emphasized in the sense that if growth is not inclusive then it is of no need to the society. Several authors as reviewed in section 2 have related stock market development to economic growth without considering its effect on the welfare which is the gap that this study explored. From the analysis, there is a long run causality running from stock market development to welfare in Nigeria because the ECM (-1) carries a negative sign and very significant at 0.05 levels of significance. Using Wald test, there is a short run causality running from market capitalization to HDI and a short run causality running from All share index to HDI. The speed of adjustment towards long run equilibrium is about three (3) years.

Policies affecting stock market development take about three years before having significant effect on welfare of the citizens in Nigeria just as monetary policy takes time lag to affect the target variables. This means that policy makers should be proactive when it concerns using stock market to influence welfare in Nigeria and the masses should avoid early judgment of policies before the maturity date. Nonetheless, stock market has the potential of improving welfare in Nigeria.

References

Adegbite, T. A. (2013). Stock market, inflation, and economic growth in Nigeria (1990-2010). *International Journal of Research in Commerce, Economics & Management,* 3(2),38 – 44.

Adenuga, A. (2010). Stock market development indicators and economic growth in Nigeria (1990-2009): Empirical investigations, *CBN, Economic and Financial Review*, 48(1), 33-70.

Alajekwu, U. & Achugbu, A. (2012). The role of stock market development on economic growth in Nigeria: A time series analysis, *African Research Review*, 6(1), 24, 51 – 70.

Bekaert, G., Ehrmann, M., Fratzscher, M., & Mehl, A. (2011). Global crises and equity market contagion. *Macro prudential Research Network,* 3 – 46. Retrieved from http://www.ecb.europa.eu.

CBN http://www.cenbank.org/OUT/2011/PUBLICATIONS/STATISTICS/2010/INDEX.HTML

Collins, S. (2012). *IFRS for dummies*. England: John Wiley and Sons Ltd.

Donwa, P. & Odia, J. (2011). Effects of the consolidation of the banking industry on the Nigerian capital market. *Journal of Economics,* 2(1), 57-65.

Fasanya, I., Onakoya, A. & Ofoegbu, D. (2013). Capital Market Development: A Spur to Economic Growth in Nigeria, *ACTA UNIVERSITATIS DANUBIUS*, 9(5), 222 – 234.

Goudarzi, H. & Ramanarayanan, C. S. (2011). Empirical analysis of the impact of foreign institutional investment on the Indian stock market volatility during world financial crisis 2008-09. *International Journal of Economics and Finance,* 3(3), 214 – 226.

Jibril, R., Salihi, A., K/Wambai, U., Ibrahim, F., Muhammad, S. & Ahmad, T. (2015). An Assessment of Nigerian

Stock Exchange Market Development to Economic Growth, *American International Journal of Social Science,* 4(2), 51 – 58.

Kolapo, F. & Adaramola, A. (2012). The Impact of the Nigerian Capital Market on Economic Growth (1990-2010), *International Journal of Developing Societies,* 1(1), 11-19.

Mum, H. W., Siong, E. C., & Thing, T. C. (2008). Stock market and economic growth in Malaysia: Causality test. *Asian Social Science,* 4(4), 86 – 92. Retrieved from www.ccsenet.org/journal.html.

Ogege, S. & Ezike, J. E. (2012). The Nigerian capital market and economic development: A critical appraisal. *International Business Research,* 5(8), 228 – 236.

Ogboi, C. & Oladipo, S. (2012). Stock market and economic growth: the Nigerian experience, *Research Journal of Finance and Accounting*, 3(4), 103 – 110.

Oke, M.O. & Adeusi S.O.(2012). Impact of capital market reforms on economic growth: the Nigerian Experience.*Australian Journal of Business and Management Research,* 2(2), 20-30.

Okey, O. O. (2012). Stock market development and economic growth in Nigeria: Market size versus liquidity. *Canadian Social Science,* 8(5), 65 – 70.

Okonkwo, O., Ogwuru, H. & Ajudua, E. (2014). Stock market performance and economic growth in Nigeria : An empirical appraisal, *European Journal of Business and Management,* 6(26), 33 – 42.

Oladokun, O., Adeagbo, M. & Abiola, B. (2015). Wald test analysis of the impact of Nigerian stock market on economic growth, *International Journal of Recent Research in Commerce Economics and Management (IJRRCEM)*, 2(3), 106 – 113.

Onakoya, A. B. (2013). Stock Market Volatility and Economic Growth in Nigeria (1980-2010), *International Review of Management and Business Research,* 2(1), 201 – 209.

Osho, A. E. (2014). The role of stock market on Nigeria's Economic Development, *International Journal of Scientific and research publications*, 4(4), 1 – 7.

Rousseau, P. I. & Wachtel, P. (2011).What is happening to the impact of financial deepening in economic growth? *Economic Inquiry,* 49(1), 276–288.

Sule, K. O. & Momoh, C.O. (2009). The impact of stock market earnings on Nigerian per capital income. *African Journal of Accounting Economics, Finance and Banking Research,* 5(5), 77-88.

Umar, M., Ismail, S. & Solung, Z. (2015). Stock Market-Based Financial Development and Economic Growth with Reference To Nigeria: A Review of Literature, *International Journal of Academic Research in Economics and Management Sciences,* 4(1), 141 – 159.