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Stock Market Development and Economic Growth in Three Emerging African Economies.

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Abstract
Background: *This study empirically investigated the perceived relationship between stock market development and economic growth, with evidence from three emerging African economies of Nigeria, Egypt, and South Africa, over a thirty-five year period.*
Materials and Methods: *Utilizing annual time series data carefully sourced from World Bank development indicators as well as the stock exchanges of the countries for period 1985 to 2019, the study disaggregated stock market development components into: stock market capitalization (MC), value of stock traded (VST), all share index (ASI) as well as stock market returns (SMR). The study adopted the ex-post facto research design and employed econometric techniques, such as unit root and Co-integration test among others.*
Results: *The findings from the study showed that Value of stock traded (NVST), Market capitalization (NMC) and Stock market returns (NSMR) positively influenced Real GDP (RGDP) in Nigeria. Value of stock traded (EVST) and Stock market return (ESMR) positively influence Real GDP (RGDP) in Egypt but Market capitalization (EMC) influenced Real GDP negatively. In South Africa, only Value of stock traded (SVST) affected Real GDP positively while, Market capitalization (SMC) and Stock market return (SSMR) influenced its Real GDP negatively. Both Egypt and Nigeria showed long run relationship with encouraging speed of adjustment in the previous and current years. South Africa revealed no long run relationship.*
Conclusion: *The study concluded that consistent domestic and foreign investments stimulus should be in place, particularly in Nigeria and South Africa for the stock markets to have the required impart on the economy.*
Key Words: *Endogenous Theory; Stock Market Capitalization (MC); Value of Stock Traded (VST); All Share Index (ASI); Stock Market Returns (SMR); Real Gross Domestic Product (RGDP).*

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I. Introduction

Over the years, countries all over the world have continued to search for ways to achieve a sustainable high level of economic growth and development. To explain the phenomenon of economic growth, traditional economists first, considered physical factors such as, land, labour, capital and technology as the only factors, which matter in the economic growth process. During 1950's and 1960's emerging economies, saw capital accumulation as the sole important factor that increased investment and economic growth. This belief led to negligence of the contribution of the financial sector to economic growth.

The emergence of new theories of endogenous growth has in recent times, rekindled great debate on the stock market/economic growth nexus. Literature on financial development and growth identify three fundamental channels through which economic growth and capital markets are related (Pagano, 1993). First, capital market development increases the proportion of savings that is funneled to investments. Second, capital market development may change the savings rate and hence, affect investment. Third, capital market development increases the efficiency of capital allocation. In contrast, the traditional growth theorists posit that there is no correlation between stock market development and economic growth. Some of the studies that agree with the traditional theorists include Nyong (1997), Singh (2008), and Ake and Ognaligui (2010).

Recently, developments in economic growth theory have shifted the focus of growth literature from the traditional factors to other factors like financial development, foreign direct investment (FDI), macroeconomic environment, political stability and other positive innovations in productivity (Tachiwou, 2010), and since the 1970s, efficient and stable financial system was considered vital for investment and growth. This study focuses on one of these other factors, namely financial development and stock market development in particular, and how it impacts on economic growth.

The growing importance of stock markets around the world has recently opened a new avenue of research into the relationship between financial development and economic growth, with particular focus on the effect of stock market development (Arestis, Demetriades and Luintel, 2001). The general idea that economic growth is related to financial development can be traced back to Schumpeter (1912) in his book "*The Theory of*

Economic Development", and later to McKinnon (1973) and Shaw (1973). Schumpeter (1912) argues that credit markets are important to economic growth, as they make it possible for businesses to finance the acquisition of new technologies, which in turn lead to economic growth. Mckinnon and Shaw (1973) hypothesis states that financial liberalization and stock market development would promote economic growth through their effects on the growth rate of savings, investment, and thus economic growth. The essential message of the McKinnon-Shaw thesis is that a low or negative real rate of interest discourages savings and hence reduces the availability of loanable funds, constrains investment, and in turn lowers the rate of economic growt and vice visa

Bouzid (2012) noted that the idea was adopted by great international institutions like International Monetary Fund (IMF) and the World Bank leading to many developing countries have implementing financial liberalization policies with the aim to delete the repressed regime. The financial liberalization policies were aimed at liberalizing interest rates by switching from an administered interest rate setting to a market-based interest rate determination; reducing controls on credit by gradually eliminating directed and subsidized credit schemes; developing primary and secondary securities markets; enhancing competition and efficiency in the financial system by privatizing nationalized commercial banks (Bouzid, 2012).

In the McKinnon-Shaw hypothesis, the success of the financial liberalization process depends on the following: the effective deepening of the financial sector, a positive correlation between the saving and the real interest rate, and a perfect complementarity between the money demand and investment (Bouzid, 2012). However, the financial development role in economic growth has however, focused almost entirely on bank based financial institutions, while underplaying or even ignoring the possible impact of stock market development.

Statement of the Problem/ Justification

The relationship between stock market development and economic growth has been a subject of controversy with conflicting research findings on the subject. While, some studies maintain that stock market development promotes economic growth (Tachiwou (2010), Bouzid (2012), others opine that stock market development could harm economic growth, Singh (2008), Ake & Ognaligui (2010).

Results obtained from most empirical studies on developed countries point to the existence of a positive relationship between stock market and economic growth, while the available studies for developing countries have not been clear. Enisan & Olufisayo (2009) opine that this apparent difference in the results obtained for developed and developing countries may be due to factors like the level of efficiency of the developing countries' stock markets or their relatively small sizes, as opposed to stock markets in developed countries, differences in the structure of the economies and the general macroeconomic environment, and suggested a country specific analysis to overcome the problem of inconsistency.

Added to the factors above are other factors that play out clearly in most emerging economies. These include the thinness of trading, low market capitalization, low turnover rates and illiquidity of the market that are likely to constrain foreign investors, bottlenecks in the clearing system, the "buy–and–hold" attitude of investors, the imposition of a price cap on share price movements and political instability, among others.

Thus, this disagreement in the research findings among scholars on developing economies has necessitated the need for a country specific investigation on each of these selected emerging African economies on this link to improve understanding because of the importance of the stock market to investors. This is the research gap addressed by this study. This study also seeks to contribute to the on-going debate on the dynamic stock market- economic growth link.

Objectives of the Study

The broad objective of the study is to empirically evaluate the relationship between stock market development and economic growth in three African emerging countries. The specific objectives include:

(i) To examine the effect of stock market indicators on economic growth of the three (3) selected African emerging countries stock markets.

(ii) To determine the relationship between stock market development (market capitalization (MC), value of stock traded (VST), All Share Index (ASI), Stock Market Returns (SMR)) and economic growth (GDP) in African emerging countries.

(iii) To identify the best performing economy in terms of stock market development and economic growth (GDP) in these Africa countries.

II. Review of Related Literature

Theoretically, the link between financial intermediation and economic growth stems from the insights of endogenous growth models, in which economic growth is self-sustaining without exogenous influence from the economy. Endogenous growth theory postulates that endogenous and not external forces primarily drive economic growth. It holds that the long run growth rate of an economy depends on policy measures like

subsidies for research and development or education that in turn increase the incentive for innovation and eventually the growth rate. This is the fundamental theory for this study.

In theory, the underpinnings concerning the relationship between stock market development and economic growth can be traced back to the work of Schumpeter (1912) and, later Mckinnom (1973), Levine (2005). These authors hinged their claim on the functional role played by financial system in enhancing efficiency of intermediation- reducing information, transaction, and monitoring costs. Modern and efficient financial system facilitates savings mobilization, promotes investment by identifying and funding business opportunities, monitors the performance of managers, enables the trading, hedging and diversification of risks, and facilitates the exchange of goods and services (Creane, Goyal, Sab & Mushiiq, 2003).

Demirgue-Kunt & Levine (1993) postulates four theories around the stock-growth nexus. First, well-functioning stock markets generate lower cost of equity capital for firms. Second, continuous adjustment of share prices in a developed stock market imposes control on the investment behaviour of firms. Third, in a developed stock market, investors have the opportunity to price and hedge against risk effectively. Fourth, stock markets serve as a mechanism for attracting foreign portfolio investment, thereby increasing resources available to the economy for investment.

Levine (2005) on the other hand, categorized these functions into five. These include: (i) to produce information about possible investments and allocate capital; (ii) to monitor investments and exert corporate control; (iii) to facilitate diversification and management of risk; (iv) to mobilize and pool savings; and (v) to facilitate the exchange of goods and services. These functions impact growth in two ways. First, through capital accumulation, giving rise to what is now, known as the capital accumulation-growth model. This model asserts that the financial system affects the accumulation of capital by reallocating savings to capital producing technologies or by altering savings rates. Second, technology innovation-growth model now focuses on the development of new products and processes, financial systems can affect the rate of steady-state growth by altering the rate of technological innovation. For these reasons, Tachiwou (2010) argues that the stock market is an indicator of an economy's financial health because it communicates the mood of investors in a country.

Patrick (1966) posits that finance can lead to economic growth through what he terms the "supply-leading" hypothesis; and equally that economic growth can also stimulate financial development and calls this the "demand-following" hypothesis. Ever since these hypotheses were formulated, empirical conclusions on this relationship and the direction of causality between stock markets development and economic growth have remained contentious and inconclusive. Some of these studies rely on cross-country regressions which can at best provide only a broad- brush picture of the relationship between stock market development and growth without sorting out country specific effects as may be dictated by institutional characteristics and circumstances (Ovat, 2012).

Cross-country growth regressions suffer from measurement, statistical, and conceptual problems. Measurement problem stems from inconsistencies in the definition, collection and evaluation of variables by some country officials thereby creating discrepancies between published data and what ought to be. Statistically, regression analysis assumes that observations from cross-country regressions are drawn from homogenous population. In terms of conceptual problem, changes often times occur in country policies, business cycle, governments etc. when averaging over long periods. Therefore, interpretation of coefficients from cross-country regressions should be done cautiously because aggregation may blur important events and differences across countries. Consequently, cross-country regressions hardly confront the issue of causality explicitly.

The application of time series analysis in addressing causality issue has gained popularity in recent times. Chandavarkar (1992) argues that the relationship between finance and growth should be systematically tested on a country wide basis over sufficiently long periods because findings from such a study easily reflect the prevailing economic conditions and institutions structures. In recent years, there has been growing application of multivariate (VAR) model to time series studies on stock market – growth nexus (Abu-Badr & Abu-Qarn, (2008), Gries et al (2009), Wolde-Rafel (2009). This may not be unconnected with the emergence of endogenous growth model that emphasizes that this relationship occurs through different channels like productivity, investment, technology, savings etc. New empirical studies are therefore, exploring some of these channels by applying multivariate (VAR) methodology.

Although some researchers perceive stock markets especially, in developing countries as "casinos" that have little or no positive impact on economic growth; recent evidence suggests that stock markets benefits had been largely ignored in the past. Indeed, there appears to be a consensus now concerning the positive effects brought about by stock markets (Tachiwou, 2010, Levine & Zervos, 2010).

Financial markets, especially capital markets have long played an important role in economic life. In theory, a plethora of diffuse literature argues that stock markets provide services that boost economic growth. Indeed, it is now widely acclaimed by development economists, policy makers and financial analysts that a well- functioning stock market is crucial for the mobilization of financial resources for long- term investment and therefore, constitutes a major ingredient for economic growth. In principle, a developed stock market should

accelerate savings and efficiently allocate capital to productive investments at relatively low costs. Alile (1984), states that, the importance of the savings mobilization role of the stock market is that capital resources are channeled by the mechanism of the forces of demand and supply to those firms with relatively high and increasing productivity thus, enhancing economic expansion and growth. Countries with developed stock markets provide alternative sources of funds to businesses thus, making them less dependent on bank financing, which in turn, mitigate the risk of credit crunch, the principal agent problem and reduce asymmetry information, thus promoting efficient resource allocation and growth (Adjasi & Biekpe, 2006).

Stock market development provides a platform that helps in improving the allocation of capital and thus enhancing the prospects of long-term economic growth. A liquid stock market offers the potential for investors to quickly and cheaply alter their portfolios thereby reducing the riskiness of their investment, thus, facilitating investments in projects that are more profitable (Ovat, 2012). Without a liquid stock market, many profitable long-term investments would not be undertaken because savers would be reluctant to tie up their investments for long periods of time (Okonkwo, Ogwuru & Ajudua, 2014).

However, according to some individuals regard stock market as a ‘’gambling market’’, instead of perceiving it as a significant sector to the economic growth. Robinson (1952), among others, does not view finance as having a role in development. Rather, he argues that economic growth creates a demand for financial services, as “where enterprises lead, finance follows”. He is of the view that financial development is only a corollary of economic development and that financial institutions have no part to play in economic growth. Singh (1997) asserts that due to macroeconomic instabilities, volatility and unpredictability of the pricing process; stock markets do not lead to long-run economic growth. He argued that opening the developing stock markets to foreign investors will transform them into casinos and increase volatility. The increased volatility could damage the growth of the economy because it will become more unstable.

Also, Senbet & Otchere (2008) stress that increased liquidity of the stock market can be harmful to corporate governance, as highly liquid stock markets may encourage investor myopia. Essentially, the selling of highly liquid stocks on the stock market has the potential to weaken the investor’s commitment in matters of corporate control.

The threat of takeovers provides a mechanism whereby stock markets can exert control over managers, since sales by dissatisfied shareholders have the potential to reduce the price of the shares, leaving the firm exposed to possible takeover bids. Furthermore, when the threat of takeover is high, the stock market has the potential to place an additional cost on firms, since it encourages the managers to invest in short-term and quick-return projects. As Stulz (2000) points out, short-term policy hampers the firm’s ability to invest in much needed longer-term projects, which have higher returns and greatly increase the firm’s ability to perform efficiently and competitively and provide long-term growth for the economy.

Empirical investigations on the link between stock market development and economic growth have been relatively limited in developing countries (Ovat, 2012). However, there is no consensus on results obtained from most empirical studies on both developed and developing economies on the existence of this relationship.

For instance, Akimov, Wijeweera & Dollery (2009), using unbalanced data analysis, and four measures of financial development established a robust and positive relationship between financial development and economic growth in 27 transition economies.

Akinlo & Egbetunde (2010) examined the long-run, causal relationship between financial development and economic growth for ten countries in sub-Saharan Africa for the period1980-2005. Using a VECM, the study found that financial development is co integrated with economic growth in the selected ten countries in sub-Saharan Africa. That is, there is a long run relationship between financial development and economic growth in the selected sub-Saharan African countries. The results indicate that financial development Granger-causes economic growth in Central African Republic, Congo Republic, Gabon, and Nigeria while economic growth Granger-causes financial development in Zambia. However, bidirectional relationship between financial development and economic growth was found in Kenya, Chad, South Africa, Sierra Leone and Swaziland.

Similarly, Rajan & Sharma (2008) conducted a microeconomic study where they utilised industry level data to investigate causality issues as well as the mechanism of transmission of the relationship between financial development and economic growth. Their results demonstrate that financial development has a positive impact on firm growth as well as in the creation of new firms by helping the flow of external finance. The findings of the study show that industries with a high reliance on external finance do so well in countries that have well-developed financial sectors.

Bahadur & Neupane (2006) also, carried out separate single country studies on Ghana and Belgium and found evidence in support of a positive relationship between stock market development and economic growth. Their respective results provide support for the assertion of the endogenous growth theory that stock markets enhance growth.

Also, Shahbaz et al (2008), within a single country study framework, provide further evidence which supports the view that stock market development can foster economic growth in the long run for Romania and

Pakistan respectively. Their results provide support for the endogenous growth theory that a well- functioning stock market may enhance economic growth.

Ovat (2012) studied stock market development and economic growth in Nigeria. the study utilized several econometric techniques such as unit root tests, cointegration test and Granger causality test, and stock market development components of stock market size and liquidity. The findings show the dominance of liquidity over market size. The study reveals a two way causation between stock market liquidity and economic growth with the strength of the causality coming more from stock market liquidity. Market size, it was discovered has little or no effect on growth. Also, the study found a one-way causation between financial deepening and growth with causality flowing from financial deepening to economic growth.

Okodua & Ewetan (2013) also, examined the relationship between stock market performance and economic growth in Nigeria. Using the autoregressive distributed lag estimation, and some key stock market indicators and some macro economic variables, the study established a relationship between some of the variables used and the economy, but concluded that overall output in the Nigerian economy is less sensitive to changes in stock market capitalization as well as the average dividend yield in the long run. Also, the study found that the Nigerian economy is highly sensitive to marginal variations in interest rate, suggesting that macro economic variables in the country are very useful in showing the long run growth direction of the Nigerian economy.

III. Material and Methods

The study area for this research includes three emerging African economies of Nigeria, Egypt, and South Africa over a thirty year period (1985-2019). These represent the biggest economies in Africa and each, the largest economy in their respective sub region. Time series data for the study were sourced from World Bank development indicators and the stock exchanges of the respective countries for periods. The research adopted the *ex-post facto* research design. Data type for the analysis of this work was secondary in nature.

Measurement of Stock Market and Other Variables

The selected proxies for stock market development that constitute the independent variables include Market Capitalization (MC), Value of Stock Traded (VST), All Share Index (ASI) and Stock Market Returns (SMR).

To measure economic growth, this study used the growth of per capita real *GDP* following the majority of finance and growth studies**.** By economic growth, economists generally imply a quantitative and measurable increase in output that takes place in the economy (*i.e*., real *GDP*).

Market Capitalisation Ratio (*MC*): This is calculated by dividing the value of listed companies (market capitalisation) by *GDP*. It gives a measure of the size of the stock market in relation to the size of the economy and is a useful measure of the relative size of the stock market as well as the market's ability to allocate capital and manage risk.

Value of Share Traded Ratio (*VST*): This gives the total value of shares traded during the period. Total value traded divided by *GDP* gives a measure of the liquidity in the market. Market liquidity measures the ease with which securities can be bought and sold.

All Share Index (ASI): This indicator is a measure of stock volatility and also indirectly measures the development of stock market in general. The All-Share Index tracks the general market movement of all listed equities on the Exchange, including those listed on the Alternative Securities Market (ASeM), regardless of capitalization.

Stock Market Returns (SMR): Stock Market Returns are the returns that the investors generate out of the stock market. This return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time-to-time.

Model Specification

The model for the estimation of the relative relationship between the dependent variable (RGDP) and the independent variables (ASI, MC, VST, and SMR) is stated below.

The functional model is specified as:

$$RGDP_t = f(ASI, MC, VST, SMR) \quad \ldots\ldots (1)$$

The linear form of the regression equation containing predictor variables is represented by:

$$RGDP_t = a_0 + a_1 ASI_t + a_2 MC_t + a_3 VST_t + a_4 SMR_t + \varepsilon_t \quad \ldots\ldots (2)$$

Model specification for each of the country under study

Egypt model

$$ERGDP_t = \gamma_0 + \gamma_1 EASI_t + \gamma_2 EMC_t + \gamma_3 EVST_t + v_4 ESMR_t + u_t \quad \text{(2a)}$$

Nigeria model

$$NRGDP_t = \beta_0 + \beta_1 NASI_t + \beta_2 NMC_t + \beta_3 NVST_t + \beta_4 NSMR_t + \varepsilon_t \quad \text{(2b)}$$

South Africa model

$$SRGDP_t = \alpha_0 + \alpha_1 SASI_t + \alpha_2 SMC_t + \alpha_3 SVST_t + \alpha_4 SSMR_t + \pi_t \quad \text{(2c)}$$

Where

Y = dependent variable: $RGDP_t$

Xis=independent variables: ASI, MC, VST, SMR

$RGDP$= Economic Growth

ASI = All Share Index

MC = Market Capitalization

VST = Value of Stock Traded

SMR = Stock Market Returns

$\alpha_0, \beta_o, \gamma_0,$= constant

$\alpha_1, \beta_1, \gamma_1,$ = slope of Y with variables x_1, holding variables x_2, x_3 …….x_n constant

$\alpha_2, \beta_2, \gamma_2,$ = slope of Y with variable x_2, holding variables x_1, x_3 ……..x_n constant

$\alpha_3, \beta_3, \gamma_3,$ = slope of Y with variable x_3, holding variables x_1, x_2 ……..x_n constant

$\alpha_4, \beta_4, \gamma_4,$ = slope of Y with variable x_n, holding variables x_1, x_2, x_3 ….x_{n-1} constant

$\varepsilon_t, u_t, \pi_t,$ = random error terms

The data for the models are logarithmically expressed to make the data dimensionless that is, normalized in unit of measurement.

Econometric Estimation Technique

Robust regression model estimation techniques such as Unit root, co integration test and Vector Error Correction were used in determining the behavior of the variables and estimation of the parameters of the model. The significance of the model was tested with't' and 'f' statistics. The null hypothesis was rejected where the Prob (t or F-statistic) was less than or equal to the critical value (0.05) and vice versa. A parameter was considered significant when the P- value < α. Adjusted R- Square ($\bar{R}^2$) was also adopted to determine the fitness of the models.

In this study, unit root test was applied to ensure that the time series data are stationary. Co integration test was conducted to ascertain the existence of co integrating equations based on Trace test and Maxi-Eigen value test. Error correction mechanism was applied to establish the short run and the long run dynamics in order to ascertain the speed of adjustment to equilibrium should the system drift apart.

IV. Results

Data for analysis are presented in the appendix 1 and data to examine the stationarity pattern of the variables under investigation are presented in table 4.1. The table shows the results of the stationarity trend pattern of the variables used in this study.

Test of Stationarity and Co integration of Variables

The study carried out a stationarity test of the variables using Phillips-Perron (PP) test as presented in Table 4.1. It is apparent from the table that two of the variables were stationary at first difference, I(1) series.

Table 4.1 Unit Root Test Results

Variable	Order	PP-Test	Critical Value at 5%	Prob.<0.05	Decision	Conclusion
D(ERGDP)	I(1)	-9.1913	-2.9540	0.0000	No unit root	Stationary
D(EASI)	I(1)	-13.1023	-2.9540	0.0000	No unit root	Stationary
D(EMC)	I(1)	-10.7693	-2.9540	0.0000	No unit root	Stationary
D(EVST)	I(1)	-9.5625	-2.9540	0.0000	No unit root	Stationary
D(ESMR)	I(1)	-18.1980	-2.9540	0.0001	No unit root	Stationary

Variable	Order	PP-Test	Critical Value at 5%	Prob.<0.05	Decision	Conclusion
D(NRGDP)	I(1)	-15.2988	-2.9540	0.0000	No unit root	Stationary
D(NASI)	I(1)	-3.9623	-2.9540	0.0045	No unit root	Stationary
D(NMC)	I(1)	-4.4046	-2.9540	0.0014	No unit root	Stationary
D(NVST)	I(1)	-5.7589	-2.9540	0.0000	No unit root	Stationary
D(NSMR)	I(1)	-9.7620	-2.9540	0.0000	No unit root	Stationary

Variable	Order	PP-Test	Critical Value at 5%	Prob.<0.05	Decision	Conclusion
D(SRGDP)	I(1)	-10.6798	-2.9540	0.0000	No unit root	Stationary
D(SASI)	I(1)	-18.1707	-2.9540	0.0001	No unit root	Stationary
D(SMC)	I(1)	-11.2436	-2.9540	0.0000	No unit root	Stationary
D(SVST)	I(1)	-6.6016	-2.9540	0.0000	No unit root	Stationary
D(SSMR)	I(1)	-6.2563	-2.9540	0.0000	No unit root	Stationary

Source: E-views 9.0 Extracts

Table 4.1a, b and c reveal the stationarity tests of Real GDP (RGDP), All Share Index (ASI), Market capitalization (MC), Value of stock traded (VST) and Stock market return (SMR) variables were stationary at order 1, I(1) as the values were greater than critical value at 5% with associated probabilities less than 0.05 at 5%. This implies that all the variables in the specified model for estimating the selected countries (Egypt, Nigeria and South Africa) have no unit root hence stationary at order I, I(1). The finding informs co integration test for investigating possibility of co integration and number of integrating equation among the variables in table 4.2.

Test of Johansen Co integration

To establish the existence of long-run relationship equilibrium among the variables (series), a co integration test was performed using Johansen's multivariate approach. The result is in table 4.2.

Table 4.2: Johansen Co integration Results

Date: 04/13/20 Time: 15:14
Sample (adjusted): 1987 2019
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: ERGDP EASI EMC EVST ESMR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Country	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
Egypt	At most 1 *	0.5073	52.5449	47.8561	0.0170
Nigeria	None *	0.6610	81.9232	69.8188	0.0040
South Africa	None *	0.6914	85.2386	69.8189	0.0018

Source: E-views 9.0 Extracts

Table in 4.2 shows that the variables are co integrated. The trace statistic, Max-eigen value and MacKinnon-Haug-Michelis (1999) p values, reveal that there is co integration. Variables for Egypt are co integrated at most 1 with at least two co integrating equations. Nigeria and South Africa variables are co integrated at none with at least one co integrating equation. Hence, Ho is rejected in favour of the alternative hypotheses at 5 per cent as values exceeded the critical values at the 0.05 level. This implies that a long-run equilibrium relationship exists among the stock market variables for estimating real GDP of selected countries. There is co integrating equations at none and at most 1 in the series. As the variables were co integrated and stationary strictly at order 1, I(I), Error correction model is appropriate for estimating the models for Egypt, Nigeria and South Africa.

Table 4.3a: Error Correction Results (Egypt)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010299	(0.32588)	[0.03160]	0.8432
EMC	-0.262113	(0.22577)	[-1.16096]	0.1415
EVST	0.287974	(0.14539)	[1.98075]	0.0345
ESMR	0.021987	(0.18265)	[0.12038]	0.7498
D(EASI(-1))	4.082565	(2.49075)	[1.63909]	0.2601
D(EASI(-2))	1.523773	(2.21935)	[0.68658]	0.2895
D(ERGDP(-1))	0.229796	(0.24852)	[0.92467]	0.3227
D(ERGDP(-2))	0.492665	(0.20384)	[2.41697]	0.0389
CointEq1	-0.928524	(0.27533)	[-3.37243]	0.0184

Source: E-views 9.0 Extracts

The results from the ECM results of Egypt model in Table 4.3a above suggests that Value of stock traded (EVST) and Stock market return (ESMR) positively impact Real GDP (ERGDP) in Egypt, while Market capitalization (EMC) indicates negative impact on Real GDP (ERGDP). The magnitude of effects of variables revealed that a unit increase in Value of stock traded (EVST) and Stock market return (ESMR) account for 0.28 and 0.021 correspondent increase in Real GDP (ERGDP) in Egypt. While, a unit increase in Market capitalization (EMC) will bring about 0.26 decrease on Real GDP (ERGDP) in Egypt.

Among the variables of All Share Index (EASI), Market capitalization (EMC), Value of stock traded (EVST) and Stock market return (ESMR), Value of stock traded (EVST) significantly affect Real GDP (ERGDP) in Egypt since the probability values are less than 0.05 at 5% level. The finding shows that Real GDP (ERGDP) in Egypt driven by the level Value of stock traded (EVST). The coefficient of the ECM (-1) has negative sign of 0.9285 with negative t-statistic of 3.3724 having probability value (0.018<0.05). This confirms a long run relationship among, and between the exogenous of stock market and endogenous Real GDP (ERGDP) in Egypt. ECM model variables (Market capitalization (EMC), Value of stock traded (VST) and Stock market return (ESMR) and All Share Index (EASI) relatively have moderate percentage of effect on Real GDP (ERGDP) in Egypt. The speed of adjustment is relatively high and it is statistically significant. Coefficient of equation suggests that previous years would be corrected in the following year at an adjustment rate of 93% hence; there is convergence of model variables (All Share Index (EASI), Market capitalization (EMC), Value of stock traded (EVST) and Stock market return (ESMR) and Real GDP (ERGDP) to long run relationship equilibrium relationship. The control variable-All Share Index (EASI) has positive effect on real Egypt GDP by 4.08 in current year (-1) and negative effect of about 1.52 in previous year (-2) but not significant to the Egypt real GDP. In the previous years, it positively reacted to stock market significantly by 0.49 and in the current years by 0.229 but not significant.

Table 4.3b: Error Correction Results (Nigeria)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.34877	(0.45914)	[-2.93762]	0.0074
NMC	0.076448	(0.10206)	[0.74905]	0.4614
NVST	0.072603	(0.02536)	[2.86342]	0.0088
NSMR	0.611207	(0.33494)	[1.82480]	0.081
D(NASI(-1))	0.069826	(0.58656)	[0.11904]	0.9063
D(NASI(-2))	-0.24318	(0.57694)	[-0.42150]	0.6773
D(NRGDP(-1))	0.227998	(0.25328)	[0.90019]	0.3773
D(NRGDP(-2))	0.077814	(0.14852)	[0.52393]	0.6053
CointEq1	-1.32086	(0.32427)	[-4.07338]	0.0005

Source: E-views 9.0 Extracts

The results from the ECM model in Table 4.3b above suggest that Value of stock traded (NVST), Market capitalization (NMC) and Stock market return (NSMR) positively impact on Real GDP (RGDP) in Nigeria. The magnitude effects of variables indicated that a unit increase in Value of stock traded (NVST), Market capitalization

(NMC) and Stock market return (NSMR) account for 0.072, 0.076 and 0.61 correspondent increase in Real GDP (NRGDP) in Nigeria. Of the independent variables, All Share Index (NASI) and Stock market return (NSMR) are significant to Real GDP (NRGDP) in Nigeria since the probability values are less than 0.05 at 5% level. The findings show that Real GDP (NRGDP) in Nigeria is influenced by the level All Share Index (NASI) and Stock market return (NSMR). The coefficient of the ECM (-1) with negative sign of -1.32086 with negative t-statistic of 4.07338 have probability value (0.0005<0.05). This confirms a long run relationship between stock market and Real GDP (NRGDP) in Nigeria. ECM model variables (Market capitalization (NMC), Value of stock traded (NVST) and Stock market return (NSMR) relatively have high percentage of effect on Real GDP (NRGDP) in Nigeria. The speed of adjustment is relatively high and it is statistically significant. Coefficient of equation suggests that previous years would be corrected in the following year at an adjustment rate of 132% hence; there is convergence of model variables (All Share Index (NASI), Market capitalization (NMC), Value of stock traded (NVST) and Stock market return (NSMR) and Real GDP (NRGDP)) to long run relationship equilibrium relationship. The control variable- All Share Index (ASI) has positive effect on real Nigeria Real GDP by 0.24 in previous year (-2) and negative effect of about 0.06 in current year (-1). All Share Index (ASI) as control variables in the study has no significant effect on Nigeria real GDP. In the previous and current year, real GDP is positively reacting to stock market significantly by 0.22 and 0.07 but not significant.

Table 4.3c: Error Correction Results (South Africa)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.121666	(6.17314)	[0.34369]	0.7342
SMC	-0.992562	(3.07000)	[-0.32331]	0.7494
SVST	1.191261	(2.78817)	[0.42726]	0.6732
SSMR	-1.3612	(2.77677)	[-0.49021]	0.6286
D(SASI(-1))	-0.47044	(0.36270)	[-1.29706]	0.2075
D(SASI(-2))	-0.183588	(0.25960)	[-0.70720]	0.4865
D(SRGDP(-1))	-0.085837	(0.13825)	[-0.62090]	0.5408
D(SRGDP(-2))	-0.207311	(0.10683)	[-1.94051]	0.8477
CointEq1	-0.009535	(0.04909)	[-0.19424]	0.2075

Source: E-views 9.0 Extracts

The results from the ECM results of Egypt model in Table 4.3c reveal that Market capitalization (SMC) and Stock market return (SSMR) negatively influenced Real GDP (SRGDP) in South Africa while, Value of stock traded (SVST) indicates positive impact on Real GDP (SRGDP). The magnitude effects of variables revealed that a unit increase in Market capitalization (SMC) and Stock market return (SSMR) account for 0.99 and 1.36 correspondent increases in Real GDP (SRGDP) in South Africa while, a unit increase in Value of stock traded (SVST) will bring about 1.19 decrease on Real GDP (SRGDP) in South Africa.

Among the variables of All Share Index (SASI), Market capitalization (SMC), Value of stock traded (SVST) and Stock market return (SSMR), none significantly affected Real GDP (SRGDP) in South Africa since the probability values are greater than 0.05 at 5% level. The finding shows that Real GDP (SRGDP) in South Africa is not driven by the stock markets. The coefficient of the ECM (-1) has negative sign of 0.009 with negative t-statistic of 0.194 having probability value

(0.2075>0.05). This confirms a long run relationship among, and between the exogenous of stock market and endogenous Real GDP (SRGDP) in South Africa. ECM model variables (Market capitalization (SMC), Value of stock traded (SVST) and Stock market return (SSMR) relatively have moderate percentage of effect on Real GDP (SRGDP) in South Africa. The speed of adjustment is relatively low and it is statistically insignificant. Coefficient of equation suggests that previous years were not corrected in the following year at an adjustment rate of 9% hence; there is no convergence of model variables (All Share Index (SASI), Market capitalization (SMC), Value of stock traded (SVST) and Stock market return (SSMR) and South Africa Real GDP (SRGDP) to long run equilibrium relationship. The control variable- All Share Index (SASI) has negative effect on real South Africa GDP by 0.47 in current year (-1) and 0.18 in previous year (-2). Therefore, it is not significant to the South Africa real GDP. In the previous and current years, South Africa Real GDP negatively reacted to stock market insignificantly by 0.08 and so in the current year by 0.21.

Table 4.4: Comparison for Optimal Model Selection

Parameter	Egypt	Nigeria	South Africa
R-squared	0.519715	0.613251	0.341059
Adj. R-squared	0.352660	0.478730	0.111862
Sum sq. resids	0.684325	2.970108	1.919925
S.E. equation	0.172491	0.359354	0.288920
F-statistic	3.111032	4.558766	1.488059
Log likelihood	16.11490	-7.37183	-0.390835
Akaike AIC	-0.444681	1.023239	0.586927
Schwarz SC	-0.032443	1.435478	0.999165
Mean dependent	0.002808	-0.012764	-0.009346
S.D. dependent	0.214388	0.497727	0.306576
Predicting Power = S.D./mean dependent by 100	76.3490	-38.9946	-32.8029

Source: E-views 9.0 Extracts

From the table 4.4 total variations in the real GDP of Egypt, Nigeria and South Africa explained by the independent variables (All Share Index (ASI), Market capitalization (MC), Value of stock traded (VST) and Stock market return (SMR)) by 32.3%, 47.8% and 11.1% respectively. The model of real GDP of Egypt, Nigeria and South Africa fitted with All Share Index (ASI), Market capitalization (MC), Value of stock traded (VST) and Stock market return (SMR)) by 51.9%, 61.3% and 34.1% respectively.

Over all statistical significance among real GDP, All Share Index (ASI), Market capitalization (MC), Value of stock traded (VST) and Stock market return (SMR) were evidence in the model of Egypt and Nigeria. However, it is not significant in the model of South Africa as the F-stat is less than 2.0 as compare to Egypt and Nigeria F-stat values in the table 4.4.

The values of Log likelihood, Akaike Information Criteria (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn criterion (HQC) of Egypt were (16.11, -0.44 and -0.03), Nigeria were (-7.37, 1.02 and 1.43) and South Africa were (-0.39, 0.58 and 0.99). In comparison for optimal model selection, the lower the values of AIC and SIC, but higher log likelihood, the better the model. Hence, Egypt has smaller AIC, SIC and higher Loglikelihood, Egypt by this study suggests the best model for evaluating performance of real GDP based on stock market variables used.

The findings are in line with the study of Bahadur & Neupane (2006) on separate single country studies on Ghana and Belgium that suggested positive relationship between stock market development and economic growth. It also supported (Brasoveanu et al, 2008 and Shahbaz et al, 2008) that stock market development can foster economic growth in the long-run for countries like Romania and Pakistan respectively. In general, the findings of this comparative study of three selected emerging economies in Africa supported the growth theory that a well- functioning stock market enhances economic growth. Also, the results based on unit root test and co integration test reveal causation from financial deepening to economic growth and confirmed the findings of Ovat (2012) in his study on stock market development and economic growth in Nigeria.

V. Discussion

Based on the findings of stock market development and economic growth in three emerging Africa economies (Egypt, Nigeria and South Africa), Value of stock traded (NVST), Market capitalization (NMC) and Stock market return (NSMR) positively influence Real GDP (RGDP) in Nigeria. Value of stock traded (NVST) and Stock market return (NSMR) positively influence Real GDP (RGDP) in Egypt but Market capitalization (NMC) influence Real GDP negatively. In South Africa, only Value of stock traded (NVST) affected Real GDP positively. However, Market capitalization (NMC) and Stock market return (NSMR) influence South Africa Real GDP negatively. Both Egypt and Nigeria show long run relationship with encouraging speed of adjustment in the previous and current years. South Africa reveals no long run relationship.

All Share Index (EASI) has positive effect on real Egypt GDP by 2.68 on average, on real Nigeria Real GDP by 0.15. In South Africa, All Share Index (SASI) has negative effect on real GDP by 0.26 on average. Egypt real GDP positively reacted to stock market development significantly by 0.49 in the previous year. Nigeria real GDP positively reacted to stock market significantly by 0.22 in the previous year. South Africa Real GDP negatively reacted to stock market development insignificantly by 0.08 and 0.21 in both previous and current years. In finding out the overall statistical significance among real GDP, All Share Index (ASI), Market capitalization (MC), Value of stock traded (VST) and Stock market return (SMR), it was evident in the model of Egypt and Nigeria but not in the South Africa model. Comparison for optimal model selection results reveal that Egypt has the

best model for evaluating performance of real GDP based on stock market development among the three studied emerging economies in Africa.

VI. Conclusion

The study concludes that relative stable domestic and international investments flow policy should be implemented to improve stock market performance in the three emerging economies in Africa. Nigeria and South Africa should take a cue from Egypt that has better predicting power for economic growth model drawing from the stock market development determinants.

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