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Assessment of financial system and economic growth: An empirical evidence from Ghana's stock market

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The importance of a country's financial system to its economic well-being cannot be underestimated. This paper seeks to investigate whether causation exists between Ghana's financial system and economic growth. Ghana's financial system was measured using the efficiency, depth, and stability of the stock market, while economic growth was measured as the Gross Domestic Growth (GDP) per capita growth. The measurement variables were purposively sampled from 2008 to 2020, spanning thirteen years of time series data. The granger causality approach was employed to test the financial system's and economic growth's causation. In analysis the data, the study employed the Augmented Fuller Dickey (ADF) and Phillip Perron (PP) to test the stationarity of the series, the Jerque Bera Variable to test the normality of the data and the VAR and Johansen cointegration to test the order of integration among the variables. The statistical test revealed that the variables were not cointegrated at level; there was a unit root in the series. There was no long or short run relationship among the variables. Furthermore, the regressors' depth, efficiency, and stability of the stock market as proxies for the financial system of Ghana do not cause economic growth. It is recommended that regulatory bodies should pursue policies that would improve the effectiveness, efficiency, depth, and stability of other aspects of the country's financial system and focus less on the stock market due to the discovered relationship between the stock market and economic growth.

Keywords: Financial system, economic growth, stock market.

INTRODUCTION

The financial system of every country exists to ensure efficient resource allocation, mobilization of capital for investment, facilitate monetary policy, enable financial stability, and help payment system. The benefits of a well-functional financial system tend to contribute to the fortune of economic growth and development (Guptha and Prabhakar, 2018). A financial system comprises banks, capital stock exchange markets, and insurance

companies. In both developed and developing economies, the advancement of the financial system and efficient financial market has been identified as a contributing factor to economic growth (Xu et al., 2021). The efficiency and effectiveness of financial systems and their impacts on economic growth can be assessed using different institutions and parameters. However, academics and policymakers have mainly focused on banks' role in

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the financial stability of economies and their contributions to economic growth, with little emphasis on stock exchange markets (Beck and Cull, 2013; Türsoy and Faisal, 2018). For instance, empirical evidence shows that domestic bank credit, non-performing loans, and bank capital to asset ratio positively affect the economic growth of twenty-eight (28) European Countries (EU) (Prochniak and Wasiak, 2017). The evidence from the developing countries is different. Bank credit negatively affects the economic growth of sixty (60) developing countries (Narayan and Narayan, 2013). The situation is not different with research on Sub-Saharan African (SSA) countries. Most African countries' financial systems are developed, and their structure totally relies on the banking industry with a more significant influence on the countries' economic growth at the total or partial neglect of the stock exchange market (Ouedraogo and Sawadogo, 2022). Notwithstanding the overemphasis literature on the impact of the banking industry as a pivot in the financial system on economic growth, there is strong evidence of the crucial role of an efficient stock exchange market in economic growth (Guptha and Prabhakar, 2018). It is not yet clear if this similarly holds for developing SSA countries. Consequently, this study evaluates Ghana's financial system in the quest to understand whether or not it contributes to economic growth. According to studies, Ghana's financial system is at a growing stage, inefficient, and coupled with challenges that stem from inappropriate dealings and inefficiencies by players in the various industries that make up the sector (Sackey and Nkrumah, 2012; Ofori-Abebrese et al., 2017; Amenu-Tekaa, 2022). The account put forward portrays that the inefficiencies led to the collapse and outright revocation of the license of several banks (Amenu-Tekaa, 2022). However, the Bank of Ghana (BoG) accounts that the country's financial system is robust and resilient to the extent that players are posing high growth potential amidst higher profit due to the recent clean-up of the financial sector (BoG, 2019). Moreover, there is empirical evidence of the impact of the banking industry, one of the blocks in Ghana's financial system, to economic growth (Sackey and Nkrumah, 2012; Ibrahim and Alagidede, 2020). The bank-based financial system is less sensitive to economic growth than the equity-based market (Ergungor, 2008; Liu et al., 2022). This varied fragmented discourse on the financial system calls for more empirical interrogation to establish the relationship between Ghana's financial system and economic growth. In doing so, this paper seeks to assess if Ghana's financial system based on efficiency (EF), stability (ST), and depth (DT) causes economic growth. The study would serve three thematic purposes. First, its findings would inform policymakers; again, practitioners in the financial sector would take a cue in structuring their policies and deals to enhance economic development. Finally, it would enrich the diverse literature on the discourse on the financial system and economic growth.

and policy recommendations.

LITERATURE REVIEW

Theoretical review

No single economic theory explains the relationship between the financial system and economic growth. However, this paper explores three theoretical frameworks that underpin the relationship between the stock market as a proxy for the financial system and economic growth. The three theories are the efficient market theory, asset pricing theory and Fisher's Hypothesis. First and foremost, the efficient market theory has been reconnoitred theoretically and empirically to conclude how security prices behave in an efficient market in different financial systems. The theory of efficient stock assumes that the security prices change fully to reflect the available information about individual stock, the entire stock market, or the economy (Fama, 1970). Although the term "how efficient is the stock market" has received many critiques as limitations to the efficient market theory, many scholars and researchers have tested, proven and added to the evolving of the effectiveness of the theory assumptions (Rayball, 1989; Adam and Tweneboah, 2008; Malkiel, 2003). The hypotheses of the efficient market theory have been used to assess stock market efficiency as either strong, semi-strong or weak form and the extent of such form contributions to the financial system (Ozdemir, 2008; Mubarak and Fadhli, 2020). The contribution of the stock market's efficiency has been linked to security prices and economic growth (Lee and Lee, 2009). The performance of the security prices, which reflects the efficiency of the market, is evident with the market's annual stock turnover as available information (Fama, 1970; Osei, 2002). Most empirical studies of the efficient market theory used the stock turnover to measure market efficiency information (Ozdemir, 2008; Shah et al., 2019; Bouteska and Regaieg, 2020).

Moreover, the asset pricing theory, as propounded (Ross, 1976) and deployed in empirical studies on the stock market (Osei, 2002; Adu et al., 2013), asserts that volatility in the prices of listed stocks on an exchange is affected by systematic factors as well as unsystematic factors. The systematic factors, as proffered by the theory, refer to macroeconomic factors inherent in an economy which influences the mechanism that takes place in determining asset prices, whilst the unsystematic factors are those industry-specific variables that come with the particular industry a firm chooses to invest (Chen et al., 1986). These two distinct factors play an instrumental role in determining the price of listed stocks. As mentioned earlier, the effectiveness and accuracy of the factors reflect the efficiency and stableness of a country's financial market (Borio and Drehmann, 2009).

The effectiveness of the interaction between the asset pricing mechanisms would entice foreign firms to enlist their securities on a country's stock market (Martinez-Jaramillo et al., 2016). The higher the number of expatriate firms listed on the exchange, the higher the depth of the financial market of such country and consequentially higher economic growth with *ceteris paribus*. The asset price theory does not provide a framework that suggests that macroeconomic factors affect stock price volatility rather than the asset price; the Fisher hypothesis proposed that expected nominal annual stock returns are a sum of the real returns and expected rate of inflation (Srivastava, 2010).

Lastly, Fisher's hypothesis, also known as Fisher's theory, is an economic framework brought by Irving Fisher (1930) which asserts that the real interest rate is distinct from monetary mechanisms, precisely the nominal interest rate and the expected rise in the general price of goods and services (Fisher, 1930). The framework describes the linkage between real and nominal interest rates and inflation. According to Fischer (1993), the difference between the real interest rate and the expected level of inflation sum up to the real interest rate. Consequentially a rise in the inflation rate equals a fall in the real interest rate unless a commensurable increment occurs in the nominal interest rate (Fischer, 1993). This volatility necessarily affects the stability of the financial market of every country, however, at different degrees depending on the level of financial advancement and economic growth of the country in question (Borio and Drehmann, 2009). The extent of the volatility of interest rates and inflation influences stock price volatility and thereby determines the financial system's stability. The underpinning assumptions of asset pricing theory and Fisher's hypothesis clearly suggest the interplay of stock prices and macroeconomic factors that determine the stability of a country's financial system and general economic climate. The theoretical framework of Fisher's hypothesis, the efficient market theory and the asset prices theory underpins a country's depth of financial system. Moreover, stock price volatility and stock market turnover are rooted in the assumptions of the efficient market theory and asset prices theory. This study adopts these theoretical frameworks to test the extent of Ghana's financial system's depth, efficiency and stability using the stock market as a proxy.

Empirical review

The existing literature on the financial system and economic growth demonstrates dimensions where possible literature gaps that needs attention in Ghana's financial system. The financial system of a developing financial market is characterized by various factors contributing to market performance and economic growth. The factors identified by existing literature as

influencing market efficiency are appropriate legal and regulatory framework, the efficiency of the securities exchange commission, a dynamic stock exchange market, and the extent of available information on a firm's performance (Williams and Hussein, 2018). The stock market is described as efficient when the asset price fully displays all the available information (Eakins and Mishkin, 2012). The level of stock market efficiency has been identified as a key contributing factor to the stock market performance and its contribution to the economic climate of the country of operations (Bodeutsch and Franses, 2015; Jayakumar et al., 2018). For instance, weak stock market efficiency has been significantly linked to different degrees of economic growth (Aktan et al., 2019). The general empirical studies on the Ghana Stock Exchange (GSE) have mainly focused on the performance of the listed firms with few emphases on the efficiency of the market and the possible contribution to economic growth. A corporate financial performance review on GSE-listed banks indicates that the bank's internal variables tend to increase profitability (Oduro et al., 2019) while the unlisted banks' financial performance is inverse with the level of leverage (Gadzo and Asiamah, 2018). With regards to market efficiency, the GSE is not efficient due to high transactional cost, low firm participation, and slow market competition (Ayentimi et al., 2013). The GSE inefficiency is insensitive to firms' returns on the market (Awiagah and Sup Brian Choi, 2018). It has also been established that the GSE is inefficient due to the information release of the annual earnings and the general market climate of the GSE is inconsistent with Efficient Market Hypothesis (EMH) theory (Osei, 2002). The inefficient market of GSE has several implications for domestic and international investors and economic growth (Magnus, 2008). Moreover, the competition in the stock market turns to improve efficiency, thereby impacting the country's economic growth (Cojocararu et al., 2016).

The extent of GSE efficiency, performance, and contribution to economic growth is evident in the market regulations and the enforcement of those regulations (Tagoe, 2019). In Ghana, the level of economic growth and the extent of influence of sectors such as the financial system varies based on the financial market's performance and development. There is evidence of a strong effect of Ghana's capital market performance on economic growth (Acquah-Sam and Salami, 2014). The dynamic shocks in Ghana's financial system development tend to have short-run and long-run effects on the country's economic growth (Ibrahim and Alagidede, 2020). Besides, the government's policy decisions, such as monetary policy, have a significant positive impact on Ghana's stock market and influence economic growth (Antwi et al., 2021). A critical analysis of literature across continents and countries shows that the extent of the financial system's impact on economic growth is determined by the choices of the variables used

in the measurement of economic growth and the proxy of the financial system, thus, resulting in different findings (Adu et al., 2013; Alexiou et al., 2018). As an element that determines economic growth, the financial system has been measured as domestic credit (Mishra and Narayan, 2015; Prochniak and Wasiak, 2017), bank non-performing loans, and market capitalization (Prochniak and Wasiak, 2017; Antwi et al., 2021). In almost all these empirical studies, economic growth is measured by Gross Domestic Product (GDP).

In some studies, GDP is specifically measured in terms of non-oil sectors to evaluate the financial system's effect on economic growth (Ogbonna et al., 2020). In the broader context, using the capital market (Choe and Moosa, 1999) and the banking industry (Jayakumar et al., 2018; Appiah-Otoo and Song, 2022) as proxies shows that the financial system contributes to economic growth because of the crucial role of financial intermediaries. In addition to market efficiency, the varying proxies of the financial system influence economic growth (Türsoy and Faisal, 2018). Furthermore, the literature on the context of Ghana's economic growth shows that remittances positively impact economic growth, while external debt and foreign direct investment negatively affect economic growth in the long run. The extent of the domestic financial system's impact on economic growth is hardly being investigated. Even if it is considered, the focus has mainly been on the banking sector in the financial system. A recent study concludes that banks' variables to GDP significantly negatively affect the financial system and economic growth in the long run (Appiah-Otoo and Song, 2022). Although the banking sector plays a major role in Ghana's financial system, the sector has, over the years, experienced challenges leading to amalgamation and revocation license of some banks (Amuakwa-Mensah and Marbuah, 2015; Obuobi et al., 2020); hence using the sector as a proxy of the financial system in addition to the existing literature may not contribute much to the body of knowledge in the field. Also, there are mixed empirical results on the relationship between the financial system and economic growth regarding measurement and proxy of the markets. This paper seeks to add to the literature by using Ghana's stock market measures in terms of financial depth, market efficiency, and stability to establish the influence of the financial system on economic growth.

Conceptual framework and hypothesis

The three parameters in the study are fragmented since prolonged stability can lead to greater depth; thus, providing various financial services to the client would lead to efficiency. The depth of the financial system shows how deep or rich services are rendered by players in the financial system (Kim, 2016). Furthermore, the efficiency of financial services can be achieved when

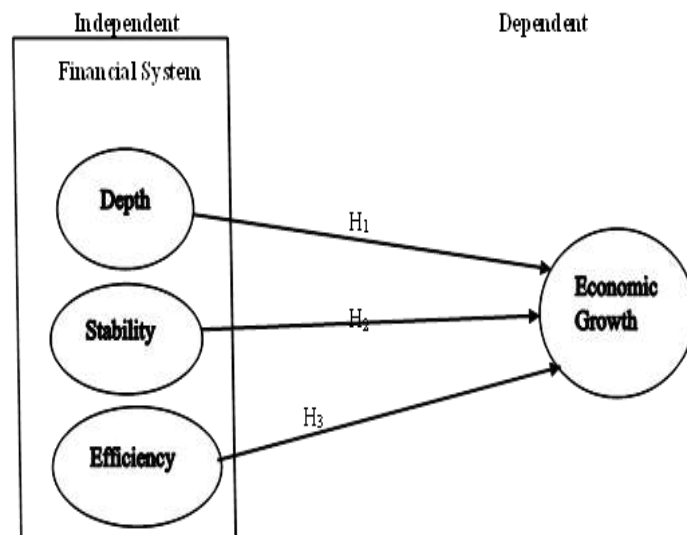


Figure 1. Proposed conceptual framework. Author's construct (2022).

there is less volatility in the system and, thus, stability. These would jointly impact economic growth. Figure 1 depicts a visual representations of the proposed conceptual framework for the study.

Conceptual framework

Proposed Research Hypothesis Development:

- H₁: Depth of financial system leads to economic growth.*
H₂: Stability in the financial system causes economic growth
H₃: Efficiency in the financial system predicts economic growth

METHODOLOGY

The study adopted causal research as the design where the hypothesized individual variables would be regressed on economic growth as the dependent variable. The various variables included in the study are selected based on the indicators employed to assess the financial system. The depth of Ghana's financial system is measured by international debt securities to GDP. The efficiency of the financial system is measured as the stock market turnover ratio. The use of multi-proxies to measure the financial system is motivated by the literature, and studies assert that defining a single appropriate variable for financial system development is a daunting task faced by empirical studies (Türsoy and Faisal, 2018; Koçoğlu and Cihangir, 2021; Kuranchie-Pong and Forson, 2022). In addition, the measuring construct for financial system stability is stock price volatility (Antwi et al., 2021), while the dependent variable, economic growth, is measured by GDP per capita annual growth, as used by Barradas (2020). The multidimensional measure gives a comprehensive and broad assessment of the financial system development encompassing depth, efficiency, and volatility (Beck and Cull, 2013). Yearly data for Ghana's financial system

was assembled from 2008 to 2020, spanning a period of 13 years of time series observations. This period also represents the time frame within which data for all other variables employed in the study were collected. This period was considered for the study since most indicators' data were unavailable before 2008. Moreover, 2008 was the year the global economy experienced a severe financial crisis where the financial systems of emerging economies, including Ghana, were worst hit (Blankenburg and Palma, 2009). Again, data for variables that predate 2008 were not in full. Since then, Ghana's financial structure has witnessed several structural adjustments, including recapitalization and stock market listing requirements (BoG, 2019). The study employed the Granger causality framework as the estimation technique for its analysis (Granger, 1969). The adoption of the method is based on its usage in the empirical literature (Türsoy and Faisal, 2018; Koçoğlu and Cihangir, 2021; Kuranchie-Pong and Forson, 2022). Again, the decision to employ granger causality is premised on the relationship the study intended to test. Moreover, since the data for the studied variables were time series, employing granger causality would serve the purpose of other conventional estimation models. Also, the approach assumes that DT, EF, and ST granger cause economic growth. This condition makes it suitable for the study since it assesses the effect of the regressors on the regressand (Granger, 1969). Since the data used is time series data, the stationarity of the variables needs to be tested; ignoring this would lead to spurious problems (Jayakumar et al., 2018). The Augmented Dickey-Fuller (ADF) tests for unit roots to ensure the variables are integrated in the same order (Harris, 1992).

Where Y_t is a Random Walk and assumes the forms as follows:

$$\Delta Y_t = \partial Y_t - 1 + \alpha_i \sum_{i=1}^m \Delta Y_t - 1 + \varepsilon_i$$

Y_t is a Random Walk with an intercept:

$$\Delta Y_t = \beta_1 + \partial Y_t - 1 + \alpha_i \sum_{i=1}^m \Delta Y_t - 1 + \varepsilon_i$$

Y_t is a Random Walk with an intercept and time trend:

$$\Delta Y_t = \beta_1 + \beta_2 t + \partial Y_t - 1 + \alpha_i \sum_{i=1}^m \Delta Y_t - 1 + \varepsilon_i$$

The Philip-Person (PP) statistical test is a different approach to checking the unit root of a dataset. However, the rationale governing this does not differ from the ADF method. Notwithstanding, the PP test adds a non-parametric statistical approach to cater for serial correlation in the residual and does not add the lagged difference into the model. Below is the notation of the PP test.

Y_t is a random walk and takes the form as follows:

$$\Delta Y_t = \partial Y_t + \varepsilon_i$$

Y_t is a random walk with an intercept.

$$\Delta Y_t = \beta_1 + \partial Y_t + \varepsilon_i$$

Y_t is a random walk with intercept and time trend

$$\Delta Y_t = \beta_1 + \beta_2 + \partial Y_t + \varepsilon_i$$

$$Y_t = Y_t - 1 + Y_t - 2 + Y_t - n + X_t - 1 + X_t - 2 + X_t - n$$

$$GDP_G = [DT, EF, ST]$$

Where: Y_t represents economic growth; DT denotes the depth of financial services; EF represents the efficiency of the financial system; ST denotes volatility of the financial system, while t denotes time. GDP_G represents gross domestic product per capita growth.

Descriptive statistics

Beside the above modeling, this research used descriptive statistics to characterize the variables under study. According to Hejase and Hejase (2013), "descriptive statistics deals with describing a collection of data by condensing the amounts of data into simple representative numerical quantities or plots that can provide a better understanding of the collected data" (p. 272). Therefore, this study analyzed data collected with descriptive statistics such as frequencies, percentages, minimum, maximum, and other terms supported with a table for clarity.

RESULTS AND DISCUSSION

The results of various statistical tests and their corresponding discussions and interpretations are presented in this study. For any quantitative inquiry, the data's description and summary are paramount. According to the descriptive statistics in Table 1, financial system stability had a maximum of 13.255, while that of economic growth was 11.315. The maximum efficiency of the financial system was 10.083, while the depth of the financial system recorded 15.214 as the maximum. The mean for economic growth was 3.880, efficiency was 5.675, and that of stability of the financial system was 9.225. In addition, the mean for the depth of the financial system was 7.466. In total, the most divergent data from the center of the distribution was depth, with a standard deviation of 5.036, while the least deviated variable for the average of the distribution was stability which registered a standard deviation of 1.730. Efficiency is highly skewed to the left, notwithstanding the financial system's stability skewed to the right. Jarque's test showed that the dataset is normally distributed. The study begins by adjusting a Vector Error Correction Model (VAR) by identifying the Data Generating Process (DGP) to detect the characteristics of all variables. This VAR requires the study to estimate if the model would incorporate an aspect of intercept and time trend. Thereafter, the sampled indicators being its GDP_G, DT, EF, and ST, would be subjected to unit tests, and only variables that integrate in the same order would be subjected to cointegration analysis. The variables were subject to the stationarity test through the ADF test and PP stationarity test; relying on the automatic level of precision selection by Akaike Information Criterion (AIC) and Schwarzman Information Criterion (SIC), using the PP approach to select the maximum lag length. Since the visual plot is usually the initial step in time series analysis, the study plotted the stationarity of the variables at level specification, as shown in Figure 2. The charts clearly show that the variables have no stationarity at a level, which signifies that their respective means

Table 1. Descriptive statistics.

	ST	GDP_G	EF	DT
Mean	9.225185	3.879667	5.675323	7.462634
Median	9.037324	4.229181	6.729468	6.988401
Maximum	13.25488	11.31541	10.08304	15.21416
Minimum	6.898379	-1.605116	0.353179	1.817259
Std. Dev.	1.729589	3.469663	3.011204	5.305785
Skewness	0.931741	0.340837	-0.351039	0.229973
Kurtosis	3.466984	2.833395	1.854546	1.418631
Jarque-Bera	1.999098	0.266737	0.977697	1.469151
Probability	0.368045	0.875143	0.613332	0.479709
Sum	119.9274	50.43567	73.77920	97.01425
Sum Sq. Dev.	35.89772	144.4627	108.8082	337.8162
Observations	13	13	13	13

Source: Author

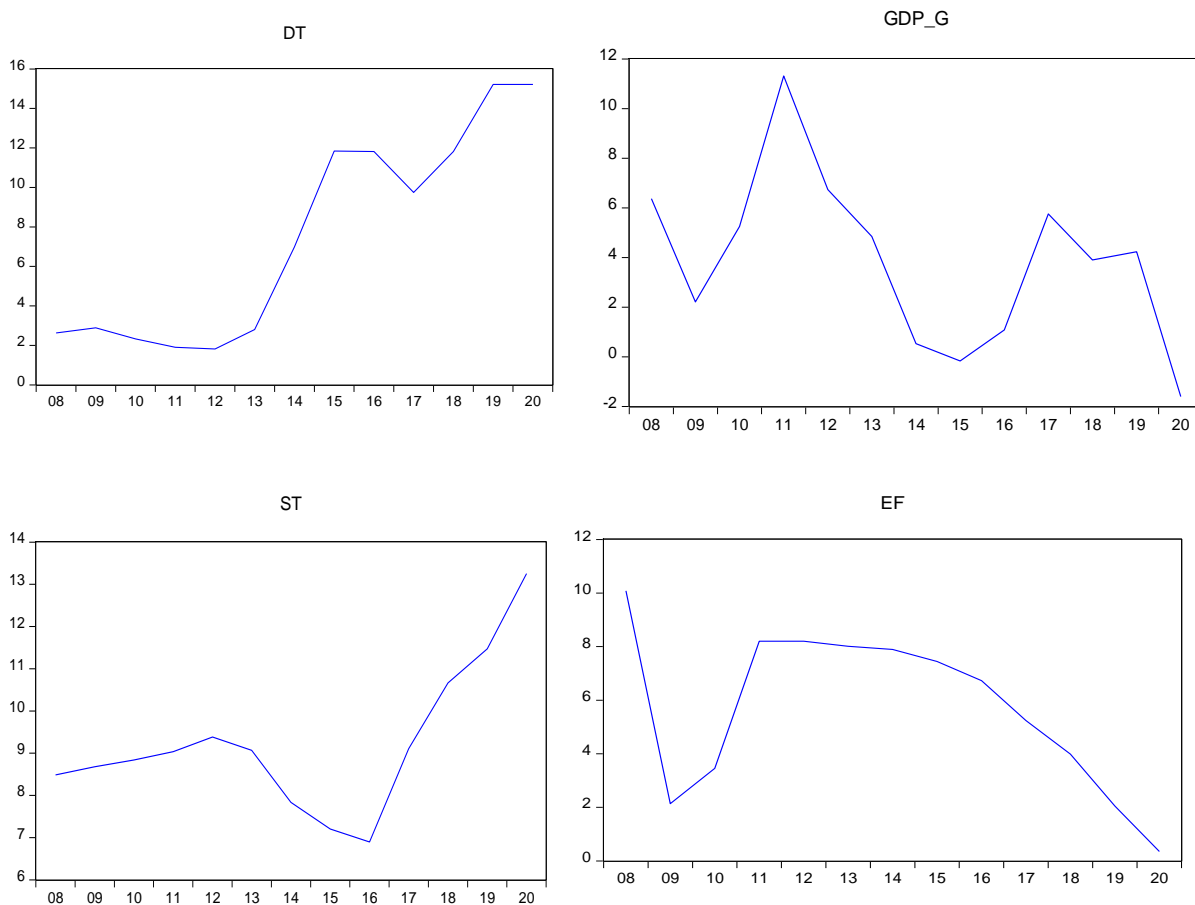


Figure 2. Stationarity of variables at Levels (Levels).
Source: Author

and variance are not constant.

This finding agrees with previous studies that found unit roots for variables at level (Forson and Janrattagul,

2014). For instance, the graphs for GDP_G and DT showed a fluctuating movement throughout the study period. Contrastingly, the graph for ST showed ups and downs, while that of EF demonstrated a decreasing trend

Table 2. Unit root of variables at level specification.

At level	ADF		PP		ADF		PP	
	Intercept		Intercept		Intercept and Trend		Intercept and Trend	
	t-stats	p-value	Adj-stat	p-value	t-stats	p-value	Adj-stat	p-value
GDP_G	-1.86148	0.3368	-1.97242	0.2931	-3.45439	0.101	-1.88456	0.6009
DT	-0.12536	0.9206	0.132567	0.9539	-3.67873	0.0708	-2.36844	0.3737
EF	0.769242	0.9865	-2.00239	0.2818	-4.21259	0.0386	-1.86648	0.6101
ST	-0.70161	0.8064	-0.00745	0.9396	-0.90475	0.9153	-0.35902	0.9745

Source: Author.

Table 3. Unit root at first difference.

First Diff	ADF		PP		ADF		PP	
	Intercept		Intercept		Intercept and Trend		Intercept and Trend	
	t-stats	p-value	Adj-stat	p-value	t-stats	p-value	Adj-stat	p-value
GDP_G	-3.3629	0.0432	-3.03911	0.0619	-3.42319	0.113	-2.91293	0.1969
DT	-1.33884	0.5621	-2.218	0.2108	-0.94136	0.8955	-1.72158	0.6719
EF	-2.87613	0.086	-4.23359	0.0095	-7.05397	0.001	-11.0475	0.0001
ST	-1.31959	0.5802	-1.31959	0.5802	-1.85574	0.6104	-1.67595	0.6924

Source: Author

with its peak during the 2008 financial crisis and economic downturn.

Unit Root

In statistical analysis, whenever a time series data exhibits the absence of a unit root, the series is integrated of order 0 or I (0). Nonetheless, if a series is integrated at I (1), I (2), or I (3), it means stationarity can only be achieved at the first difference, second difference, or third difference, respectively. After employing ADF and PP tests which test the null hypothesis that there is unit root and stationarity, the study ascertained mixed results for intercept and intercept with a time trend. Using the ADF for intercept and intercept with time trend, only efficiency was found without a unit root at a 5% level. However, as a confirmatory test, the PP test was employed to ascertain stationarity, but none of the variables was stationary at a level. This PP test outcome led to testing at the first difference using both approaches. The ADF test found the GDP_G intercept without a unit root at the first difference at a 5% significance level. Again, the intercept and time trend of EF had a p-value of 0.001. Therefore, the null is rejected, concluding that EF does not have a unit root at first difference. PP test found the intercept and time trend of efficiency to be stationary at first difference. The remaining variables were either at the unit root or not stationary. The result means that at a level, only EF had its means and variance constant, which implies that the financial system was efficient at the level while the

efficiency of the system was higher at the first difference (Tables 2 and 3).

Cointegration test

In further analysis, a test was conducted to examine whether the variables are cointegrated. Johansen cointegration test was performed to determine the order in which the variables are integrated. The result revealed that the variables are not cointegrated. Therefore, the VAR approach was used to estimate the short-run relationship among the variables. Since estimating the cointegration between the variables is not enough to assess the robustness of our test. The trace statistic and maximum eigenvalues statistic, and granger causality tests were deployed.

Granger causality test

The presence of a unit root problem due to the rejection of the alternative hypothesis means that the series is non-stationary. This outcome makes it inappropriate and inefficient if the study applies the conventional granger causality test or investigates causality between the independent and dependent tests, making it necessary to select an alternative: Toda Yamamoto granger causality. The Toda and Yamamoto granger causality test was developed to serve as an alternative and more robust approach that tests causality among variables regardless of whether the variables are non-stationary or at the unit

Table 4. Result of Toda and Yamamoto Granger Causality test.

Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
GDP_G does not Granger Cause ST	11	1.66111	0.2666
ST does not Granger Cause GDP_G		0.80964	0.4883
EF does not Granger Cause ST	11	0.92775	0.4456
ST does not Granger Cause EF		1.15365	0.3768
DT does not Granger Cause ST	11	14.4889	0.0050
ST does not Granger Cause DT		0.68181	0.5410
EF does not Granger Cause GDP_G	11	0.11027	0.8974
GDP_G does not Granger Cause EF		0.05405	0.9478
DT does not Granger Cause GDP_G	11	3.06114	0.1213
GDP_G does not Granger Cause DT		0.33694	0.7266
DT does not Granger Cause EF	11	6.27841	0.0338
EF does not Granger Cause DT		0.17317	0.8451

Source: Author

root. Therefore, the causality among the variables was tested using the Toda and Yamamoto granger causality, as shown in Table 4. Per the Toda Yamamoto test output, the null hypothesis that ST does not cause GDP_G cannot be rejected; thus, ST does not cause GDP_G. This output implies that the stock market's stability does not lead to economic growth. It violates the study's assumption that the more stable the financial system is, the higher the economic improvement. The result is in line with the findings of previous studies (Alexiou et al., 2018; Ehigiamusoe and Lean, 2018). However, the same contradicts the findings of previous studies (Bodeutsch and Franses, 2015; Min et al., 2018). The efficiency of the financial market was found to be inversely related to economic growth in Ghana. This outcome is based on the failure to reject the null hypothesis that efficiency does not cause economic growth. No long-run or short-run causality is running from efficiency to economic growth. This result means that the past efficient level of the stock market does not lead to economic growth in Ghana, which rejects the study's initial hypothesis. This discovery conforms with the findings of Bhattacharya et al., (2019). However, the result disagrees with the findings of Min et al. (2018) and Antwi et al. (2021), who found the efficiency of a financial market to predict economic growth. Again, the depth of Ghana's stock market does not cause economic growth, and the null hypothesis is accepted due to a p-value of 0.121. The result means that the level of depth of the stock market activities is, the slower the economic growth; thus, there is no causality from depth to

economic growth. This outcome confirms the conclusions of Alexiou et al. (2018) and Ehigiamusoe and Lean (2018) that the financial system decelerates economic growth; the same finding contradicts the assertions of Barradas (2020) and Jayakumar et al. (2018).

CONCLUSIONS AND POLICY RECOMMENDATIONS

The financial system's contribution to a country's economic growth has been spearheaded as headlines in previous studies and discussions. Ghana's financial system and its predicting power on economic growth are less researched. This paper explored the causality relationship between the development of Ghana's financial system proxied as depth, efficiency, and stability of the stock market while economic growth was measured as GDP growth per capita. The study employed the ADF and PP tests to examine the stationarity of the series. The Johansen cointegration was employed to test the possibility of the long-run and short-run relationship among the variables through the VAR approach. Again, due to unit root behaviour exhibited by the variables at both level and first difference, the study deployed the Toda and Yamamoto granger causality test as an alternative to the conventional granger causality. The paper concludes that the depth of the stock market in Ghana does not granger cause economic growth. Thus, improving the depth of the stock market operations does not lead to economic growth. A similar result was found in the case of the efficiency and stability of the stock

market, implying that the more efficient and stable the stock market becomes, the slower the country's economic growth. This result deviates from conventional expectations of literature due to challenges that trickled into the study. Just as most empirical apprehensions face, the study was not without limitations. Data unavailability and difficulty in retrieving data were the main limitations. The findings have various policy implications. Regulatory bodies in the financial system should consciously provide data on the stock exchange's operations to facilitate academic and policy apprehension. The regulatory bodies should pursue policies that would improve the effectiveness, efficiency, depth, and stability of other aspects of the country's financial system and focus less on the stock market due to the discovered relationship between the stock market and economic growth. Future research should examine the effect: the long run and the short run, of insurance markets and economic growth. Furthermore, academia can collaborate to use other non-conventional approaches and indicators in exploring the afore-tested relationship

CONFLICT OF INTERESTS

The author has not declared any conflict of interest.

REFERENCES

- Acquah-Sam E, Salami K (2014). Effect of capital market development on economic growth in Ghana. *European Scientific Journal* 10(7).
- Adam AM, Tweneboah G (2008). Macroeconomic Factors and Stock Market Movement: Evidence from Ghana. *SSRN Electronic Journal*.
- Adu G, Marbuah G, Mensah JT (2013). Financial development and economic growth in Ghana: Does the measure of financial development matter?. *Review of Development Finance* 3(4):192-203.
- Aktan C, Iren P, Omay T (2019). Market development and market efficiency: Evidence based on nonlinear panel unit root tests. *The European Journal of Finance* 25(11):979-993.
- Alexiou C, Vogiazas S, Nellis JG (2018). Reassessing the relationship between the financial sector and economic growth: Dynamic panel evidence. *International Journal of Finance and Economics* 23(2):155-173.
- Amenu-Tekaa KS (2022). Examining the Survival Strategies of Banks in Ghana in the Post—2017 Banking Crisis. *Research Journal of Finance and Accounting* 13(2):47-4-58.
- Amuakwa-Mensah F, Marbuah G (2015). The Determinants of Net Interest Margin in the Ghanaian Banking Industry. *Journal of African Business* 16(3):272-288.
- Antwi S, Issah M, Kpodo R (2021). Stock market and economic growth nexus in Ghana. *Bulletin of Applied Economics* 8(2):57-73.
- Appiah-Otoo I, Song N (2022). Finance-growth nexus: New insight from Ghana. *International Journal of Finance and Economics* 27(3):2682-2723.
- Awiagah R, Sup Brian Choi S (2018). Predictable or Random?-A Test of the Weak-Form Efficient Market Hypothesis on the Ghana Stock Exchange. *Journal of Finance and Economics* 6(6):213-222.
- Ayentimi DT, Mensah AE, Naa-Idar F (2013). Stock market efficiency of Ghana stock exchange: An objective analysis. *International Journal of Management, Economics and sSocial Sciences* 2(2):54-57.
- Barradas R (2020). Does the financial system support economic growth in times of financialisation? Evidence for Portugal. *International Review of Applied Economics* 34(6):785-806.
- Beck T, Cull R (2013). *Banking in Africa*. World Bank Policy Research Working Paper, 6684. Available at: <https://ssrn.com/abstract=2348417>
- Bhattacharya SN, Bhattacharya M, Basu S (2019). Stock market and its liquidity: Evidence from ARDL bound testing approach in the Indian context. *Cogent Economics and Finance* 7(1):1586297.
- Blankenburg S, Palma JG (2009). Introduction: The global financial crisis. *Cambridge Journal of Economics* 33(4):531-538.
- Bodeutsch D, Franses PH (2015). The Stock Exchange of Suriname: Returns, Volatility, Correlations, and Weak-Form Efficiency. *Emerging Markets Finance and Trade* 51(1):130-139.
- BoG (2019). Bank of Ghana Annual Report 2019 [Annual Report]. Bank of Ghana. Available at: <https://www.bog.gov.gh/wp-content/uploads/2019/07/AnnRep-2018.pdf>
- Borio CEV, Drehmann M (2009). Towards an Operational Framework for Financial Stability: "Fuzzy" Measurement and Its Consequences. *SSRN Electronic Journal*.
- Bouteska A, Regaieg B (2020). Loss aversion, overconfidence of investors and their impact on market performance evidence from the US stock markets. *Journal of Economics, Finance and Administrative Science* 25(50):451-478.
- Chen NF, Roll R, Ross SA (1986). Economic forces and the stock market. *Journal of Business*, pp. 383-403.
- Choe C, Moosa IA (1999). Financial System and Economic Growth: The Korean Experience. *World Development* 27(6):1069-1082.
- Cojocar L, Falaris EM, Hoffman SD, Miller JB (2016). Financial System Development and Economic Growth in Transition Economies: New Empirical Evidence from the CEE and CIS Countries. *Emerging Markets Finance and Trade* 52(1):223-236.
- Eakins G, Mishkin S (2012). *Financial Markets and Institutions*. Prentice Hall.
- Ehigiamusoe KU, Lean HH (2018). Finance–Growth Nexus: New Insights from the West African Region. *Emerging Markets Finance and Trade* 54(11):2596-2613.
- Ergungor OE (2008). Financial system structure and economic growth: Structure matters. *International Review of Economics and Finance* 17(2):292-305.
- Fama EF (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance* 25(2):383.
- Fischer S (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics* 32(3):485-512.
- Fisher I (1930). *The Theory of Interest*. Macmillan.
- Forson JA, Janrattanagul J (2014). Selected Macroeconomic Variables and Stock Market Movements: Empirical Evidence from Thailand. *Contemporary Economics* 8(2):154-174.
- Gadzo GS, Asiamah SK (2018). Assessment of the relationship between leverage and performance: An empirical study of unlisted banks in Ghana. *Journal of Economics and International Finance* 10(10):123-133.
- Granger CWJ (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica* 37(3):424.
- Guptha KS, Prabhakar R (2018). The causal relationship between financial development and economic growth: An experience with BRICS economies. *Journal of Social and Economic Development* 20(2):308-326.
- Harris RID (1992). Testing for unit roots using the augmented Dickey-Fuller test. *Economics Letters* 38(4):381-386.
- Ibrahim M, Alagidede IP (2020). Asymmetric effects of financial development on economic growth in Ghana. *Journal of Sustainable Finance and Investment* 10(4):371-387.
- Jayakumar M, Pradhan RP, Dash S, Maradana RP, Gaurav K (2018). Banking competition, banking stability, and economic growth: Are feedback effects at work? *Journal of Economics and Business* 96:15-41.
- Kim JH (2016). A Study on the Effect of Financial Inclusion on the Relationship Between Income Inequality and Economic Growth. *Emerging Markets Finance and Trade* 52(2):498-512.
- Koçoğlu Ş, Cihangir ÇK (2021). Oil Prices, Economic Policy Uncertainty and Stock Market Returns in Oil Importing Countries: The impact of COVID-19 pandemic. *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*.
- Kuranchie-Pong R, Forson JA (2022). Overconfidence bias and stock market volatility in Ghana: Testing the rationality of investors in the

- Covid-19 era. *African Journal of Economic and Management Studies* 13(1):147-161.
- Lee CC, Lee JD (2009). Energy prices, multiple structural breaks, and efficient market hypothesis. *Applied Energy* 86(4):466-479.
- Liu P, Peng Y, Shi Y, Yang J (2022). Financial structures, political risk and economic growth. *The European Journal of Finance* 28(4-5):356-376.
- Magnus FJ (2008). Capital market efficiency: An analysis of weak-form efficiency on the Ghana Stock Exchange. *Journal of Money, Investment and Banking* 5(5):5-13.
- Malkiel BG (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspectives* 17(1):59-82.
- Martinez-Jaramillo S, Molina-Borboa JL, Bravo-Bernitez B (2016). The role of Financial Infrastructures in Financial Stability: An Overview' in Chapter 2 of *Analyzing the Economics of Financial Market infrastructures*, IGI Global.
- Min Z, Weidong C, Jingtong Z, Xinzhe G, Qiyue X (2018). The development of China's financial system: A global perspective. *China Economic Journal* 11(1):25-43.
- Mishra S, Narayan PK (2015). A nonparametric model of financial system and economic growth. *International Review of Economics and Finance* 39:175-191.
- Mubarok F, Fadhli MM (2020). Efficient Market Hypothesis and Forecasting in the Industrial Sector on the Indonesia Stock Exchange. *Journal of Economics, Business, and Accountancy Ventura* 23(2).
- Narayan PK, Narayan S (2013). The short-run relationship between the financial system and economic growth: New evidence from regional panels. *International Review of Financial Analysis* 29:70-78.
- Obuobi B, Nketiah E, Awuah F, Amadi AG (2020). Recapitalization of Banks: Analysis of the Ghana Banking Industry. *Open Journal of Business and Management* 8(1):78-103.
- Oduro R, Amoh Aseidu M, Gadzo SG (2019). Impact of credit risk on corporate financial performance: Evidence from listed banks on the Ghana stock exchange. *Journal of Economics and International Finance* 11(1):1-14.
- Ofori-Abebrese G, Pickson RB, Diabah BT (2017). Financial Development and Economic Growth: Additional Evidence from Ghana. *Modern Economy* 8(2):282-297.
- Ogbonna OE, Mobosi IA, Ugwuoke OW (2020). Economic growth in an oil-dominant economy of Nigeria: The role of financial system development. *Cogent Economics and Finance* 8(1):1810390.
- Osei KA (2002). Asset pricing and information efficiency of the Ghana Stock Market. AERC.
- Ouedraogo S, Sawadogo H (2022). Financial development, financial structure and economic growth in the Sub-Saharan African countries. *International Journal of Finance and Economics* 27(3):3139-3162.
- Ozdemir ZA (2008). Efficient market hypothesis: Evidence from a small open-economy. *Applied Economics* 40(5):633-641.
- Prochniak M, Wasiaik K (2017). The impact of the financial system on economic growth in the context of the global crisis: Empirical evidence for the EU and OECD countries. *Empirica* 44(2):295-337.
- Rayball MBG (1989). Efficient market hypothesis. In *Finance* 21(2):145-156.
- Ross SA (1976). Options and Efficiency. *The Quarterly Journal of Economics* 90(1):75.
- Sackey FG, Nkrumah EM (2012). Financial sector deepening and economic growth in Ghana. *Journal of Economics and Sustainable Development* 3(8):122-139.
- Shah D, Isah H, Zulkernine F (2019). Stock Market Analysis: A Review and Taxonomy of Prediction Techniques. *International Journal of Financial Studies* 7(2):26.
- Srivastava A (2010). Relevance of macroeconomic factors for the Indian stock market. *Decision* 37(3):69-89.
- Tagoe NA (2019). Financial Market Regulators and the Costs Associated with Regulatory Forbearance in Ghana. *International Research Journal of Nature Science and Technology (IRJNST)* 1(4):13-17.
- Türsoy T, Faisal F (2018). Does financial depth impact economic growth in North Cyprus? *Financial Innovation* 4(1):12.
- Williams AA, Hussein S (2018). The Importance of financial reporting to capital market development in Ghana. *Journal of Economics and International Finance* 10(8):89-94.
- Xu Y, Zhao X, Zhou X, Yuan L (2021). Financial Structure and Capital Allocation Efficiency: An Empirical Analysis of China from 2005–2018. *Applied Economics* 53(29):3347-3358.