

Stock market development and economic performance of West-African countries: A dynamic panel data analysis

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Abstract

The nexus between development of stock market and the performance of economic activities have been a critical issue around the globe. The issue as to whether a well-developed stock market influences the performance of economic activities and the relevant of developmental policy strategies have been a concern for the developing economies especially the West Africa economies. Literatures have shown that most of the West Africa economies were faced with sharp swings and wide fluctuations in the stock market indices, which had negative effect on the performance of economic activities of these economies. This study examined the effect of stock market development on the economic performance among West Africa economies. The study employed secondary data subjected to panel regression method of analysis within the period of seven years across selected West-Africa countries. Findings revealed that stock market development indicators; ratio of market capitalization to gross domestic product, All Share Index, and Stock Turnover have positive effect on economic performance while corruption perception index have negative effect on economic performance, all at 5% level of significance. The study concludes that stock market development indicators and corruption index affect economic performance in West Africa. Therefore, the study recommends that the stock market regulatory authorities should initiate strategic policies that would boost market liquidity and encourage easy access of companies to the market and also be more proactive in

surveillance role in order to check unethical practices which undermine stock market integrity, erode investors' confidence and patronage.

JEL Code: G1, O4, C1.

Keywords: All share index, Corruption perception index, Market capitalization, Gross domestic product, Stock turnover.

Introduction

The role of a high frequent trading and well-functioning stock market is critical to the performance of economic activities as established in the literature. Generally, sound and developed stock market enable economic growth through conscription of domestic and foreign financial resources that facilitate investment and economic activities, through access to low cost capital by quoted companies.

The expected benefits of sound stock market have steered the interest of developing economies around the globe on appropriate strategies of stock market framework and policies that are suitable in achieving a well-developed stock markets. However, majority of stock markets in the developing economies are yet to achieved the desired aspirations of the developed stock market due to the some existing challenges; such as weak corporate governance, regulatory and legal institutions, political risk, unethical practices in the stock market especially in the developing economies of Africa and as well as the effect of global financial crisis (Hearn & Piesse, 2010; Kemboi & Tarus, 2012; Asongu & Nwachukwu, 2016; Popoola, Ejemeyovwi, Alege & Adu & Onabote, 2017; Igbinosa & Uhunmwangho, 2019).

Furthermore, as observed in literature, stock market development has been part of fundamental factor to the economic performance. Kuada (2016) and Yartey and Adjasi (2007) are of the opinion that with financial liberalization and performance of the macroeconomic activities in Africa are not efficient without the establishment and a well-developed stock markets. The studies of Bhoyu (2011), Khumalo (2013), Cyrus and Kirwa (2015), Mbah, Okoli and Amassoma (2017), Worlu and Omodero (2017) among others collaborated that for the developing economies, especially the African economy to achieve stock market development, stock market must be efficient, good in ethical practices, continuous increase in market capitalization, high stock turnover and also the fundamental macroeconomic policies; such as the interest rate, Gross Domestic Product (GDP), exchange rate, inflation rate and money supply must be stable.

These problems are further magnified in developing countries especially West African economies with weak stock markets regulatory framework and high macroeconomic volatilities,

informational and disclosure deficiencies reduces the efficiency and stock market development which in turn lessen local and foreign investors' confidence and patronage in the stock exchange markets (Nkechukwu, Onyeagba & Okoh, 2013; Barakat, Elgazzar & Hanafy, 2016; Kahuthu, 2017). The fair growth in the West Africa stock markets do not implies that even the most seemingly advanced African stock markets are not matured as compared with stock markets in developed economies. Most of these stock markets still suffer the problems of low liquidity, higher cost of trading, unstable exchange and inflation rates, declined in growth domestic product, low frequency trading, information and disclosure deficiencies, poor supervision and regulatory framework and political instability (Okoye, Modebe, Taiwo & Okorie, 2016; Popoola *et al.*, 2017; African Capital Market News, 2018). Furthermore, studies have shown that countries with low level of corruption practices and well-functioning, sound and developed stock market experienced drop in poverty levels, increased in foreign investment inflow and well-functioning economic activities grow more rapidly than those countries with high level of corruption and weak economic indices (Andrianaivo & Yartey, 2009; Beck, Maimbo, Faye & Triki, 2011; Oshaibat, 2016; Wang, Tsai & Li, 2017).

Several studies outside Africa countries that investigated the empirical link between stock market development and economic growth in different economies, which include Kamaiah and Biswal (2000), Biswal and Veerashekharappa (2002), Adjasi and Biekpe (2006), Agrawala and Tuteja (2007), Brasoveanu, Dragota, Catarama and Semenescu (2008), Vazakidis and Adawopoulos (2009), Acharya, Amanulla and Joy (2009), Kurach (2010), Yartey (2008, 2010), Ibrahim (2011), El-wassal (2013), Raza, Jawaid, Afshan, and Karim (2015), Ho (2019) found that macroeconomic factors such as money supply, gross domestic product, exchange rate and inflation rate have positive and significant effect on stock market performance. But Mu Qing, Robert and Chang (2001), Wang (2002), Paskevicius and Norkaity (2011), Bayar, Kaya and Yıldırım (2014), Chia and Lim (2015), Kumar and Misra (2015), Rasmiah and Rasmiah (2016), Wang, Tsai and Li (2017) among others have contrary view over the relationship between the development of stock market and economic growth. They argued that there is negative and insignificant relationship between gross domestic product and stock market development.

Whereas studies in the Africa countries also revealed mixed findings; as studies such as Ndako (2010), Ovat (2012), Abdelbaki (2013), Masoud (2013), Osamwonyi and Kasimu (2013), Ikikii and Nzomoi (2013), Kirui, Wawira and Onono (2014), Chipaumire and Ngirande (2014), Bayar, Kaya and Yıldırım (2014), Brown and Nyeche (2016), Pan and Mishra (2018), Osaseri and Osamwonyi (2019) found that stock market development exerts significant impact on the economic growth and there is a positive correlation between stock market development indicators and economic growth. Conversely, other studies such as Alajekwu and Achugbu (2012), Owusu

and Odhiambo (2014), and Okonkwo, Ogwuru and Ajudua (2014) found that stock market development has negative effect on economic growth. Conclusively, even though there are mixed findings within and outside African countries on the relationship between stock market development and economic performance, but the findings that supported the relationship between stock market development and economic performance are far greater in number than those that established negative relationship. Therefore, the establishment of positive relationship is in line with endogenous growth theory.

Considering the past studies reviewed within and outside Africa context, the following research gaps were established. Most reviewed studies majorly focused on the link between stock market development and economic growth, but these studies employed ratio of market capitalization to gross domestic product, stock value traded, and number of stock deals as indicators for stock market development while gross domestic product as indicator for economic growth; these past studies failed to employ stock turnover as a measure for stock market development, this serves as variable measurement gap. Similarly, these studies failed to consider corruption perception index as control variable in determining stock market development and economic performance, whereas literatures have established that countries with high level of corruption will not achieve high level of economic performance. Therefore, corruption perception index serves as control variable measurement gap. Based on these existing research gaps and inconclusive findings within and outside African context, this current study is motivated to examine the effect of stock market development on economic performance of West Africa countries.

1. Theoretical framework

1.1. Endogenous growth theory

Endogenous growth theory was propounded by Romer (1980s) as an alternative to the neoclassical growth theory. It questioned how gaps in wealth between developed and underdeveloped countries could persist if investment in physical capital like infrastructure and stock market are subject to diminishing returns. In endogenous growth theory, it views economic growth to be emanating from internal forces rather than external forces; this implies that households investing in human capital, infrastructure and investment in stock market as the key to growth in Gross Domestic Product (GDP) (Gwilym, 2008). Similarly, endogenous growth theory acknowledges that stock market is not subject to diminishing returns. This means that economic growth is positively related to the stock market investment. It states that in the long run, economic growth will depend on trade openness, fair competition, stock market and innovation policies taken by government agencies and different stock market stakeholders so as to promote economic growth (Bayar, 2016).

Bencivenga, Smith and Starr (1996) and Levine (1991) were among the first to propose endogenous growth models to identify the channels through which financial markets affect long-term economic growth. Raza, Jawaid, Afshan, and Karim (2015) and Ho (2017) emphasize that endogenous growth theory explain how stock markets help diversify the liquidity and investment risk of agents. Additionally, stock market helps to attract more savings into productive investment and prevent the early withdrawal of capital invested in the long-term projects. King and Levine (1993), Rasmiah and Rasmiah (2016) and Wang, Tsai and Li (2017) also suggested another approach to identify the channel of transmission between financial markets and economic growth—financial markets help the functioning of efficient resource allocation. Therefore, an economy with a well-functioning financial market will have a higher productivity growth rate. Thus, several studies such as Osamwonyi and Kasimu (2013), Ikikii and Nzomoi (2013), Kirui, Wawira and Onono (2014), Chipaumire and Ngirande (2014), Bayar, Kaya and Yıldırım (2014), Brown and Nyeche (2016), Pan and Mishra (2018), Osaseri and Osamwonyi (2019) among others have employed endogenous growth theory and put forward that in a modern economy, commercial banks and stock markets constitute a major part of the financial market which significantly determine economic performance.

1.2. Methodology

This study adopts ex-post facto research design by employing secondary sources of data. This study focuses on the effect of stock market development on economic performance of selected stock exchange market within seven (7) years (2011-2017) across West Africa countries (The Gambia, Ghana, Ivory Coast, Liberia, and Nigeria). This period of 2011 to 2017 were selected with the five West Africa countries due to availability of data on stock market development indicators. Stock turnover, Ratio of market capitalization to gross domestic product, All Share Index represents the independent variable and measure for stock market development, the gross domestic product is the dependent variable while corruption perception index served as the control variable. The functional model in this study is adapted from Ibrahim (2011), who examined the link between stock market development and macroeconomic performance. The Ibrahim (2011) functional model was specified below;

$$GDP = f(MC, INV, P)$$

$$GDP_{it} = \beta_0 + \beta_1 \left(\frac{MC}{GDP} \right)_{it} + INV_{it} + P_{it} + \alpha_i + \mu_{it} \quad \dots \quad (1)$$

Where; GDP = Real Gross Domestic Product Growth Rate= Macroeconomic Economic Performance; MC/GDP = Ratio of Market Capitalization to Gross Domestic Product = Market Size; INV = Investment to GDP ratio (INV) and P = Aggregate price level as measured by the

GDP deflator (P). In Ibrahim (2011) model, investment ratio and aggregate price were substitute with stock turnover and All Share Index as both investment ratio and aggregate price were inappropriate measure for stock market development. Therefore, Ibrahim (2011) model was modified to suit the objective of this current study. Therefore, the model is specified as;

$$\text{GDP} = f(\text{MC}, \text{ST}, \text{ASI}, \text{CPI}) \quad \dots \quad (2)$$

$$\text{GDP}_{it} = \beta_0 + \beta_1 \left(\frac{\text{MC}}{\text{GDP}} \right)_{it} + \beta_2 \text{ASI}_{it} + \beta_3 \text{ST}_{it} + \beta_4 \text{CPI}_{it} + \alpha_i + \mu_{it} \quad \dots \quad (3)$$

Where,

GDP = Gross Domestic Product proxy for Economic Performance

MC/GDP = Ratio of Market Capitalization to Gross Domestic Product

ASI = All Share Index

ST = Stock Turnover

CPI = Corruption Perception Index

μ_t = Error term

Based on extant literature review, the *apriori* expectations for the study variables are; $\partial_1, \partial_2, \partial_3 >$

$0; \partial_4 < 0$

2. Results and discussions

Multicollinearity analysis

In order to determine whether the series in the distribution are correlated; correlation matrix test and Variance Inflation Factor test are carried out and the results presented in Table 1. Variance Inflation Factor test denotes the existence of multicollinearity or otherwise without estimating the magnitude of the association among the variables but Pearson Correlation Matrix showed the magnitude of the associations as reflected in the correlation matrix test in Table 1. A correlation ratio denotes the existence or non-existence of relationship among variables which do not necessarily mean that the variables influence one another, that is; it is not an indication of causal effect.

Table 1: Multicollinearity Test

	<i>MC/GDP</i>	<i>ASI</i>	<i>ST</i>	<i>CPI</i>	VIF	1/VIF
<i>MC/GDP</i>	1.0000				1.12	0.89
<i>ASI</i>	-0.171	1.0000			1.45	0.69
<i>ST</i>	0.166	0.234	1.0000		1.20	0.84
<i>CPI</i>	-0.229	-0.044	-0.308	1.0000	1.19	0.82

Source: Authors' Computation (2019)

Baltagi (2015) indicated that there exists a multicollinearity problem among variables when the correlation coefficients between variables exceed the benchmark of 0.75 in absolute value. The result of the correlation test presented in Table 1 showing the minimum and maximum correlation coefficients of 0.044 and 0.308 at absolute which are less than the benchmark recommended by Baltagi (2015), this shows that there is no evidence of multicollinearity among the study variables (independent variables). Furthermore, the result of the correlation matrix was corroborated by the result of the variance inflation factor which are all below the threshold of 5.0 considering the variance inflation factor of each of the variables and the inverse VIF of the study variables are less than the threshold of 1.0. This confirmed the report of the correlation matrix which indicated that multicollinearity problem does not exist among the study variables. The unit root test of the time series for selected West Africa countries shows that variables were stationary at first difference and 5% level of significance. This explains that the existence of unit root among the variables cannot be accepted.

Table 2: Panel Regression Result

Method	POOLED OLS			Fixed effects			Random effects											
Variables	Coeff	t-Stat	Prob	Coeff	t-stat	Prob	Coeff	t-stat	Prob									
MC/GDP	3.69	0.96	0.04	-0.05	-1.56	0.08	0.14	2.59	0.05									
ASI	5.24	3.47	0.90	0.29	2.92	0.01	0.42	3.49	0.04									
ST	0.18	3.55	0.03	0.06	6.65	0.02	0.05	5.84	0.41									
CPI	-0.23	-6.27	0.04	-0.04	-4.40	0.03	-0.06	-3.83	0.01									
Constant	40.44	3.16	0.00	5.02	3.16	0.87	0.009	-0.08	0.93									
	Adj. R-squared = 0.76			Adj. R-squared = 0.68			Adj. R-squared = 0.71											
	F= 20.6			F= 25.88			Wald chi ² (5) = 31.98											
	Prob > F = 0.00*			Prob > F = 0.02*			Prob > chi ² = 0.00*											
Hausman Test: Chi² = 5.70, Prob> chi² = 1.04																		
Breusch-Pagan LM Test: Chi²(1) = 1.55, Prob> chi² = 0.030																		
Breusch-Pagan/ Cook-Weisberg Test: Chi²(1) = 1.23, Prob> chi² = 0.24																		
Wooldridge Test: F = 7.85, Prob >F = 0.13																		

Dependent Variable: Gross Domestic Product (GDP)

Significance @ *1%, **5%, ***10%

Source: Authors' Computation, 2019.

Hausman Test was conducted to determine the most appropriate estimating technique out of the Fixed Effect and Random Effect Analysis. The results as shown in Table 2 with p-value of 1.04 which is higher than the 5 percent level of significance chosen for the study reveals that Random Effect is the most appropriate estimator according to its null hypothesis which states that there is presence of unsystematic difference in the model coefficients; thus, the study does accept the null hypothesis. The Hausman specific test signifies the favor of random effect model because all these selected West African countries are different to each other. That is why fixed effect model is not supporting the panel regression results rather random effect model is fine for these countries. The selection of random effect model by Hausman specific test clears that the random effect is covering the heterogeneity among the countries. Similarly, the results of the confirmation test on the Hausman results using Breusch-Pagan Lagrangian multiplier with p-value of 0.03 being less than the acceptable level of significance of 5% supported the result of the Hausman Test which concluded that Random Effect is the most appropriate estimator; therefore, Breusch-Pagan Lagrangian multiplier supported the appropriateness of the Random Effect.

Breusch-Pagan/Cook-Weisberg Test was conducted for Heteroskedasticity; that is testing for the consistency of the variations in the residuals of the model over the period “t”. The result with p-values of 0.24 which is less than 5 per cent chosen level of significance indicated that the

differences in error terms of the model are trending. This implies that the model is homoscedastic, which implies that there is no heteroskedasticity problem. Similarly, Wooldridge Test was conducted to know if the coefficients of the model and its residuals are correlated over time. The result of this test with *p*-value of 0.13 being greater than the chosen level of significance of 5% evidenced that there is no first order autocorrelation. This implies that there is no correlation problem among coefficients of the models and its residuals.

Considering the result of the Hausman result that random effect model is the best appropriate estimator among fixed and pooled panel regression model. The explanatory power of stock market development indicators (MC/GDP, ASI, ST) with control variable CPI combined on economic performance (GDP) (that is the coefficient of multiple determinations) using random effect model is 0.71, which implies that just 71% variation in the GDP is explained by the combined influence of the explanatory variables (MC/GDP, ASI, ST and CPI) while the remaining 29 percent is caused by other determining variables which are outside the scope of this study. Considering the result of the Wald $\chi^2(4) = 31.98$; with *p-value* of 0.00 (0 percent), this is an indication that all the explanatory variables (MC/GDP, ASI, ST and CPI) jointly and significantly influence the economic performance (GDP). The study further revealed that market capitalization, All Share Index and stock turnover have positive and significant effect on economic performance except stock turnover that is insignificant. Similarly, corruption perception index has negative and significantly affect economic performance, all at 5% level of significance.

The findings of this study indicates that stock market development indicators positively increase economic activities and that corruption index inversely affect economic activities i.e increase in economic corruption perception index, reduced economic performance/activities and vice-versa. Several studies are in line with the findings of this study that stock market development positively increase economic activities/performance (See Ibrahim, 2011; Masoud, 2013; Marques, 2013; Najeb & Masoud, 2013; Ikikii & Nzomoi, 2013; Osamwonyi & Kasimu, 2013; Bayar, Kaya & Yıldırım, 2014; Babajide, 2016; Brown & Nyeche, 2016; Pan & Mishra, 2018; Osaseri1 & Osamwonyi, 2019 among others), on the other hand, Ayadi (2015) argued that the GDP has significant negative impact on stock traded and market capitalization. Similarly, Chia and Lim (2015), Kumar and Misra (2015), Rasmiah and Rasmiah (2016), Wang, Tsai and Li (2017) found that stock market does not significantly affect economic performance. Theoretically, endogenous growth theory supported the findings of this study; that stock market development positively related with economic growth and in the long run, economic growth will depend on stock market development.

Conclusion and policy recommendations

This study concludes that stock market development indices with corruption perception index significantly affect economic performance of African countries. The overall findings of this study are in tandem with the theoretical framework that underpinned this study. Based on the findings, the study recommends that to stimulate and achieve high economic growth rate, there has to be appropriate stock market policies that will boost and motivate investments in derivatives, securitized debts, and mutual funds; which enhances the stock market activities, deepening liquidity, and market depth.

Relevant government agencies should build up strong legal and functional institutions so as to implement appropriate sanctions that will reduce the level of corruption practices in the financial and sub-financial sector. This will encourage both local and foreign investors' confidence and patronage in the stock exchange markets across the African nations.

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