

Stock Market Capitalization, Foreign Direct Investment and Stock Market Performance: A Comparative Study of Ghana and Nigeria

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Abstract

the study assesses the impact of stock market capitalization and foreign direct investment in stock market performance for the period of 1996 to 2017 in a comparative study of Ghana and Nigeria. The study used both panel and time-series approaches and methodologies such as unit root tests, cointegration tests, vector error correction model, dynamic ordinary least square, generalized least square, multiple linear regression (random and fixed effects) models and granger causality tests to make its statistical inference. The study concludes that stock market capitalization and foreign direct investment have a negative impact on stock market performance in a panel study, but both have positive impact on stock market performance in Ghana and Nigeria respectively. The study recommends further look into the areas for validation.

Keywords: stock market capitalization; stock market performance; foreign direct investment; Ghana; Nigeria

1. Introduction

The stock market in every emerging or developing economy plays a major role in its development. The stock market is internationally integrated to accommodate both local and foreign investors in diversified investment portfolios in the quest to minimize risk exposures. Moreover, the market also serves as a capital acquisition facility for states or governments to raise debt instruments such as treasury bills and bonds. Stock turnover ratio (proxy for stock market performance) characterizes the number of times a company's stock or shares traded and exchanged over a given period. The stock turnover ratio can also be explained as the worth of domestic share traded divided by their market capitalization. The stock turnover ratio is mostly used as an indicator of the size of the stock market, and a high stock turnover ratio indicates high efficiency of the market, while low turnover indicates inefficiency. The ratio also expresses the size of the stock market and the level of development in the whole country. The higher the stock ratio, the bigger the size of the stock exchange markets, an indication of development level of the financial market of the country (Sawe, 2017). Nigeria is the largest economy in Africa hence the Nigerian stock exchange serves Africa's largest economy. As of March 2019, the average daily value traded across all products on the NSE decreased by 53.24% to N 3.26 billion (\$9.05 million) from N 6.98 billion in the previous year. Similarly, the average daily volume traded decreased by 53.49% to 323.52 million units in Q1 2019, from 695.65 million units in Q1 2018; while the number of transactions recorded during the quarter declined by 37.27%. As at the end of Q1 2019, the average PE ratio of the Exchange's listed equities stood at 17.92 compared to 24.91 in the previous year. The equity turnover velocity also declined by 4.55 percentage points to 7.17%, from 11.72% in Q1 2018. The dividend yield for the 52-week period ending March 29, 2019 was 6.15%, compared to 4.61% for the previous year. The total market capitalization stood at 61.91 billion as of March 2019 and the number of listed companies is 158 (Nigerian Stock Exchange, 2019). The Ghana stock exchange as at August 2018 reports GSE composite index (GSE – CI) of 2,897.53 with YTD change of 12.32%, GSE financial stock index (GSE – FSI) of 2,691.16 with YTD change of 16.41%, market capitalization of GH¢ (million) 55,971.16 with YTD change of -4.82% and domestic capitalization of GH¢ (million) 19,004.31 with YTD change of 16.99% (Ghana Stock Exchange, 2018).

The annual increases in the NRF share of market capitalization could be attributed to share price appreciation or foreign direct investment. The acquisition of shares by foreigners from locals will go to increase the inflow

of forex into the economy. On the other hand, forex inflows of such acquisitions by foreigners will eventually be repatriated, thus having no effect on the level of FDI (Bank of Ghana, 2000). Interestingly, these two markets are the only stock exchange markets in West Africa. The inefficiency of the financial markets, most especially the capital market of developing and emerging markets or economies becomes an impediment to growth and development of these economies or markets. The inefficiency has been attributed to the near absence of liquidity, low level of investment in the market, low level of savings as a result of low income levels and high marginal propensity to consume. Foreign investments have become the antidote to this alarming headache hence the inflows of foreign investments are widely reckoned on supplement the domestic financial resources in order to strengthen the financial development. As the macroeconomic performance of an economy promotes the efficiency of the economy hence the lucrative it is to transact business due to stability of the macroeconomic indicators. The economies in West Africa, Ghana and Nigeria to be precise have experienced ups and downs in their macroeconomic performance in the past 20 years due to economic downturns; since capital accumulation within these two economies are reliant on foreign resources, the study is motivated to investigate the financial development (stock market capitalization) and foreign direct investment impact on the stock exchange market performance of both countries.

Prior studies focused on the foreign investments (resources) on the stock market development, this study takes a different dimension to assess the impact of stock market development (market capitalization) and foreign direct investment on stock market performance. The study intends to contribute to existing literature in two-fold; firstly to assess the impact of stock market development (market capitalization) and foreign direct investment on stock market performance in a panel study in West Africa thus Nigeria and Ghana because they are the only stock markets in West Africa, the second objective is to assess the impact in time series study of each country.

The study comprises of section 2, which consists of the theoretical and empirical literature reviews, section 3 contains the data and methodology of the study. Subsequently, section 4 presents the results of the data analysis and section 5 concludes the study.

2. Literature review

2.1 Theoretical review

The study builds on two theories thus theory of foreign direct investments and theory of capital market growth. The theory of foreign direct investment postulates that there are two classifications for the theory namely; microeconomic theory and macroeconomic theory of foreign direct investment where the microeconomic theory focuses on the characteristics of a firm that influence its decision making processes such as market imperfections, market power and investment location theories while macroeconomic theory seeks to examine the country's characteristics that defines FDI inflows within and across countries such as internalization and product cycle theories. Dunning (1973) developed a theory dubbed Eclectic theory, which offers a general framework for determining patterns of both foreign owned production undertaken by a country's own firms and that of domestic production owned by foreign firms. According to Dunning (1973), there are two main types of investments namely; foreign portfolio investment and foreign direct investment. FPI characterizes the passive holdings of securities and other financial assets which do not curtail active management or control of securities issuer, which is positively influenced by high rates of return and decrease in risk through geographical diversification and FDI is the acquisition of foreign assets for the purpose of control. The eclectic theory has three assumption pillars thus ownership, location and internalization (O+L+I). These are questions that foreign investors seem to answer. The (O) pillar refers to the ownership advantages that solve the question why the foreign organizations need to go abroad. The (L) represents the question of location; the factors such as land and labor become important in determining the location of foreign firms. The (I) represents the internalization advantages to how to go abroad thus the mode of entry into a foreign country. The eclectic theory postulate that for a foreign company to gain competitive edge, it must have some kind of one-off advantage that can help them

overcome the cost associated with operating in the new country. The theory of capital market growth is supported by efficient market hypothesis and it states that asset prices fully reflect all available information and the direct implication is that it is impossible to “beat the market” consistently on a risk adjusted level since market prices should only react to new information changes in discount rates.

2.1 Empirical literature review

Empirical literature has found that foreign direct investment and stock market development have positive relationship and a significant inflow of foreign direct investment increases the quantum of funds in the economy and it helps to beat down interest rates, also makes the access to funds or credits easier and available for the private sector which enhances their operations to maximize productivity as well as profitability (Henry, 2000; Soumare & Tchana, 2011). Adam and Tweneboah (2008) researched foreign direct investment and stock market development in Ghana; they found that FDI positively influences stock market development. Nyang’oro (2013) studied the effect of portfolio investment on the performance of Nairobi Stock Exchange by using the multifactor pricing model and the results showed that the involvement of foreign investors in the stock market has positive and significant relationship. Aigheyisi and Edore (2013) researched the impact of foreign financial resources inflows and stock market development in Nigeria and Ghana, according to the findings foreign direct investment has negative impact on stock market development.

Richard and Felicia (2018) examined the effect of foreign direct investment on the development of market capitalization in Sub-Saharan African countries from 1984 to 2015 using the least square regression methodology showed that FDI has negative and statistically significant effect on the development of stock market capitalization. Meanwhile, Mika’ilu and Yunusa (2018) also studied the impact of foreign direct investment on stock market development in Nigeria by using ARDL bound test model; the study found a positive but insignificant impact of FDI on stock market development. Prior studies into foreign direct investment and stock market development which intend to propel economic growth found that there are an insignificant and negative relationship (Singh & Weisse, 1998; Parthapratim, 2006; Baker et al., 2004; Bernard & Austin; 2012; Arcabic et al., 2012; Musa & Ibrahim, 2014) whiles other studies found positive and significant relationship (Kim & Yang, 2008; Claessens et al., 2001; Kaleem & Shahbaz, 2009; Olewe et al., 2011; Oseni & Enilolobo, 2011; Raza et al., 2012; Zafar et al., 2013; Anfofum et al., 2013; Aigboro and Izekor, 2015; Adaramola & Obisesan, 2015).

The study has identified that there is sparse research in the nexus of foreign direct investment and market capitalization to a stock market performance by proxy of stock market turnover ratio hence the objective of the study to examine this phenomenon. The study considers some control variables as factors which could affect or influence the actions of foreign direct investment, stock market capitalization and stock market performance such as domestic credit to private sector, inflation rate, the number of listed companies on the stock exchange market and gross domestic product per capita as proxy measure of economic growth.

3. Data and Methodology

3.1 Data

The study employed secondary data for the period of 1996 to 2017 for time series and panel study for Ghana and Nigeria. The dependent variable is the stock market performance, it is measured by proxy variable of stock market turnover ratio) and the independent variable variables are stock market capitalization and foreign direct investment. Some control variables are also considered such as gross domestic product per capita, inflation rate and domestic credit to private sector. The details of the variables and their source can be found in table 1.

Table 1 Variable description and source

Variable	Variable description	Source
Instmc	Stock market capitalization to GDP (%)	The global financial development database
Instmt	Stock market turnover ratio (%)	Global financial development database
lninf	Consumer price index (2010=100, average)	Global financial development database
Indcp	Domestic credit to the private sector (% of GDP)	The global financial development database
Infdi	Foreign direct investment, net inflows (% of GDP)	The global financial development database
Ingdppc	GDP per capita (constant 2005 US\$)	Global financial development database
lnnlc	Number of listed companies per 1,000,000 people	The global financial development database

All the variables are transformed into a natural logarithm in order to resolve fluctuation in the data series.

The econometric model for the study can be written as:

$$\text{Stock market performance (stmt)} = f(\text{stmc}, \text{fdi}, \text{gdppc}, \text{dcp}, \text{inf}, \text{nlc}) \quad (1)$$

After taking logarithm of the variables, the model is then written as:

$$\text{Log (stmt)} = \beta_0 + \beta_1 \log(\text{stmc})_{it} + \beta_2 \log(\text{fdi})_{it} + \beta_3 \log(\text{gdppc})_{it} + \beta_4 \log(\text{dcp})_{it} + \beta_5 \log(\text{inf})_{it} + \beta_6 \log(\text{nlc})_{it} + \mu_{it} \quad (2)$$

$$\text{Log (stmt)} = \beta_0 + \beta_1 \log(\text{stmc})_t + \beta_2 \log(\text{fdi})_t + \beta_3 \log(\text{gdppc})_t + \beta_4 \log(\text{dcp})_t + \beta_5 \log(\text{inf})_t + \beta_6 \log(\text{nlc})_t + \mu_t \quad (3)$$

Equation (2) represents the model for the panel study and equation (3) represents the model for the time series study. In both equations, stmt represents stock market performance, stmc represents stock market capitalization, fdi stands for foreign direct investment, gdppc represents economic growth thus gross domestic product per capita, dcp represents domestic credit to private sector, inf represents inflation rate, nlc represents number of listed companies on the stock markets, μ represents the error term (stochastic and other disturbances or factors not considered), i represents the cross sections of the panel, t represents the time period and β_0 represents the intercept.

3.2 Methodology

The study employed two methodologies thus panel and time series for the two countries adopted for the study. For the panel study, the study performs panel unit root tests for the variables to confirm stationarity among the variables hence the use of Levin, Lin & Chin (Levin et al., 2002), Im-Pesaran Shim (IPS) (Im et al., 2003), Fisher Augmented Dickey Fuller (ADF) and Fisher Philips-Perron (PP) (Maddala & Wu, 1999) tests to check for stationarity among the variables and for the time series unit root test, Augmented Dickey Fuller test (ADF) is used to check for stationarity. The null hypothesis posits that there is unit root in the variables and none of them is stationary. The unit root tests are used due to the capability to test for homogeneity and heterogeneity. After, the unit root tests have been done and there is confirmation of stationarity among the variables then Pedroni (2004) and Kao (2000) cointegration tests are performed to confirm the long run relationship among the panel variables to estimate the long run coefficients with the panel cointegration methodology. Subsequently, the models employed for the study are applied to ascertain the coefficients at which the independent variables affect the dependent variables. However, these methodologies are considered; panel dynamic ordinary least square model, linear regressions models thus generalized linear square (GLS) random effects, multiple linear (ML) random effects regression, linear regression fixed effects model and panel granger causality test. Moreover, for the time series study vector error correction model and granger causality tests are considered to make robust and statistical inference on the outcome. Dynamic ordinary least square (DOLS) model is

asymptotic unbiased estimator and has the ability to check and solve endogeneity, simultaneity and serial correlation issues through the differenced leads and lags.

4. Results and discussion

4.1 Summary statistics

Table 2 displays the summary statistics of the panel variables for the two countries adopted for the study. It can be evidenced that the mean and the median are very close in values and the standard deviation is homogeneously related. The skewness test reports that the variables are positively skewed and mass of the distribution is on the right because majority of the variables are positive. However, the kurtosis test reports that all the variables are positive and leptokurtic, thus too tall. Finally, the Jarque-Bera test confirms that the variables are in normal distribution except LNDCP. The summary statistics for the time series study for Ghana and Nigeria can be found in table 3 and 4 respectively. Table 3 and 4 reports that the mean and the median are closely related whiles the standard deviation are homogenous in nature. Unlike the panel variables, the skewness test for both Ghana and Nigeria is negatively skewed hence mass of the distribution is on the left while the Kurtosis test reports that the variables are leptokurtic and the Jarque-Bera tests report that the variables are in normal distribution except LNDCP for both countries.

Table 2 Summary statistics for Panel (Ghana and Nigeria)

Panel	LNSTMT	LNSTMC	LNGDPPC	LNDCP	LNFDI	LNINF	LNNLC
Mean	1.792	1.808	7.311	2.660	0.903	4.100	0.243
Median	1.985	1.347	7.227	2.624	0.744	4.190	0.213
Maximum	3.381	3.579	7.849	3.648	2.253	5.331	0.502
Minimum	0.091	0.532	6.807	1.793	-0.455	2.326	-0.096
Std. Dev.	0.728	0.994	0.334	0.320	0.711	0.803	0.145
Skewness	-0.367	0.410	0.185	0.621	0.355	-0.386	0.107
Kurtosis	2.810	1.701	1.736	5.447	2.219	2.132	2.271
Jarque-Bera	1.055	4.323	3.182	13.803	2.043	2.473	1.060
Probability	0.590	0.115	0.204	0.001	0.360	0.290	0.589

Table 3 Summary statistics (Ghana)

Ghana	LNSTMT	LNSTMC	LNGDPPC	LNDCP	LNFDI	LNINF	LNNLC
Mean	1.469	0.922	7.101	2.621	1.278	4.016	0.186
Median	1.492	0.903	7.037	2.692	1.416	4.124	0.174
Maximum	2.550	1.328	7.503	3.031	2.253	5.331	0.288
Minimum	0.091	0.532	6.807	1.793	-0.045	2.326	0.096
Std. Dev.	0.691	0.188	0.235	0.298	0.746	0.913	0.058
Skewness	-0.302	0.482	0.400	-1.039	-0.283	-0.362	0.433
Kurtosis	2.220	3.267	1.667	4.054	1.632	1.934	1.966
Jarque-Bera	0.893	0.917	2.216	4.976	2.010	1.524	1.669
Probability	0.640	0.632	0.330	0.083	0.366	0.467	0.434

Table 4 Summary statistics (Nigeria)

Nigeria	LNSTMT	LNSTMC	LNGDPPC	LNDCP	LNFDI	LNINF	LNNLC
Mean	2.115	2.693	7.520	2.698	0.528	4.184	0.300
Median	2.156	2.561	7.609	2.594	0.587	4.232	0.355
Maximum	3.381	3.579	7.849	3.648	1.138	5.214	0.502
Minimum	0.548	1.366	7.133	2.199	-0.455	3.089	-0.096
Std. Dev.	0.624	0.587	0.284	0.343	0.428	0.686	0.182

Skewness	-0.439	-0.049	-0.321	1.643	-0.618	-0.137	-0.765
Kurtosis	3.734	2.547	1.386	5.135	2.707	1.687	2.213
Jarque-Bera	1.200	0.197	2.766	14.071	1.478	1.648	2.715
Probability	0.549	0.906	0.251	0.001	0.478	0.439	0.257

4.2 Unit root tests (Panel and Time series)

In order to avoid spurious regression, unit root tests were performed to check for stationarity among the variables for both panel and time series methods. The panel unit root tests considered are Levin, Lin & Chi (LLC), Im-Pesaran Shim (IPS), Fisher ADF and Fisher PP. Augmented Dickey Fuller (ADF) was used for the time series method. Table 5 exhibits the results and for the panel unit root tests, at level form *lnstmt* and *lndcp* showed stationary with all the four tests, *lnstmc* showed stationary with IPS and *lninf* showed stationary with LLC and PP-fisher tests, but *lnnlc*, *lnfdi* and *lngdppc* had unit root. At first difference, all the variables became stationary, but *lninf* became stationary without an intercept and trend while the rest were stationary with an intercept. In the time series method, *lnstmt*, *lnstmc*, *lndcp* and *lninf* became stationary at the level form for Ghana and *lndcp* became stationary for Nigeria.

Table 5 Unit root tests

	LNSTMT	LNSTMC	LNGDPPC	LNDCP	LNFDI	LNINF	LNNLC
Panel -level							
LLC	-2.885**	-1.219	1.581	-2.553**	-0.325	-2.961**	0.310
IPS	-2.363**	-1.323*	2.743	-2.252**	-0.119	-0.917	0.783
ADF - Fisher	12.529**	7.588	0.551	12.010**	3.148	6.291	1.931
PP - Fisher	12.325**	6.571	0.558	11.856**	2.952	10.306**	2.269
First difference							
LLC	-8.299***	-4.636***	-3.133***	-4.558***	-6.479***	-2.058**	-3.055***
IPS	-7.116***	-3.773***	-2.404**	-4.402***	-5.306***		-4.425***
ADF - Fisher	38.541***	19.961***	12.635**	23.445***	28.453***	8.245*	23.543***
PP - Fisher	70.486***	19.484***	12.635**	26.562***	28.461***	7.801*	23.492***
Time Series -Ghana							
Level - ADF	-3.599**	-2.739*	1.439	-3.282**	-1.380	-2.752*	-1.690
First difference	-6.334***	-3.373**	-2.670*	-5.067***	-3.839**	-2.919**	-4.623**
Time Series -Nigeria							
Level - ADF	-2.512	-2.052	-0.922	-2.742*	-1.817	-1.481	-0.336
First difference	-5.994***	-4.593**	-3.510**	-3.720**	-6.127***	-2.634**	-4.194**

Note: *** indicates 1% significance level, ** indicates 5% significance level, * indicates 10% significance level. At first difference, LNINF became stationary with no intercept and trend but became stationary in Ghana and Nigeria with an intercept and trend.

4.3 Panel cointegration tests

Table 6 depicts the Pedroni and Kao cointegration tests for the panel study; in order to ascertain that there variables are cointegrated seven tests were used Panel v -statistic, panel rho-statistic, panel PP statistic, panel ADF statistic, group rho-statistic, group PP statistic and group ADF statistic all with Pedroni tests approach. From the results, 4 out of the 7 showed significance confirming that there is an evidence of cointegration. Moreover, Kao cointegration test was conducted and the results confirm the significance of 1% hence the rejection of the null hypothesis.

Table 6 Panel cointegration tests

Alternative hypothesis: common AR coefs. (within-dimension)				
Pedroni Cointegration test	Statistic	Prob.	Weighted	
			Statistic	Prob.
Panel v-Statistic	-0.627	0.735	-0.638	0.738
Panel rho-Statistic	0.887	0.812	0.952	0.829
Panel PP-Statistic	-6.982	0.000***	-5.869	0.000***
Panel ADF-Statistic	-2.890	0.002**	-2.582	0.005**
Alternative hypothesis: individual AR coefs. (between-dimension)				
Kao Cointegration test	Statistic	Prob.	t-Statistic	
			t-Statistic	Prob.
Group rho-Statistic	1.533	0.937		
Group PP-Statistic	-8.093	0.000***		
Group ADF-Statistic	-2.877	0.002**		
ADF			-3.882	0.000***

Note: *** indicates 1% significance level, ** indicates 5% significance level

4.4 The impact of stock market capitalization and foreign direct investment on stock market performance (Panel results)

At this section the objective of the study thus assessing the impact of stock market capitalization and foreign direct investment on stock market performance is pursued and in order to ensure a concrete and statistical inference, four regression models (dynamic ordinary least square, generalized least square random effects model, multiple linear random effects model and linear regression fixed effects model) were considered for the panel study. Table 7 displays the results and it can be ascertained that stock market capitalization (Instmc) has negative and significant impact on stock market performance across all the models with coefficients of -0.83, -0.42, -0.46 and -0.88, literally a percentage increase in stock market capitalization will lead to a decrease of 0.83%, 0.42%, 0.46% and 0.88 percent in stock market performance. Foreign direct investment (Infdi) showed negative and statistical significance of 1% and 5% respectively with coefficients of -0.90, -0.49, -0.49 and -0.47 in the four models which confirms that a percentage increase in foreign direct investment (Infdi) will lead to decrease of 0.90%, 0.49%, 0.49% and 0.47% in stock market performance. Assessing the impact that domestic to private sector has on the stock market performance, it is evidenced in table 7 that Indcp has positive and significant impact on stock market performance with coefficients of 1.06, 0.79, 0.78 and 0.93. A percentage increase in domestic credit to private sector will literally increase stock market performance by 1.06%, 0.79%, 0.78% and 0.93%, respectively. Economic growth (Ingdppc) has a positive and statistically significant impact on stock market performance. The coefficient of economic growth with stock market performance is shown as 4.92, 1.44, 1.64 and 3.31, which literally means that a percentage increase in economic growth will lead to 4.92%, 1.44%, 1.64% and 3.31% increase in stock market performance. Controlling stock market performance with inflation rate as a factor that could influence it, inflation (Ininf) showed an insignificant impact on stock market performance. Moreover, by considering the number of listed companies on the stock market to assess their impact on stock market performance, it was ascertained that the number of listed companies showed positive and statistical significance of 1% with DOLS, GLS and ML but was insignificant with the fixed effects model. The coefficients of the three significant models are 7.07, 3.17, 3.17 and 2.03, which translate into 7.07%, 3.17%, 3.17% and 2.03% increase in stock market performance as a result of a percentage increase in the number of listed companies on the stock market.

The four regression methodologies used are; dynamic ordinary least square (DOLS), Generalized least square (GLS) random effects, Multiple linear (ML) random effects and linear regression fixed effects.

Table 7 Panel results (DOLS, GLS and ML random effects and fixed effects)

	DOLS	GLS -Random effects	ML -Random effects	fixed effects
lnstmc	-0.83 (-4.41)***	-0.42 (-1.99)**	-0.46 (-2.54)**	-0.88 (-2.38)**
lngdppc	4.92 (4.95)***	1.44 (1.66)*	1.64 (2.22)**	3.31 (2.31)**
lndcp	1.06 (5.11)***	0.79 (2.55)**	0.78 (2.93)**	0.93 (2.41)**
lnfdi	-0.90 (-7.66)***	-0.49 (-3.34)***	-0.49 (-3.85)***	-0.47 (-2.77)**
lninf	-0.89 (-1.42)	-0.00 (-0.01)	-0.07 (-0.25)	0.92 (0.89)
lnnlc	7.07 (6.87)***	3.17 (3.72)***	3.17 (4.30)***	2.03 (1.42)
R-squared	0.85			
Adj. R-squared	0.83			
F-statistics				8.93***
Wald chi2		56.55***	41.07***	

Note: *** indicates 1% significance level, ** indicates 5% significance level, * indicates 10% significance level. Z and t-statistics are in parenthesis.

4.5 The impact of stock market capitalization and foreign direct investment on stock market performance (Time series study)

The main objective of the study is to compare the situation in Ghana and Nigeria with regards to stock market capitalization and FDIs' impact on stock market performance. The study used vector error correction model and from table 8 the results are displayed. According to the results, stock market capitalization (lnstmc) has positive and 1% statistical significant impact on stock market performance in both countries with coefficient of 0.94 and 3.75 which means that a percentage increase in stock market capitalization will lead to an increase of 0.94% in Ghana and 3.75% in Nigeria in their stock market performance; foreign direct investment also showed 1% significance and positive impact on stock market performance in both countries with coefficient of 0.47 for Ghana and 3.07 for Nigeria which literally means that a percentage increase in foreign direct investment will lead to 0.47% and 3.07% increase in the stock market performance of Ghana and Nigeria respectively. Domestic credit to the private sector showed positive impact in Ghana but negative in Nigeria hence a percentage increase in the domestic credit to the private sector will lead to 3.94% increase in the stock market performance in Ghana and -2.81% decreases in the stock market performance in Nigeria. Inflation showed a negative impact on Ghana but positive for Nigeria with coefficients of -0.62 and 19.99 respectively. A percentage increase in inflation will lead to a decrease in the stock market performance of Ghana by 0.62% and will lead to an increase in the stock market performance of Nigeria by 19.99%. The number of list companies showed negative impact on the stock market performance in Ghana but showed insignificant positive impact in Nigeria. A percentage increase in the number of listed companies in Ghana will lead to -4.61% decreases in the stock market performance but insignificant in Nigeria.

Table 8 Times series results (Vector Error Correction Model)

Time series	Ghana	Nigeria
lnstmc	0.94 (5.08)***	3.75 (6.09)***
lngdppc	-2.53 (-3.33)***	-42.77 (-7.91)***
lndep	3.94 (18.34)***	-2.81 (-4.52)***
lnfdi	0.47 (9.37)***	3.07 (5.52)***
lninf	-0.62 (-2.49)**	19.99 (6.38)***
lnnlc	-4.61 (-6.84)***	0.53 (0.15)
ce_1 chi2	1958.79***	158.68***

Note: *** indicates 1% significance level, ** indicates 5% significance level. Z-statistics are in parenthesis.

4.6 Granger causality test

This section reports the granger causality tests for the panel and time series for Ghana and Nigeria. Table 9 reports the results; the panel result can be evidenced that there is unidirectional causality from domestic credit to private sector to stock market capitalization, economic growth to foreign direct investment and inflation to domestic credit to private sector. However, in Ghana, stock market capitalization has granger causality on stock market performance. Also, there is evidence of unidirectional causality from stock market capitalization on number of listed companies, economic growth has granger causality on domestic credit to private sector and number of listed companies has granger causality on economic growth. Finally, in Ghana inflation rate has granger causality on domestic credit to private sector and foreign direct investment. Taking into consideration Nigeria, from table 9 it can be ascertained that stock market performance granger causes domestic credit to private sector and inflation rate. Meanwhile, stock market capitalization granger causes economic growth and economic growth granger causes foreign direct investment as well as number of listed companies. Lastly, the number of listed companies granger causes inflation rate. Furthermore, the null hypothesis that the variables do not granger cause each other is rejected because there is an evidence of granger causality in both the panel and time series study.

Table 9 Granger causality test

Null Hypothesis:	Panel		Ghana		Nigeria	
	F-Stat.	Prob.	F-Stat.	Prob.	F-Stat.	Prob.
Instmc does not granger cause Instmt	0.505	0.608	6.327	0.010**	0.258	0.776
Instmt does not granger cause Indcp	1.866	0.170	0.124	0.884	3.158	0.072*
Instmt does not granger cause lninf	0.058	0.944	0.138	0.872	3.072	0.076*
Instmc does not granger cause lngdppc	1.965	0.155	0.400	0.677	2.764	0.095*
Indcp does not granger cause Instmc	3.060	0.059**	1.976	0.173	0.588	0.568
Instmc does not granger cause lnnc	1.116	0.339	3.222	0.069*	0.364	0.701
Indcp does not granger cause lngdppc	0.556	0.579	0.085	0.919	0.212	0.811
lngdppc does not granger cause Indcp	0.720	0.494	4.541	0.029**	0.168	0.847
lnfdi does not granger cause lngdppc	0.855	0.434	1.050	0.374	0.685	0.519
lngdppc does not granger cause lnfdi	3.454	0.043**	0.697	0.513	3.003	0.080*
lninf does not granger cause lngdppc	0.434	0.652	1.975	0.173	0.881	0.435
lngdppc does not granger cause lninf	1.472	0.243	0.012	0.989	2.579	0.109
lnnc does not granger cause lngdppc	0.852	0.435	3.358	0.062*	0.166	0.849
lngdppc does not granger cause lnnc	2.265	0.119	0.566	0.580	2.896	0.086*
lninf does not granger cause Indcp	2.964	0.065*	3.352	0.063*	1.641	0.227
Indcp does not granger cause lninf	0.324	0.726	1.162	0.340	0.787	0.473
lninf does not granger cause lnfdi	0.280	0.757	3.272	0.066*	0.958	0.406
lnnc does not granger cause lninf	1.286	0.289	0.295	0.749	3.010	0.080*

Note: ** indicates 5% significance level, * indicates 10% significance level

Conclusion

The study assessed the impact of stock market capitalization and foreign direct investment on stock market performance in a panel and time series study of Ghana and Nigeria for the period of 1996 to 2017. The study employed both panel and time series methodologies such as unit root tests, cointegration tests, dynamic ordinary least square, generalized least square random effects, multiple linear random effects, linear regression fixed effects and vector error correction model as well as granger causality test.

In conclusion, the study found that stock market capitalization and foreign direct investment have a negative and statistically significant impact on stock market performance in the panel study but have positive impact in both Ghana and Nigeria in time series study. Economic growth has positive and statistically significant impact on stock market performance in panel study but negative in time series study for both Ghana and Nigeria. Domestic credit to private has positive impact on stock market performance in panel study and also in time series study for Ghana but negative in Nigeria. However, inflation rate has insignificant impact on stock market performance in panel study but positive in Nigeria and negative impact in Ghana. The number of listed companies has positive impact on stock market performance in panel study but negative in Ghana and insignificant in Nigeria.

The study recommends further studies because there are sparse researches in the area.

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