




EXAMINING THE NEXUS BETWEEN INSTITUTIONAL QUALITY AND STOCK MARKET DEVELOPMENT: EVIDENCE FROM GHANA

KURUMSAL KALİTE İLE HİSSE SENEDİ PİYASA GELİŐMİŐLİĐİ ARASINDAKİ İLİŐKİNİN İNCELENMESİ: GANA ÖRNEĐİ

Ibrahim Nandom YAKUBU* 
Ayhan KAPUSUZOGU** 
Nildag Basak CEYLAN*** 

Abstract

While the link between stock market development and overall economic growth is well discussed, the empirical evidence on what motivates the development of stock markets is still scanty necessitating further research efforts. In this study, how institutional quality affects stock market development in Ghana is examined relying on quarterly data spanning from 1995Q1-2015Q4 using a composite index of stock market development. Applying the Autoregressive Distributed Lag (ARDL) method, the results posit a significant short and long-run effect of institutional quality on stock market development. Controlling for macroeconomic factors, a long-term significant impact of foreign direct investment inflows, banking sector growth, and income level on the growth of Ghana's stock market is observed. It is further documented that regardless of the time period, domestic macroeconomic instability proxied by inflation does not matter for stock market growth. According to the main findings, it is recommended in the study that continual efforts must be made to enhance the quality of institutions. Particularly, policies geared towards improving regulatory quality and control of corruption are imperative for reducing unethical practices in the stock market.

Keywords: Stock Market, Institutional Quality, ARDL, Ghana

Jel Codes: B26, C22, O43

* Ph.D. Student, Ankara Yildirim Beyazit University, kassiibrahim@gmail.com, ORCID: 0000-0003-4424-996x

** Prof. Dr., Ankara Yildirim Beyazit University, akapusuzoglu@ybu.edu.tr, ORCID: 0000-0002-4280-3827

*** Prof. Dr., Ankara Yildirim Beyazit University, nbceylan@ybu.edu.tr, ORCID: 0000-0003-3128-8863

Öz

Hisse senedi piyasası gelişimi ile genel ekonomik büyüme arasındaki bağlantı literatürde çok sık tartışılan bir konu olup, hisse senedi piyasalarının gelişimini nelerin motive ettiğine dair ampirik kanıtlar hala yetersiz kalmakta ve daha fazla araştırma çabası gerektirmektedir. Bu çalışmada da, Gana'da kurumsal kalitenin borsa gelişimini nasıl etkilediği, borsa gelişimi için bileşik bir endeks kullanılarak 1995:01-2015:04 dönemini kapsayan üç aylık verilerle incelenmiştir. Çalışmada model olarak Otoregresif Dağıtılmış Gecikme (ARDL) yöntemi uygulanmış olup, sonuçlar kurumsal kalitenin borsa gelişimi üzerinde istatistiksel olarak anlamlı kısa ve uzun vadeli etkisi olduğunu ortaya koymuştur. Makroekonomik faktörler kontrol edildiğinde, doğrudan yabancı yatırım girişlerinin, bankacılık sektörünün büyümesinin ve gelir seviyesinin Gana borsasının büyümesi üzerinde uzun vadeli anlamlı bir etkisi olduğu görülmektedir. Ayrıca, zaman dilimine bakılmaksızın, enflasyonun yurt içi makroekonomik istikrarsızlığın göstergesi olarak alındığında borsa büyümesi için önemli olmadığı da ortaya konulmuştur. Elde edilen temel bulgular doğrultusunda çalışmada, kurumların kalitesini artırmak için sürekli bir çaba gösterilmesi gerektiği önerilmektedir. Özellikle, düzenleyici kaliteyi ve yolsuzluğun kontrolünü iyileştirmeye yönelik politikalar, hisse senedi piyasasındaki etik olmayan uygulamaların azaltılması için zorunludur.

Anahtar Kelimeler: Hisse Senedi Piyasası, Kurumsal Kalite, ARDL, Gana

Jel Kodları: B26, C22, O43

Introduction

For the past decades, stock markets have developed globally, attracting the attention of academic researchers and policymakers. Several studies have examined how stock market development affects the economy from different perspectives, with most researches exploring its impact on economic growth. Theoretically, stock markets may have myriad impacts on economic activities. For instance, stock markets enhance the efficient mobilization of savings and provide mechanisms for prudent investments, thus contributing to gross output (Greenwood & Smith, 1997, 146). Stock markets ensure long-term growth by enhancing liquidity and providing investors the opportunities to trade in a less risky manner in financial assets (Levine, 1991, 144). The stock market also contributes to the soundness of corporate governance thereby reducing the agency problem and promoting the effectiveness of business operations (Jensen & Murphy, 1990, 226).

The objective of this study is to examine how institutional quality influences stock market development in Ghana. The Ghanaian stock market has been an engine for economic growth. The stock exchange has made it possible for companies in Ghana as well as the state to secure capital over the long-run. It provides liquidity to investors and also enables them to achieve diversity in investments. In recent years institutional factors such as high level of corruption and bureaucracy have affected the Ghanaian economy in different ways including business growth. Given this, there is the need to enquire if these current institutional developments have any significant effect on the growth of the Ghanaian stock market. Hence, the purpose of this research.

While numerous studies (see Adjasi & Biekpe, 2006, 144; Shahbaz et al., 2008, 182; Ake, 2010, 14; Carp, 2012, 433; Bayar et al., 2014, 93; Azam et al., 2016, 1200; Ho, 2018, 1; Pan & Mishra, 2018, 661) have thoroughly researched on the impact of stock markets on economic growth in general, empirical works on stock market growth drivers particularly in developing economies are far from settled.

Also, recent empirical works on the factors influencing the growth of stock markets are concentrated on the effect of macroeconomic indicators (Naceur et al., 2007, 477; Eita, 2012, 871; El-Nader & Alraimony, 2013, 91; Şüküröğlu & Nalin, 2014, 64; Zhou et al., 2015, 1; Shahbaz et al., 2016, 75; Owiredu et al., 2016, 33; Ho, 2019, 174). A critical aspect that has been understudied in the literature is the link between the quality of institutions and the growth of stock markets. This relationship is worth examining given the assertion that strong institutions imbue confidence in stock markets (Yartey, 2010, 1615). With the scanty attempts on the effect of institutional quality on stock market growth, the empirical works of Gani & Ngassam (2008, 103), Yartey (2010, 1615), Bayar (2016, 211), Manasseh et al. (2017, 272), Khan et al. (2018, 90), Ahmed et al. (2020, 1), Rehman (2021, 77) and Shi et al. (2021, 1) are notable.

Undoubtedly, the aforementioned researchers have attempted to point out the link between institutional quality indices and stock market development. However, their measures of stock market development are focused on single proxies which are quite narrow and the findings may not reflect the overall stock market. Likewise, using a single indicator could produce bias results, and may misinform policy implementation. Therefore, this study has a unique approach in that given the different facets of stock markets, the principal component analysis (PCA) is applied to generate a stock market development index. With this approach, the principal components of the ratios of market capitalization, market total value traded, and the stock market turnover are taken, which broadly reflect the operations of stock markets. Similarly, rather than using different indicators of institutional quality which are highly correlated, a composite index of institutional quality is created employing different sub-indicators.

This study makes three significant contributions to the extant literature. First, instead of using a single proxy of stock market development, it is preferred to use a composite index. Second, to the best of our knowledge, there is no study investigating how institutional quality influences stock market growth in Ghana. Hence, this paper tries to fill this gap in this context. Finally, by applying the Autoregressive Distributed Lag (ARDL) framework, the study examines how institutional quality in the short and long-term affects stock market growth while controlling for macroeconomic factors.

The rest of our paper is structured as follows: In Section 1, the literature pertaining to our study is elaborated. Section 2 explains the research methodology. The empirical analysis is done in Section 3, and Section 4 concludes the study.

1. Literature Review

The factors driving stock market development has received considerable research attention. According to Garcia and Liu (1999, 37), the factors determining the development of stock markets are examined from institutional and macroeconomic viewpoints. The empirical works on some institutional quality indicators and how they influence growth of the stock market are reviewed in this section. Since the study controls for macroeconomic factors, a review of the effect of macroeconomic indicators and the growth of stock markets are provided.

1.1 Institutional Quality and Stock Market Development

The moderating role of quality institutions in shaping economic performance was earlier highlighted by the Nobel prize-winning economist, North (1990, 1). According to Rutherford (2001, 187), institutions are crucial for the effectiveness of market-based economies. Levine (1997, 689) postulated that the financial system is impacted significantly by the quality of a country's institutions. Similarly, La Porta et al. (1996, 8) and Haber (1991, 559) established that legal and political systems are crucial for a strong financial sector. Institutions and stock market growth link has been scantily investigated in the literature with inconclusive results.

For instance, Gani and Ngassam (2008, 103) found that political stability and rule of law significantly and positively enhance the stock market development of Asian nations. The authors however noted that the growth of Asian stock markets is negatively driven by poor regulatory quality and government effectiveness. Yartey (2010, 1622) reported that the development of emerging economies stock markets is influenced by political risk, bureaucratic quality, and law and order. Bayar (2016, 220) demonstrated that political stability, corruption control, quality of regulatory frameworks, and rule of law are relevant for the development of European Union Transition Economies stock markets. Applying the ARDL approach, Manasseh et al. (2017, 282) evidenced that the index of corruption control and accountability index are long-term institutional factors motivating the growth of the Nigerian stock market. In a cointegration analysis, Khan et al. (2018, 96) reported that while government effectiveness and regulatory quality positively influence stock market growth, political risk and corruption control obstruct stock market development in Pakistan. Ahmed et al. (2020, 8) reported that corruption control, rule of law, and accountability as governance factors positively and significantly affect stock market development in South Asian countries. Rehman et al. (2021, 83) found that institutional factors such as government size, sound money, and regulation have a positive significant impact on stock market development in the BRICS (Brazil, Russia, India, China, and South Africa). Similarly, in the Association of Southeast Asian Nations (ASEAN), Shi et al. (2021, 9) noted that government size and sound money as institutional variables enhance stock market development.

1.2 Macroeconomic Factors and the Development of Stock Market

At both country-specific and cross-country level, several studies have scrutinized how macroeconomic indicators influence the growth of stock markets. For instance, in a panel study, Billmeier and Massa (2009, 23) employed data of the Middle East and Central Asian countries to analyze the determining factors of stock market growth. Applying the fixed effects technique, the authors showed that at the macroeconomic level, remittance, investment, and income level are relevant factors for stock market growth in the countries considered. Yartey (2010, 1621) employing the system GMM technique noted that growth in the banking sector activities and savings influence the development of emerging economies' stock markets. Eita (2012, 877) through the vector error correction model (VECM) established that macroeconomic instability, interest rates, and broad money supply drive the Namibian stock market growth.

For the Jordanian stock market, El-Nader and Alraimony (2013, 91) noted that while money supply, domestic investment, inflation, and private sector credit positively enhance stock market development, economic activity, and remittance reduce stock market growth. In a cross-country study comprising of both developed and developing countries, Bayraktar (2014, 84) reported that the development of stock markets across countries is determined by economic activity, level of savings, interest rates, and investment. Through the Calderon-Rossell model, Zhou et al. (2015, 5) evidenced that financial openness and the flows of private capital are significant macroeconomic variables driving the Cameroonian stock market growth. The authors however found that the development of the banking sector and level of economic activity impedes the growth of the stock market.

Applying the VECM, Shahbaz et al. (2016, 75) analyzed the macroeconomic indicators influencing the growth of the Pakistani stock market. They found that investment rate, economic activity, growth in the financial sector, and macroeconomic instability spurs stock market development, whereas openness to trade impedes stock market growth. In Malaysia, Ho (2019, 174) documented that while the performance of the overall economy and trade showed a long-run significant and direct influence on the growth of the stock market, the development of the banking sector exerted a negative though statistically significant effect. Recently, Aluko and Kolapo (2020, 57) employed the Feasible Generalized Least Squares (FGLS) technique to assess how macroeconomic indicators impact on the development of stock markets in some selected countries in Sub-Saharan Africa. Using different variables as indicators of stock market growth, the results showed that income level, financial and trade openness, inflation, savings and investment, and private credit (a measure of financial intermediation) matter for growth of stock markets in Sub-Saharan Africa.

2. Research Methodology

2.1 Data and Sources

The study employs quarterly data over the period 1995Q1 – 2015Q4. The sample period is based on complete data available for our measures of stock market development. Except for institutional quality indices, the data are obtained from the World Bank. Data for the institutional quality indices are gleaned from the International Country Risk Guide.

2.2 Description of Variables

2.2.1 Stock Market Development (SDINDEX)

In this study, three commonly employed stock market development indicators are used. These proxies are market capitalization ratio (MCR), market total value traded ratio (TVR), and stock market turnover ratio (TOR). Stock market size is captured by market capitalization ratio which is calculated as the total value of listed shares (percentage of GDP). Market total value traded gauges the liquidity level of the market computed as the total value of all shares traded divided by GDP. Stock market turnover, on the other hand, depicts the level of stock market efficiency. The total shares

value traded divided by market capitalization for a given period proxies turnover ratio. A composite index based on these three proxies is constructed by applying the principal component analysis (PCA). With this technique, the index for the j th factor is specified as:

$$SDINDEX_j = W_{j1}X_1 + W_{j2}X_2 + W_{j3}X_3 + \dots + W_{jP}X_P \quad (1)$$

where $SDINDEX_j$ is the composite index for stock market development. The weight of the factor score is denoted by W_j . X indicates the original figure of the specific components and P connotes the number of factors included in the equation. The $SDINDEX$ is therefore a function of three factors. That is:

$$SDINDEX = f(MCR, TVR, TOR) \quad (2)$$

2.2.2 Institutional Quality (INSQ)

Countries with strong institutions experience rapid growth in the financial sector with a subsequent positive influence on overall economic growth. In this study, the principal component of the government stability index, the index of perceived corruption, investment profile index, law and order index, democratic accountability index, and bureaucracy quality index are taken to form a composite index for institutional quality. $INSQ$ is expected to positively drive stock market development.

2.2.3 Banking Sector Development (BSD)

Given the bank-based system of the financial sector in Ghana, banking sector development is included to examine its correlation with stock market growth. Domestic credit which the banking system provides to the private sector (percentage of GDP) indicates the development of the banking sector (Yartey, 2010, 1619; Cave et al., 2020, 1518). The growth of the stock market and BSD are anticipated to have a positive correlation.

2.2.4 Foreign Direct Investment (FDI)

In most emerging economies like Ghana, FDI serves as an external source of financing given the insufficiency of domestic investments (Abubakar & Danladi, 2018, 80). The effect of FDI is controlled for, and it is expected that it should directly motivate stock market growth. With reference to the work of Yakubu (2020, 114), FDI is proxied by the net inflows of FDI (percentage of GDP).

2.2.5 Income Level (INL)

The study also considers the potential impact of income level. Stock market size is argued to be positively correlated with income level (Baltagi et al., 2009, 285; Andrianaivo & Yartey, 2010, 394). Following the work of Yartey (2010, 1619), the log of GDP per capita (in terms of US dollars) is employed as a proxy of income level.

2.2.6 Inflation (INF)

Inflation is an indicator of domestic macroeconomic instability. In a highly inflationary environment, investors and firms are demotivated to partake in the stock market, thus reducing its growth (Yartey, 2007, 284). On this premise, a negative association between inflation and the development of the stock is posited. As employed by prior study (see Osei et al., 2019, 3), *INF* is measured by consumer prices (annual percentage change).

2.3 Model Specification

The basic empirical model for examining the impact of institutional quality and the control factors is specified as:

$$SDINDEX_t = \alpha_0 + \beta_1 INSQ_t + \beta_2 BSD_t + \beta_3 FDI_t + \beta_4 INL_t + \beta_5 INF_t + \varepsilon_t \quad (3)$$

Except for α , β , t , and ε , all the factors in the equation are clearly defined previously. α_0 denotes the constant. β_1 to β_5 are the respective coefficients of the independent factors. ε connotes the error term while t indicates the sample period.

2.4 Analytical Approach

The ARDL bounds testing method by Pesaran et al. (2001, 289) is applied to examine the long and short-run relationship between institutional quality and the control factors on stock market development. Compared to other methods, the ARDL technique is convenient and provides reliable long-run estimates, and best applied in small size studies (Yakubu, 2020, 115). To perform the long and short-run analysis, the ARDL model consistent with Pesaran et al. (2001, 289) is specified as:

$$\begin{aligned} SDINDEX = & \alpha_0 + \sum_{i=0}^n \alpha_{1i} \Delta SDINDEX_{t-1} + \sum_{i=0}^n \alpha_{2i} \Delta INSQ_{t-1} + \sum_{i=0}^n \alpha_{3i} \Delta BSD_{t-1} + \sum_{i=0}^n \alpha_{4i} \Delta FDI_{t-1} + \sum_{i=0}^n \alpha_{5i} \Delta INL_{t-1} + \\ & \sum_{i=0}^n \alpha_{6i} \Delta INF_{t-1} + \delta_1 SDINDEX_{t-1} + \delta_2 INSQ_{t-1} + \delta_3 BSD_{t-1} + \\ & \delta_4 FDI_{t-1} + \delta_5 INL_{t-1} + \delta_6 INF_{t-1} + \rho ECT_{t-1} + \varepsilon_t \end{aligned} \quad (4)$$

where Δ represents the difference operator; $\alpha_1 - \alpha_6$ denotes short-run dynamics and $\delta_1 - \delta_6$ are the long-run parameters and the lag length is symbolized by n . The error correction term is signified by ECT with ρ denoting its coefficient.

The bound-testing for long-run relationship is performed. The null hypothesis ($H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$) of non-existence of long-run association among the variables against the alternative hypothesis ($H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6$) which specifies cointegration is tested. The existence of cointegration is informed by the results of the F-statistics which is compared to the critical bounds. A cointegration is assumed when the upper critical bound is lower than the F-statistics.

3. Empirical Results

3.1 Descriptive Statistics

Table 1 reports the summary statistics of all the variables. The averages of the stock market development indicators (MCR, TVR, and TOR) are 10.419, 0.404, and 5.216 respectively. The coefficient of variation (CV) value of the turnover ratio (TOR) indicates higher volatility compared to the other measures of stock market development. Institutional quality has a mean of 0.558 which has a larger coefficient of variation showing greater variability. Except for institutional quality and banking sector development which indicate positive skewness, the rest of the series are skewed to the left. Stock market capitalization and inflation show kurtosis value greater than 3, signifying leptokurtic distribution of these variables. The Jarque-Bera probability values show that our variables are not normally distributed at 5% except for banking sector development.

Table 1: Descriptive Statistics

Variables	MCR	TVR	TOR	INSQ	BSD	FDI	INL	INF
Mean	10.419	0.404	5.216	0.558	13.065	4.562	2.844	19.836
Median	8.752	0.364	4.310	0.779	13.815	3.157	2.690	15.118
Maximum	25.800	0.722	12.803	1.218	19.621	9.517	3.376	59.462
Minimum	2.720	0.168	1.089	-0.645	5.074	0.956	2.410	7.126
Std. Dev.	5.860	0.181	3.484	0.523	3.635	3.148	0.315	12.824
CoV	0.562	0.448	0.668	0.937	0.278	0.690	0.111	0.647
Skewness	1.408	0.418	0.647	-0.967	-0.488	0.341	0.210	1.771
Kurtosis	4.172	1.869	2.253	2.869	2.948	1.383	1.493	5.566
Jarque-Bera	32.551	6.920	7.823	13.159	3.343	10.788	8.562	66.972
Probability	0.000	0.031	0.020	0.001	0.188	0.005	0.014	0.000
Observations	84	84	84	84	84	84	84	84

3.2 Unit Root Tests

The order in which the variables are integrated is first examined before the ARDL is performed. The ARDL technique requires the integration of variables at level, $I(0)$, or at the first difference, $I(1)$. Specifically, Pesaran et al. (2001, 289-326) suggest that the dependent variable must show stationarity at first difference ($I(0)$), whereas the explanatory factors may be stationary or integrated at either $I(0)$ or $I(1)$. To establish how our factors are integrated, the Phillips-Perron (PP) unit root test is applied. Unlike other methods (e.g. Augmented Dickey-Fuller test), the PP resolves serial correlation and heteroskedasticity, particularly in the error term. From Table 2, for all the variables, the PP results indicate integration at $I(1)$, with the exception of inflation integrated at $I(0)$. Given the mixed order in which the variables are integrated, the basic underlying assumption of the ARDL method is fulfilled, and thus the technique can be applied.

Table 2: Unit Root Test Results

Variables	t-statistics	Order
SDINDEX	-8.965***	I(1)
INSQ	-8.948***	I(1)
BSD	-9.287***	I(1)
FDI	-9.085***	I(1)
INL	-9.211***	I(1)
INF	-3.287**	I(0)

Note: ** (stationarity at 5%) and *** (stationarity at 1%)

3.3 Bounds-testing for Co-integration

The bounds-testing examines how the variables in the long-term are associated. Depicted in Table 3, the bounds-testing results indicate that at 1% level of significance, the upper critical bound value is lower than the estimated F-statistics value, signifying co-integration among the selected variables. Therefore, the long-run influence of our explanatory factors on stock market development is estimated. The ARDL (2, 3, 4, 4, 4, 3) is carefully chosen following the Akaike Information Criterion (AIC).

Table 3: Results of Bounds Test for Cointegration

Test Statistics	Value	Sig.	Critical bounds	
			I(0)	I(1)
F-Statistic	5.610***	1%	3.06	4.15
k	5	5%	2.39	3.38
		10%	2.08	3.00

Note: *** represents the 1% significance level.

3.4 Estimation of Long-run Relationship

In Table 4, the long-run estimates on the effect of the independent factors on stock market development are presented. The results show that institutional quality tends to significantly drive stock market development albeit negatively. The negative coefficient, however, departs from our prior expectation and provides evidence that despite the continual stringent efforts the Government of Ghana is making to ensuring strong institutions, these measures have no long-term positive influence on the growth of the stock market. Given our indicators of institutional quality, it can be argued that the high level of perceived corruption in Ghana may contribute to the negative relationship. In the stock market, corruption largely leads to poor corporate governance and inefficient regulations resulting in unethical practices in the market (Manasseh et al., 2017, 282). The negative relationship can also be attributed to the level of bureaucracy in almost every aspect of the Ghanaian economy including the financial services sector.

It is reported that the development of the banking sector correlates positively and significantly with stock market growth. This suggests that the growth in banking sector activities is of vital importance to enhancing the size, efficiency, and liquidity level of the stock market in Ghana. The result invalidates the argument that banks are substitutes for stock markets and lends support to banks and stock markets complementarity nexus (Cherif & Gazdar, 2010, 139; Naceur et al., 2014, 214).

The findings evidence that FDI effect on stock market growth is significant with a positive coefficient. The result shows that as FDI rises by a percentage, it leads to a 0.305 percent growth in the stock market. Also, the direct effect of FDI on growth of the stock market confirms its complementary role. Our finding also conforms to prior studies (Yartey, 2010, 1621; Shahbaz et al., 2013, 25).

Contrary to extant studies (e.g. Billmeier & Massa, 2009, 23; Aluko & Kolapo, 2020, 57), a significant albeit negative effect of income level on the development of the stock market is reported. The negative finding supports the proposition that low income and lower middle – income economies have less developed stock markets (Bayraktar, 2014, 84). The high statistical significance of income level shows its importance in stock market growth in Ghana.

Inflation shows a negative insignificant influence on stock market growth. The empirical evidence implies that inflation distorts stock market activities by discouraging the active participation of firms and investors. The assertion that the stock market provides an avenue for investors to reduce risk by hedging against inflation is rejected.

Table 4: Results of Long-Run Estimation

ARDL (2,3,4,4,4,3) Dependent Variable = SDINDEX				
Variable	Coefficient	Std. Error	t-stat.	p-value
INSQ _t	-0.899	0.412	-2.182	0.034**
BSD _t	0.235	0.083	2.831	0.007***
FDI _t	0.305	0.128	2.388	0.021**
INL _t	-4.039	1.280	-3.156	0.003***
INF _t	-0.026	0.018	-1.469	0.148
Constant	7.514	2.854	2.633	0.011**

Note: *** and ** are significance at 1% and 5% respectively.

3.5 Estimation of Short-run Relationship

The short-run estimates are presented in Table 5. The error correction term (ECT) has a negative coefficient (-0.488) which is significant at 1%, showing that the disturbance in our model reduces by 48.8% quarterly towards the equilibrium.

With a significant effect, institutional quality in the short-run positively influences the development of the stock market. Contrary to the long-run inimical evidence, this finding suggests that efforts to firming up the quality of institutions in Ghana only contribute primarily to the short-term growth of the stock market.

Consistent with the result of the long-run, the development of the banking sector and stock market growth are positively associated. In the short-run, however, the effect is insignificant. FDI in the short-run has a positive impact on the development of the stock market albeit insignificantly. Income level positively enhances growth of the stock market, and the effect is significant in the short-term. Conforming to the result of the long-run, inflation impedes the development of the Ghanaian stock market in the short-run.

Table 5: Results of Short-Run Estimation

ARDL (2,3,4,4,4,3) Dependent Variable = SDINDEX				
Variable	Coefficient	Std. Error	t-Stat.	P-value
Δ SDINDEX _{t-1}	0.067	0.099	0.681	0.499
Δ INSQ _{t-2}	1.105	0.379	2.917	0.005***
Δ BSD _{t-3}	0.048	0.056	0.848	0.400
Δ FDI _{t-3}	0.128	0.078	1.639	0.107
Δ INL _{t-3}	5.681	1.357	4.187	0.000***
Δ INF _{t-2}	-0.006	0.011	-0.546	0.588
ECT _{t-1}	-0.488	0.074	-6.605	0.000***
R-squared		0.464		
Adj. R-squared		0.295		
Durbin-Watson stat.		2.096		
F-statistic		19.576		
Prob. (F-stat.)		0.000		

Note: *** represents 1% significance level.

3.6 Diagnostic Tests Results

Several diagnostic tests are carried out to ensure valid findings as reported in Table 6. It can be observed that there is no serial correlation, functional form misspecification, and heteroscedasticity in our model at 5% significance level. Also, the model shows normal distribution as the probability value of the Jarque–Bera test is insignificant at 5% level.

Table 6: Diagnostic Tests Results

Test	F-statistic	P-value
Serial Correlation	0.748	0.478
Heteroscedasticity	1.074	0.402
Jarque–Bera (Normality)	5.414	0.067
Ramsey RESET	1.392	0.170

The recursive estimation of the CUSUM and the CUSUMSQ tests as shown in Figures 1 and 2 respectively indicate the model stability as the CUSUM lines lie in the critical bounds.

Figure 1. Plots of CUSUM

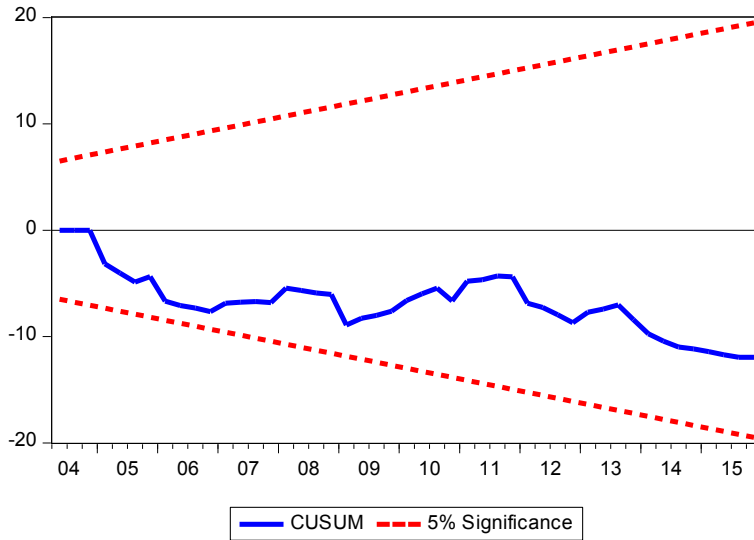
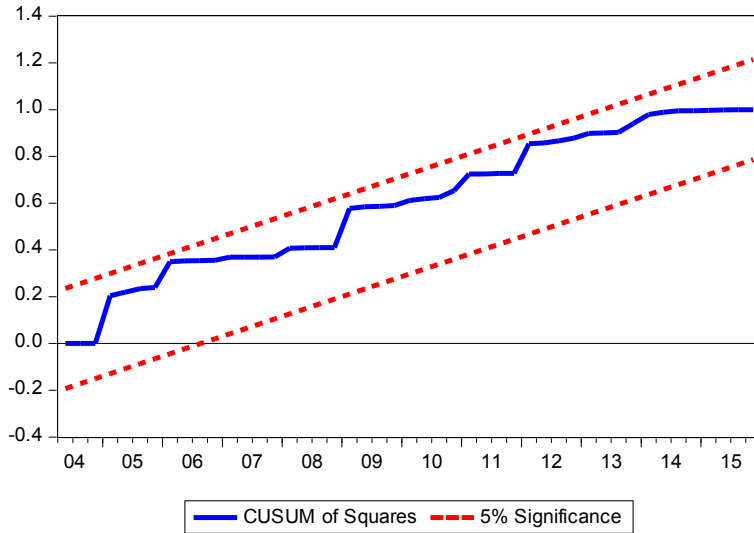


Figure 2. Plots of CUSUM of Squares



Conclusion

The development of the stock market as a key aspect of financial sector development contributes to boosting gross output. Several attempts over the years have been made to scrutinize the significant factors driving the growth of stock markets. In the literature, macroeconomic factors have been thoroughly investigated as factors impacting the development of stock markets. Little evidence

is however provided on how institutional variables affect stock market growth. Also, an appropriate measure of stock market development remains a topical issue as different proxies are employed in the literature. In this study, how institutional quality influences the development of the Ghanaian stock market is assessed. To differ from extant studies, a composite index of stock market development, as well as an institutional quality index, are generated. The study also controlled for the impact of macroeconomic indicators. The results show that institutional quality significantly influences Ghana's stock market growth and the impact is negative in the long-term. It is also revealed that banking sector growth, FDI, and income level are significant long-run macroeconomic factors influencing the development of the Ghanaian stock market. However, only income level at the macro-level matters for stock market growth in the short-term.

Based on our findings, significant recommendations are presented for stock market development in Ghana. First, it is postulated that continual efforts must be made to enhance the quality of institutions. Particularly, policies geared towards improving regulatory quality and control of corruption are imperative for reducing unethical practices in the stock market. Appropriate measures to promoting FDI inflows and the growth of banking sector activities would stimulate long-term growth in the stock market. Efficient policies to keeping inflation at an optimal level would also enhance participation in stock market activities. This study focuses on a single country. It would be therefore interesting for future research to consider a panel approach to explore the institutional quality-stock market growth nexus employing a composite index for stock market development.

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