

**STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH IN
GHANA**

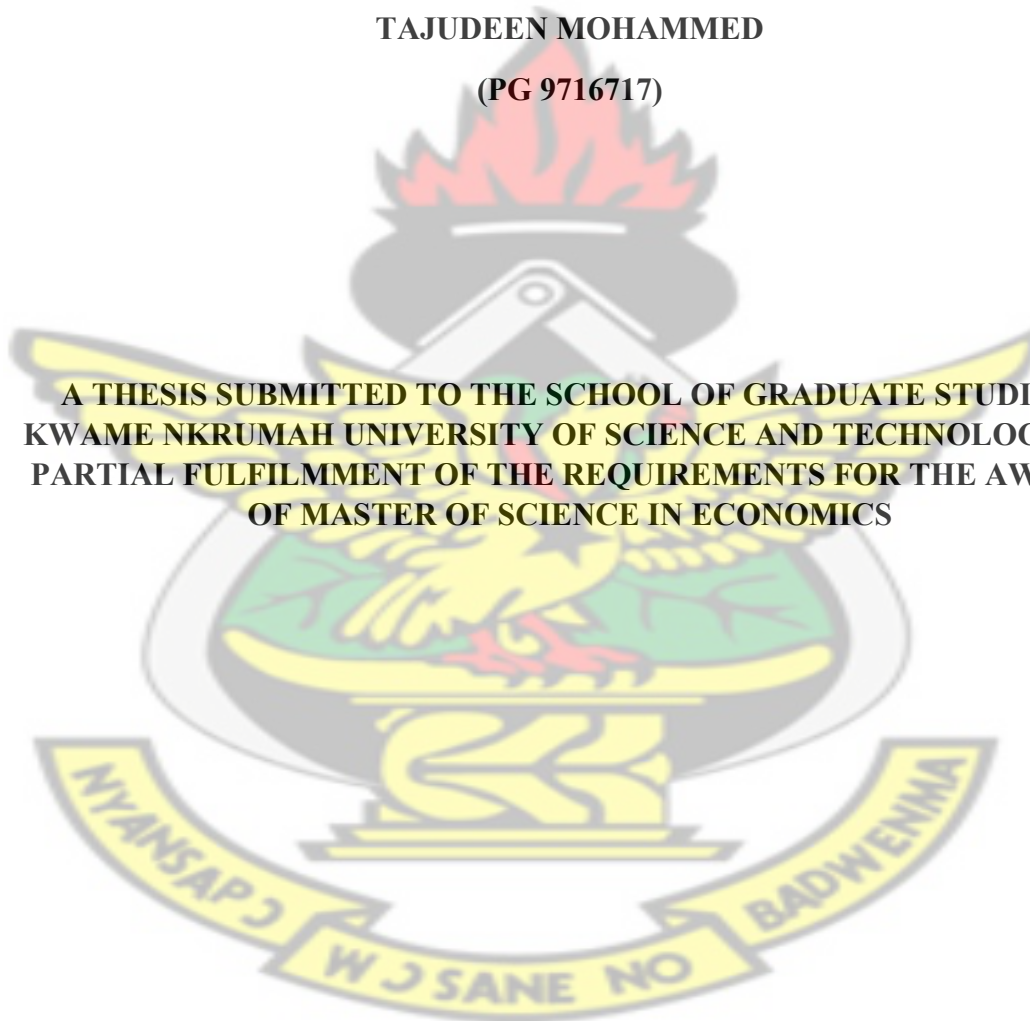
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BY

TAJUDEEN MOHAMMED

(PG 9716717)

**A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES,
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PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD
OF MASTER OF SCIENCE IN ECONOMICS**



JUNE, 2019

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DECLARATION

I do hereby declare that this thesis is my own work towards the MSc. degree and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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TAJUDEEN MOHAMMED

(PG9716717)

.....

Signature

.....

Date

CERTIFIED BY;

DR. HADRAT YUSSIF

(SUPERVISOR)

.....

Signature

.....

Date

CERTIFIED BY;

DR. PRINCE BOAKYE FRIMPONG

(INTERNAL EXAMINER)

.....

Signature

.....

Date

CERTIFIED BY;

DR. A. K. OSEI-FOSU

(HEAD OF DEPARTMENT)

.....

Signature

.....

Date

DEDICATION

This work is dedicated to my supervisor, Dr. Hadrat Yussif, my mother, Katumi Mahama, my wife, Zulfawu Salifu and my children, Noorul Haq and Humul Kulsoom.

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ACKNOWLEDGEMENT

My deepest appreciation goes to my supervisor, Dr. Hadrat Yusif whose commitment and guidance made this work a success.

I am also grateful to my brothers, Daniyal Abdul Karim, Rufai Amadu and Sammani Mohammed for their love and support throughout my life.



ABSTRACT

This study sought to analyse the trend of stock market development and economic growth in Ghana as well as the effect of stock market development on economic growth in Ghana. The study used annual time series data of Ghana from 1996 to 2017. The study adopted tests for Stationarity tests, Autoregressive Distributed Lag (ARDL) bounds testing for cointegration, ARDL model for both long run and short run analysis, diagnostic and stability tests. The stationarity test was used to check for the presence of unit root in the time series data. The ARDL bounds test was used to examine the series for cointegration relationships. The ARDL model was used to estimate the long run and short run effects of stock market development on economic growth in Ghana. The results of the study indicated that in the long run, stock market capitalization, stocks value traded and the stock market index are important stock market development indicators which affect economic growth in Ghana. Alternatively, in the short run stock market capitalization, value traded, and stock market index are the stock market development indicators which affects the economy. In addition, inflation and interest rate negatively influence economic growth in the long run. Trade openness and inflation rate influence economic growth in the short run. The study recommended that Ghana Stock Exchange increase public education on the need to raise capital through the stock market. The Ghana Stock Exchange adopt various strategies to create awareness on the need to invest in the stock market. This would bring more investors on board especially those who are less knowledgeable about the stock exchange.

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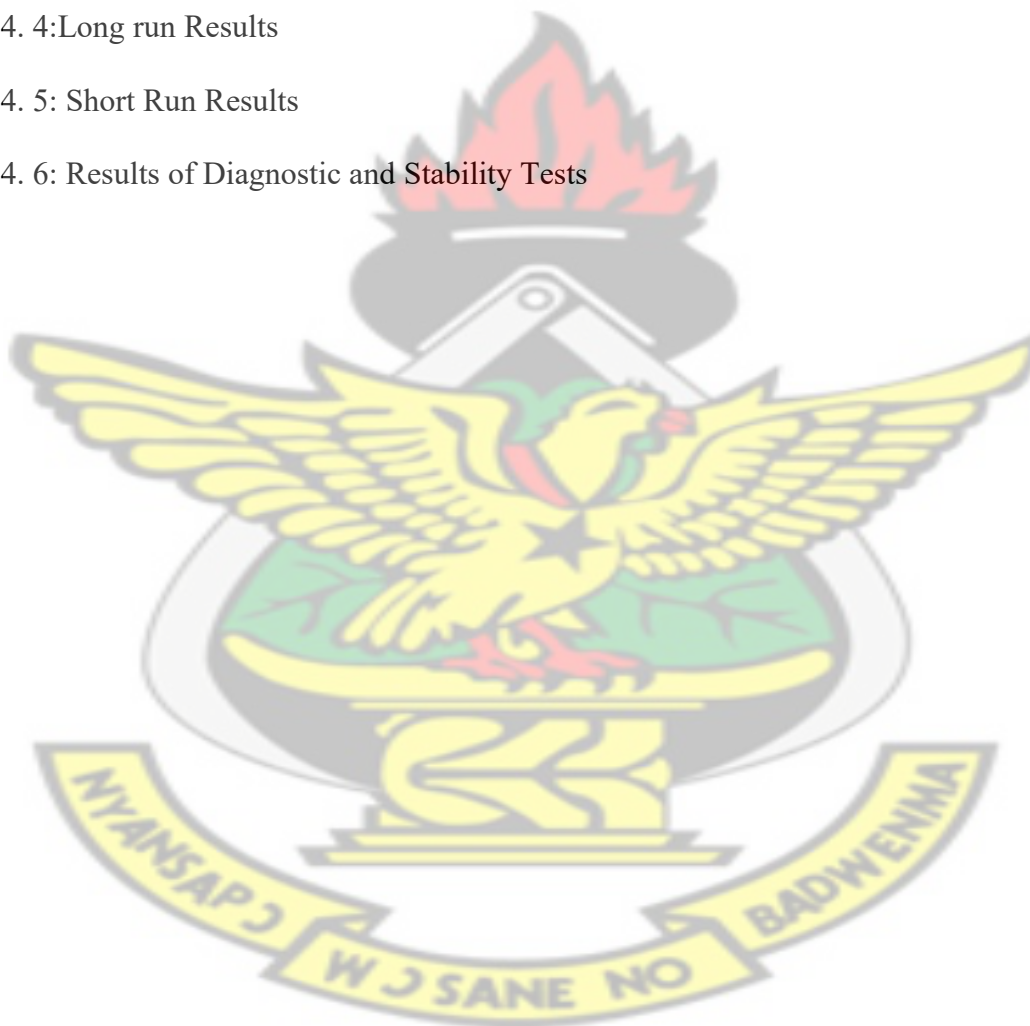
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LIST OF ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AGC	Ashanti Goldfields Company
ARDL	Autoregressive Distributed Lag
CSD	Central Securities Depository Company Limited
CUSUM	Cumulative Sum
CUSUMSQ	Cumulative Sum of Squares
ECM	Error Correction Model
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GSE	Ghana Stock Exchange
IMF	International Monetary Fund
NSE	Nairobi Stock Exchange
VAR	Vector Autoregressive
VECM	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.0 Background

Financial markets remain vital components of an economic system. It represents the engine that drives an economy, by creating an avenue for the confluence of surplus units and deficit units and negotiate varied forms of financial agreement. Westerfield and Jordan (2008) conceive financial market as an arrangement whereby people and entities exchange financial securities and commodities including stocks, bonds, and notes. The aim of financial market development is hence to promote the capacity of the financial market to efficiently operate as a transmission belt. Efficient financial market acts as a market with appropriate depth and breadth, that is; on the supply side, there exist a broad range of financial instruments allowing issuers to make decisions and credit risk to satisfy all classes of asset demand. Alternatively, on the demand side, there is the requirement of a sizeable investment demand from different kinds of investors with different risk-return appetites (Pradhan, 2009).

Stocks have been explained to constitute the equity stock of the owners of a corporation. This equity cannot be withdrawn from the organization in a way that is intended to be unfavourable to the organization's creditors. A stock market is thus a place where stocks are traded (IMF, 2012). Stock market development has been supported by organizations worldwide including the IMF and World Bank. This support was not based solely on ideology but rather stock markets are perceived as a natural consequence of a developing financial sector as long-term economic growth proceeds (Regmi, 2012).

Stock market development has been essential to the domestic financial liberalization programmes across many emerging markets (Ross, 2011). Aside their significance in domestic financial liberalization, the stock markets have critically played a role in current times as the main transmission belt of foreign capital flows into emerging economies. Net equity flows to the emerging markets have increased to approximately \$200 billion every year, offering a vital source of capital to drive development. The share of foreign direct investment (FDI) and portfolio equity in the finance mix of most evolving countries have matured in recent times. Equity flows accounted for about 80 percent of the entire external financing to developing economies from 1999 to 2003, as compared to only 60 percent from 1993 to 1998 (Capasso, 2006).

The Ghana Stock Exchange was incorporated as a private company under the Ghana companies' code, 1963 (Act179) in July 1989. Nevertheless, the status of the company was altered to a public company under the company's Code in April 1994. The exchange was recognized as an accredited stock exchange under the Stock Exchange Act of 1971. Trading activities on the floor of the exchange began on November 12, 1990 (GSE, 2007).

Despite the fact that the Ghana Stock Exchange (GSE) is a new emerging market characterized by meagre size and poor liquidity, it has operated commendably with regards to investment returns. For instance, in 1994 it was categorised as the 6th best performing stock market index in the class of all emerging economies, making gains of 124.3 percent, by Birinyi Associates, a Research Group based in the USA. It was also nominated as the top performer in a complete list of stock markets in Africa and places third on the list of best performing exchanges in developing markets in 1998 with regards to capital appreciation by the Standard Chartered Bank London Limited (Ovat, 2012).

Further, The GSE was declared the world's best-performing market at the close of 2003 with an annual return of about 154.7 percent (144 % in terms of US dollar) matched with 30 percent return by Morgan Stanley Capital International Global Index (Yartey and Adjasi, 2007). Considering the importance of stock markets to an economy and the gradual growth of the Ghana Stock exchange, this study seeks to explore the relationship between stock market development and economic growth in Ghana.

1.1 Statement of Problem

Stock markets are projected to speed up economic growth by increasing liquidity of financial assets, making global risk diversification relaxed for investors, promoting wiser investment decisions by saving-surplus units based on available information, forcing corporate managers to work harder for shareholders' interests, and channelling more savings to corporations. Interestingly, there have been contrasting perspectives on the type of effect stock market development on economic growth (Pan and Mishra, 2018; Quaidoo, 2010).

In developed countries, studies have proven a desirable effect of stock market on the economic growth (Jagadish, 2017; Ovat, 2012; Pan and Mishra, 2018; Shahbaz et al., 2008; Vazakidis and Adamopoulos, 2009). However, the relationship between stock market development and economic growth in developing countries remains disputable especially in the sub-Saharan Africa. Some critics of stock markets argued that there are indications that the setting up and development of stock markets in developing countries have contributed more adversely to economic growth. They contend that these countries tend to have high rates of volatility in the prices of securities, market illiquidity, less regulated and organized markets, and volatile macroeconomic

environments relative to capital markets in most developed countries (Nuhui and Hoti, 2011).

In Ghana, background studies have highlighted that the performance of the economy influences stock market development. From a small beginning of GH¢14,500 market capitalisation in November 1991, it increased to GH¢23,300 in 1992. Government expenditure overruns in 1992 due to the elections and causes market capitalisation as percentage of GDP (market size) to fall from 1.15 in 1991 to 1.3 in 1992. The GSE reviewed its activities and made way for foreign investment in 1993 (the "Publications" section on the GSE's website (1994)).

Furthermore, in the Ghanaian context, various studies conducted on stock market development have found varied results. For instance, studies such as Churchill et al. (2013), Manu (2017), Osei (2005), Quaidoo (2010), Yartey and Adjasi (2007), Yartey (2008) found a positive effect of stock market development on economic growth. On the other hand, Adusei (2014) contended that stock market – economic growth relationship is negative in Ghana whiles Osamwonyi and Kasimu (2010) found no causal relationship between stock market development and economic growth in Ghana.

Hence, it is clear that past studies on Ghana have come out with conflicting findings. Therefore, given the importance of the stock market, there is the need for further study to examine the relationship between the development of the Ghana Stock Exchange and economic growth. This study tried to model economic growth in Ghana together with stock market development indicators, something that was not done in previous studies. This was done because stock market critics believe that the presence

of volatile macroeconomic environments in Africa cause adverse or insignificant relationship between stock market development and economic growth.

1.2 Research Objectives

The main objective of this study is to examine the relationship stock market development and economic growth in Ghana from 1996 to 2017. The specific objectives include;

1. to examine the trend of stock market development and economic growth in Ghana from 1996 to 2017
2. to estimate the relationship between stock market development and economic growth in Ghana from 1996 to 2017

1.3 Research Questions

The study seeks to find answers to the ensuing research questions:

1. What is the trend of stock market development and economic growth Ghana from 1996 to 2017?
2. What is the relationship between stock market development and economic growth in Ghana from 1996 to 2017?

1.4 Relevance of the Study

Stock markets are perceived as a natural outgrowth of a developing financial sector as long-term economic growth proceeds. For some time now the Ghana Stock Exchange has gained a lot of attention from foreign investors and international bodies as a result of its sterling performance with respect to investment returns to stockholders or

capital appreciation right from 1994 (Yartey, 2008). It has offered an opportunity for mobilising long-term capital through both the listed companies and the state for investment. Also, the Ghana Stock Exchange has enhanced the saving and investment habit of investors in the country (Aryeetey and Kanbur, 2008). Therefore, an empirical study on how the development of the stock market affects economic growth will have both policy and academic implications. The findings of this study will contribute to the body of literature on stock markets. To policy makers and stakeholders, this study will help to identify key areas of the stock market indices so as to drive the economic growth.

1.5 Scope of the Study

This study focuses on examining the relationship stock market development and economic growth in Ghana from 1996 to 2017. This study used the Ghana Stock Exchange. The Ghana Stock Exchange came into existence in July, 1989 as a private company limited incorporated by guarantee within the framework of the country's Companies' Code of 1963 (Act 179). The establishment later altered its status to a public company limited by guarantee in April, 1994.

1.6 Organization of the Study

The study was organized in five chapters. Chapter One is the Introduction and it presents the background, problem statement, research objectives, hypothesis, relevance and scope of the study. Chapter Two deals with the theoretical, conceptual and empirical literature on stock market development and economic growth. Chapter Three is about the methodology and it includes the data types and sources, model specification, measurement of variables and empirical strategy. Chapter Four is about results and discussion. Chapter Five covers summary of major findings, conclusion and recommendations.

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter covered the review of relevant literature on stock market development and economic growth. It consists of definition of relevant concepts, theoretical review and an empirical review.

2.1 Theoretical Literature Review

2.1.1. *Keynes Theory of Growth*

The Keynes theory of growth contends that humans have three motivations for holding money. These motives consist of the transactions motive, the precautionary motive and the speculative motive. In Keynes' model, people deliberate that some interest rates are expected within some threshold at a specific time. When interest rates decrease below the normal level, people anticipate that it will increase in the future. Consequently, interest rates remain unchanged if there is an increase in the money supply since no one acquires additional bonds, which is the recognized phenomenon of the liquidity trap. This has important repercussions for the equilibrium level of output (Duut, 2010).

In this theory, investment is influenced solely by the real interest rate. Therefore, when the real interest rate increases, investments will be lower than savings at the level of full employment and the liquidity trap, which results in the piling up of inventory. To forestall equilibrium, the aggregate output will decline. Accordingly, in Keynes theory, high interest rates do not constitute a permanent engine of economic growth. However, the model has been challenged by critics for assuming short-term orientation and price inflexibility (Duut, 2010).

2.1.2 Classical Theory of Growth

The classical growth theory is traced to Adams Smith. He reflects production to be a function of labour, capital and technology (Ucak, 2015). He assumes these three variables as influential factors of output growth and so, his production function is defined as follows;

$$Y = f(L, K, T),$$

Where Y = output, L = Labour, K = Capital and T = Technology. This indicates that output is related to labour, capital and technology input. As a result growth in output is achieved by a growth in population, investment and technology growth. According to this theory, population growth is dependent on the sustenance available to accommodate the growing workforce. Investment is determined by the rate of savings and technology is determined by technological improvements (Ucak, 2015). This theory therefore links stock market development to economic growth because stock markets are platforms that raise capital for production through investments.

2.1.3 Neo – Classical Growth Model

The neo-classical theory of growth was developed by Solow and Swan. In their model, exogenous technological modification substituted capital accumulation (investment)

and it functions as the major production input that describes the dynamics of long run growth. The main assumption underlying the neo-classical model is diminishing returns to labour and capital in turns, and constant returns when they are combined linearly. Further, in the context of this model, capital market operations are assumed to be costless and also money and capital are substitutes Money has no direct effect on accumulating capital. Consequently, the real yield on money declines the demand for physical capital, which denotes that the demand for real money is inversely connected to the real rate of return on capital but directly connected to the real rate of money (Pan and Mishra, 2018).

2.2 The Concept of Economic Growth

Economic growth is usually measured by Gross Domestic Product (GDP). GDP refers to the market value of goods and services produced by a country at a specified period of time. GDP is a key indicator for the health of an economy. Primarily, economic growth is caused by an increase in demand and an increase in productive capacity. One of the main causes is as a result in an increase in aggregate demand ($AD=C+I+G+X-M$). An increase in consumption, investment, government spending, exports-imports cause growth in an economy. Also, an increase in aggregate supply; increase in capital, investment, high labour productivity and improved technology. In the short run, economic growth is caused by an increase in aggregate demand and in the long run, economic growth requires an increase in the long run aggregate supply as well as AD (Dowling and Valenzuela, 2010).

2.2 1 Economic Growth in Ghana

The economy of Ghana has experienced a declining trend of per capita gross domestic product. Given the rapid population growth, the rise in GDP growth rate has not experienced much to satisfy the needs of the population. The population of Ghana was

estimated around 21 million in 2006 (Government of Ghana, 2006). The per capita GDP of Ghana in 1960 was higher than the newly industrialized country of South Korea. In 1960, the per capita GDP of Ghana was 198.6 United States dollars (US\$) as compared to US\$151.4 for South Korea (Anaman, 2004). During the 1957-1965 period, the average growth rate of real GDP of Ghana stood at 4.62%.

Economic growth was relatively normal in the first post-independence period under Dr. Nkrumah and the CPP. Average annual growth rate was 4.62% during this period. This average rate dropped to 0.33% during the instability period from 1966 to 1983. The major structural adjustment program contributed to reversing the growth rate. Average growth rate during the 1984 to 2000 period was 4.44% (Anaman, 2004). The government therefore aimed to raise annual economic growth rate to 8% and higher in the medium-term period based on its new strategy called the Growth and Poverty Reduction Strategy, 2006-2009 (Government of Ghana, 2006). It also aimed to lift Ghana to a middle-income country by 2015 based on the achievement of a per capita income of US\$1,000 from the low level of US\$380 per capita in 2005 (Government of Ghana, 2005). An increase in per capita income by 163% was expected to be achieved in just nine years. It is worth noting that, commodities such as gold, oil and cocoa continue to be the backbone of the economy of Ghana.

The economy of Ghana expanded at the fastest rate in five years in 2017 as oil and gas production surged. Gross Domestic Product expanded 8.5 percent in 2017 compared with 3.7 percent in 2016. It can therefore be said that Ghana's GDP growth more than doubled in 2017 and this was mainly boosted by oil and gas production. The services sector rose 3.4 percent which was lower than 5.5 percent in the previous period (Ghana Statistical Services, 2018). In 2017, the fiscal deficit dropped to 6 percent of GDP from 9.3 percent in 2016, underpinned by serious fiscal consolidation

efforts. Despite that total revenue including grants underperformed by 1.1 percent of GDP, the fiscal turn around was achieved basically through expenditure cuts which were imposed on recurrent and capital expenditures. The primary balance improved from a deficit in 2016 to a surplus of 0.8 percent of GDP in 2017. The debt to GDP ratio is estimated at 69.2 percent in December 2017 from 73.4 percent in 2016 which indicated a decrease in the rate of external debt accumulation as well as a higher GDP growth (World Bank, 2018). The economy of Ghana finished 2017 on a high note confirming Ghana's position as one of the fastest-growing economies in the world.

2.3 Stock Market Development

Stock market development has been supported by organizations worldwide including the IMF and World Bank. This support was not based solely on ideology but rather stock markets are perceived as a natural outgrowth of a developing financial sector as long-term economic growth proceeds. Stock market development has been essential by liberalising domestic financial programmes of most emerging economies (Ross, 2011). Aside their significance in domestic financial liberalization, the stock markets have also been a critical transmission platform for foreign capital flows into emerging economies. Net equity flows to the emerging markets have increased to approximately \$200 billion every year, offering a vital source of capital to drive development. The share of foreign direct investment (FDI) and portfolio equity in the finance mix of most evolving countries have matured in recent times. Equity flows accounted for about 80 percent of the entire external financing to developing economies from 1999 to 2003, as compared to only 60 percent from 1993 to 1998 (Capasso, 2006).

The quick development of stock markets in emerging economies does not indicate that even the most advanced emerging stock markets are complete. In many stock markets, trading happens in just a small number of stocks which account for a

substantial part of the total market capitalization. Away from these actively traded shares, there are significant deficiencies with information and disclosure for other stocks. There are severe flaws in the transparency of transactions on these advanced markets. This suggests that the poorly developed stock markets undergo a far wider range of such shortfalls (Churchill et al. 2013).

Comparatively, the properly regulated and highly organized stock market activities in the US and the UK function better than activities of emerging markets. In these markets, there are inadequate government regulation, private information gathering and dissemination firms which otherwise are found in well-developed markets (Regmi, 2012). Furthermore, new firms in emerging stock markets do not have an extensive track record sufficient to establish a reputation. Consequently, it is expected that share prices in emerging markets become random and volatile (Ross, 2011). This has been further backed by empirical evidence which proves that share prices in emerging markets are significantly more volatile compared to developed markets (Shahbaz et al., 2008).

2.3.1 Determinants of Stock Market Development

A well-developed stock market is buttressed by a blend of factors which include sound fiscal policies, conducive institutional development, appropriate legal and regulatory framework and the presence of professional financial intermediary institutions such as brokerage firms and investment banks or underwriters. In Sub-Saharan Africa, Quaidoo (2010) explained that the three broad factors are critical to the development of capital markets comprising the stock markets include; the existence of an adequate number of market intermediaries such as brokers, dealers and underwriters; judiciously well-developed accounting, auditing and disclosure standards, to ensure that required financial information will be accessible, accurate

and transparent; establishment and execution of coherent and comprehensive legal and regulatory frameworks, so as to prevent abuses and protect investors.

Furthermore, macroeconomic factors including inflation, investment, income, interest rate and stock market liquidity greatly influence the development of capital markets (Garcia and Liu, 1999). A steady and positive political and macroeconomic environment offer favourable atmosphere required to draw savings and investments in order to sustain economic growth. Demircuc-Kunt (2006) observed that a properly functioning financial system requires a stable political atmosphere, fiscal discipline, and sound and stable macroeconomic policies. This gives an indication that the government has a greater role to play in stock market development.

On the other hand, Sililo (2010) argued investors are highly sensitive to economic and political uncertainty. Thus macroeconomic and sector policies intended to maintain political stability, steady economic growth and low inflation should be tracked to deliver a favourable environment for booming capital markets. This gives an indication that vagueness of political and macroeconomic pointers can discourage both potential and actual investors which may have hostile effects on resource mobilization and economic growth in a country.

Furthermore, Billmeier and Massa (2007) found out two ways through which institutions may influence stock market development. To begin with, better institutions are identified with transparency, low level of corruption, and enhanced protection of property rights. Such institutions nurture confidence of investors, hence resulting in an increased demand for securities and larger stock markets. Also, better institutions stimulate overall economic growth and boost market fundamentals that result in well-developed stock markets.

Furthermore, literature has identified various indicators for stock market development which include the size of the stock market measured by stock market capitalization and stock market liquidity measured by total value traded ratio and turnover ratio (Alajekwu, 2011; Ovat, 2012; Osamwonyi and Kasim, 2013; Regmi, 2012). The size of the stock market development is estimated by the ratio of market capitalization to GDP which is the market capitalization ratio. On the other hand, market capitalization is equal to the total value of all shares listed on an exchange (Regmi, 2012). The supposition underlying the use of this estimate is that the stock market size has a positive correlation with the capability to mobilize capital and diversify risk (Ross, 2011).

As stated in the previous paragraph, liquidity of the stock market is measured by total value traded ratio and turnover ratio. The total value traded ratio is equal to the total value of shares traded on the stock exchange divided by GDP and it is frequently used to measure market liquidity. This indicator measures the value of equity transactions in relation to the size of the economy or as a share of national output and thus it ought to reflect positively the liquidity on an economy entirely. The total value traded ratio, consequently, delivers more information about the aggregate provision of liquidity compared to the turnover ratio (Ovat, 2012)

The turnover ratio is calculated as the value of total shares traded divided by the market capitalization. It is usually used to measure the efficiency of the domestic stock market. High turnover is frequently used as an indicator of low costs of transactions. Nevertheless, the turnover ratio is not a direct measure of trading costs or efficiency. It somewhat reveals frictions in trading and information that encourage transactions. A small, liquid market possibly will lead to small market capitalization and total value traded ratios, but then high turnover ratio. Stated differently, a bigger

but inactive market is likely to have a large market capitalization ratio but a small turnover ratio (Regmi, 2012).

2.4 The Ghana Stock Exchange

The Ghana Stock Exchange was incorporated in as a private company under the Ghana companies' code, 1963 (Act 179) in July 1989. Nevertheless, the status of the company was altered to a public company under the company's Code in April 1994. The exchange was recognized as an accredited stock exchange under the stock Exchange Act of 1971. Trading activities on the floor of the exchange began on November 12, 1990 (GSE, 2007).

The Ghana Stock Exchange is a private sector initiative and thus not financed by government. The exchange does not have stockholders but then it has two classes of members, Licensed Dealing Members and Associate Members. Licensed Dealing Members are corporate bodies authorized by the exchange to transact in listed securities. On the other hand, Associate Members are individuals or corporate bodies, which have fulfilled the membership requirements of the exchange, but are not licensed to act as stockbrokers on the exchange (GSE, 2007).

Trading is carried out under the call-over system on the floor of the exchange with a limited auction. Trading is done in lots of 100 shares except the Ashanti Goldfields Company (AGC) shares, which trade in lots of 10 shares. Trading takes place three times within a week, specifically on Mondays, Wednesdays and Fridays opening from 10:00 a.m. The typical period of trading is approximately two hours. Over The Counter trading is also permitted in AGC's shares. Securities on the exchange can be bought by everyone as long as he or she is 18 years and above and of sound mind. Resident foreigners are also permitted to buy securities on the exchange. Non-resident

Ghanaians and foreigners can purchase up to 10 percent of any security accepted for listing on the exchange (GSE, 2007).

Moreover, the total holdings of all external residents in one listed security shall not exceed 74 percent. This restraint is only applicable to non-resident foreigners and does not apply to externally resident Ghanaians. The commission rate is fixed and controlled by the government. The dominant delivery and settlement system is centralized but not programmed. Presently, the settlement period is T+3 business days after the trade for equity and two business days for fixed income. It is also strictly delivery versus payment. Trade settlement and share depository services are currently handled by the Central Securities Depository Company Limited (CSD), a subsidiary of the Bank of Ghana and Ghana Stock Exchange (GSE, 2007).

Even though the Ghana Stock Exchange is a new emerging market described by small size and low liquidity, it has been performing commendably in terms of return on investment. For instance, in 1994 it was classified as the 6th best performing stock market index among all the emerging markets, gaining 124.3 percent, by Birinyi Associates, a Research Group based in the USA. It was also nominated the top performer among all stock markets in Africa and the third best in developing markets in 1998 with regards to capital appreciation by the Standard Chartered Bank London Limited. The GSE was then again declared the world's best-performing market at the close of 2003 with an annual return of about 154.7 percent (or 144 % in US dollar terms) matched with 30 percent return by Morgan Stanley Capital International Global Index (Yartey and Adjasi, 2007).

The GSE All-Share Index, which is a statistical measure of the overall performance of the Ghana Stock Exchange, has been different significantly over the past years. The

All-Share Index increased sharply from 69.77 points in 1991 to 334.02 points in 1994 demonstrating a gain of 124.34% but dipped in 1995, with a substandard growth rate of 6.3 percent. This was attributed to primarily high levels of inflation and interest rate before attaining a peak of 1,201.08 points in 1998. The Index at that time experienced a sinking trend two years afterwards and then increased steadily to reach a record high of 7,469.04 points in 2004 signifying a gain of 91.33%, though much lower than the 2003 growth rate of 154.67% which is the highest yield (Quaidoo, 2010).

After 2004, there was a sinking trend in 2005 and there was a steady increase up to 2008. Again in 2009, there was a sharp fall in returns from 58.16 percent to -46.58 percent. The steady rise and fall of returns continued through 2010 to 2014. There was another sinking trend in 2015 and 2016 but 2017 saw a steady rise again from -15.33 percent to 53.73 percent. This poor performance has been attributed to the difficult economic environment prevailing in the country. This situation rendered the business atmosphere unfavourable for both local and foreign investors (GSE, 2017).

2.4 Empirical Literature Review

A study by Vazakidis and Adamopoulos (2009) on stock market development – economic growth relationship in France between the period 1965 and 2007 used a VAR system. Their study established that economic growth leads to stock market development, and as a result, economic growth has a statistically significant and positive effect on the stock market.

Nurudeen (2009) also conducted a study to make certain the hypothesis that stock market development increases economic growth in Nigeria. The study employed the error correction approach and the findings suggested that stock market development

(market capitalization-GDP ratio) raises economic growth in Nigeria. Their study suggested the elimination of obstructions (such as tax, legal and regulatory inhibitors) to stock market development, the policies to improve employment that would raise the output and judicious use of resource by firms and support them to source investment capital on the stock market.

Olweny and Kimani (2011) studied the cause-effect association between stock market performance and economic growth in Kenya between 2001-2010, implementing Granger causality test based on Vector Autoregressive (VAR) model. Their results indicated that there is a unidirectional causal effect of the Nairobi Stock Exchange (NSE) 20-share index to the GDP. According to the findings, the drifting of stock prices in the Nairobi stock exchange replicate the macro-economic situation of Kenya and can thus be used to forecast the economic growth path in the future.

Churchill et al. (2013) took their turn to study the association between stock market capitalization and economic growth in Ghana using quarterly time series data from 1991 to 2006. The study used Johansen multivariate cointegration technique and vector error correction model to explore the long-run relationship and the short-run dynamics among the variables. The standard Granger causality test was adopted to define the cause-effect link between the variables. The study established that real economic growth, real stock market liquidity and real gross domestic investment sufficiently influence the development of the GSE with a positive effect.

Adefeso et al. (2013) studied the long-run cause-effect association between both stock market development and economic growth in Nigeria. The Vector Error Correction Model (VECM) and co-integration approach was used for the analysis of annual time series on annual data for the period 1980 to 2010. They established a long-run

association between stock market development and banking activity indicators in Nigeria. They confirmed that economic growth granger causes both stock market development and banking activity in Nigeria.

Osamwonyi and Kasimu (2013) studied the stock market and economic growth in Ghana, Kenya and Nigeria. They used annual time series data for the period 1989 – 2009 and found that there is no cause-effect link between stock market development and economic growth in both Ghana and Nigeria however, they confirmed that there is a bidirectional cause-effect association between stock market development and economic growth in Kenya. When market capitalization was employed to proxy for stock market development, market capitalization and listed securities were seen to Granger cause economic growth.

Adusei (2014) investigated whether stock market development promote economic growth in Ghana. The study used quarterly data from 2006Q1 to 2013Q2. A bounds testing technique to estimating cointegration and Granger causality in the vector error correction model were employed to analyse their data. Their analysis found a long-run cointegrating nexus in the stock market development – economic growth association. The results of the causality analysis established that there is a one-off causality that runs from stock market development to economic growth

Owusu and Odhiambo (2014) used the ARDL-bounds testing technique and multi-dimensional stock market development measures to study the link between stock market development and sustainable economic growth in Ghana. They found out that stock market developments have no positive effect on economic growth both in the short- and long-term. However, they also find and conclude that an increase in credit

to the private sector, instead of stock market development, drives of the real sector economic growth in Ghana.

Nabieu and Barnor (2016) used quarterly time series data from 2000 to 2012 in studying the effect of stock market performance on economic growth in Ghana. Their Vector Error Correction Model (VECM) and Granger Causality test to estimation revealed that stock market performance positively affects economic growth in the short and long-run periods. They also established a two-way causality between stock market performance and economic growth implying interrelationship between stock market performance and economic growth.

Bist (2017) studied the stock market development and economic growth relationship in Nepal for the period 1993 to 2014. The long-run and short-run elasticities were assessed by the use of autoregressive distributed lag (ARDL) bounds testing approach for co-integration analysis. Results pointed out that market capitalization had a significant and positive bearing on the economic growth in both long and short run. Further, findings indicated that market capitalization significantly and positively influence economic growth in both long and short run.

Pan and Mishra (2018) explored causal link between stock market development and economic growth with empirical evidence from China. They implemented unit root testing in the presence of structural breaks and the Autoregressive distributed lag (ARDL) model. The findings indicated that the global financial crisis for the period 2007 to 2012 had a major influence on both the real sector and the financial sector in China. Further, the findings suggested that the Shanghai A share market has had a long-run negative link with the real sector of the economy but the size of the impact was infinitesimal.

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter outlines the methodology of the study. It consists of the research design, data sources, model specification and variables measurement and apriori expectations. This chapter further explains the estimation techniques used which include stationarity tests, Autoregressive Distributed Lag model (ARDL), diagnostic and stability tests.

3.1 Research Design

The main objective of this study was to examine the relationship between stock market development and economic growth in Ghana from 1996 to 2017. The study made use of quantitative research design. The study used time series data to achieve the objectives of the study.

3.2 Data Sources

The study made use of annual time series data on the stock market development indicators for the period of 1996 to 2017. Data on real GDP growth and economic factors were obtained from the World Bank's World Development Indicators database. The data on stock market development indicators; stock market capitalization, value traded, turnover ratio, number of listed securities and the stock market index were obtained from the Ghana Stock Exchange website and Index Mundi database.

3.3 Model Specification

This study employs time series regression analysis. A general time series regression equation is specified as

$$y_t = \beta_0 + \beta X_t + e_t \dots 3.1$$

Where y is the dependent variable, β_0 is the intercept, β is the coefficient, X is the independent variable, e is an error term and t is the time period.

This study is based on the Neoclassical Growth Model which explains the sources of growth in an economy. This is stated as $Y = f(L, K, T)$. This means economic growth is a function of labour, capital, and technical progress. This model has been enhanced to incorporate other economic and financial variables such as financial sector development such as stock market development indicators, openness, interest rate and inflation.

This study follows the stock market development and economic growth model used by Ovat (2012), Osamwonyi and Kasim (2013), Regmi (2012) and Quaidoo (2010). The model is specified as;

$$RGDP = f(SMC, VALT, TR, LS, SMI, GCF, OPEN, INT, INF)$$

$$\ln RGDP_t = \beta_0 + \beta_1 \ln SMC_t + \beta_2 \ln VALT_t + \beta_3 \ln TR_t + \beta_4 \ln LS_t + \beta_5 \ln SMI_t + \beta_6 \ln GCF_t + \beta_7 \ln OPEN_t + \beta_8 \ln INT_t + \beta_9 \ln INF_t + e_t \dots 3.2$$

Where:

RGDP is Real Gross Domestic Product, SMC is Stock Market Capitalization, VALT is Value Traded, TR is Turnover Ratio, LS is the number of listed securities, SMI is the Stock Market Index, GCF is gross capital formation, OPEN is trade openness, INT is interest rate, INF is inflation rate. $\beta_1 \dots \beta_{11}$ are Parameters and t is time period.

3.4 Variable Description, Measurement and A priori Expectations

3.4.1 Description and Measurement of Variables

3.4.1.1 *Real GDP*

Real GDP is the gross domestic product divided by the inflation rate in a year. GDP refers to the total market value of the total goods and services produced in an economy. It was measured by the annual percentage change in GDP adjusted for inflation.

3.4.1.2 *Stock Market Capitalization*

Stock market capitalization is equal to the total value of all shares listed on an exchange. It is calculated by multiplying the number of outstanding shares by the market price per share. This variable was measured by the stock market capitalization as a percentage of GDP. SMC determines the characteristics of a stock market that investors are usually interested in such as risks. This variable was expected to have a positive long-run effect on economic growth because the higher the total value of shares on the stock market, the higher the level of capital accumulation which in turn promotes economic growth

3.4.1.3 *Value Traded*

The total value traded ratio is equal to the total value of shares traded on the stock exchange divided by GDP. This variable is a measure of the stock market liquidity. Value traded was expected to positively influence economic growth. Value traded is expected to have a positive effect on GDP growth because as the value of shares increases, capital formation is improved

3.4.1.4 Turnover Ratio

The turnover ratio is calculated as the value of total shares traded divided by the market capitalization. Turnover ratio is also a measure of liquidity of the stock market. A higher turnover ratio indicates that investors find it easy to trade stocks on the stock market. This variable was expected to have a positive influence on GDP growth because a highly liquid stock market increases the possibility of trading ownership of stocks, thereby ensuring the efficient allocation of resources which promotes growth.

3.4.1.5 Number of listed securities

This refers to the number of securities listed on the Ghana Stock Exchange. Number of listed securities was expected to have a positive effect on economic growth because as the number of listed securities increases, capital formation in an economy is improved.

3.4.1.6 Stock Market Index

A stock market index measures the change in the stock prices of the index's components. It is a measure employed by investors to explain the nature of the stock market and to contrast the return on major investments. It reflects important information on the future direction of the economy. It is expected to have a positive effect on economic growth because as the index increases cost of capital increases and thus equity funds allocated for investments rises and therefore economic growth increases.

3.4.1.7 Gross Capital Formation

Gross capital formation signifies either addition to existing capital stock or acquisition of new capital assets. An increase in gross capital formation stimulates industrial

growth and reduces unemployment. Therefore a positive relationship was expected between gross capital formation and economic growth.

3.4.1.8 Openness

Openness is a measure of the volume of trade between Ghana and the rest of the world. It was measured as the sum of exports and imports as a percentage of gross domestic product. $(X+M/GDP)$. Trade openness was expected to have a positive effect on economic growth.

3.4.1.9 Interest rate

This study used the 91 day Treasury bill rate as a measure of interest rate. Interest rate is expected to have a negative effect. This is because an increase in interest rate will result in an increase in the opportunity cost of holding money. This may lead to investors holding interest-bearing securities leading to an increase in the cost of capital, thereby reducing investment.

3.4.1.10 Inflation rate

Annual rates of inflation reflects the annual change in the cost of obtaining a basket of goods and services by an average consumer. This study employs inflation rate that is measured as annual percentage change in the Consumer Price Index (CPI). The year on year inflation rates for the specified period was used

3.4.2 Apriori Expectations of Explanatory Variables

Table 3. 1: The A priori expectations of the explanatory variables

Variable	Description	Apriori expectation
Stock market capitalization	Total value of shares on the Ghana Stock Exchange	Positive
Value traded	The ratio of total value of shares	Positive

	traded per period to GDP	
Turnover ratio	The ratio of the value of total shares traded to market capitalization	Positive
Number of listed securities	Number of securities listed on the Ghana Stock Exchange	Positive
Stock market index	The change in stock prices which reflects the size of the stock market	Positive
Gross capital formation	existing capital stock or acquisition of new capital assets volume of trade between Ghana and the rest of the world	Positive
Openness		Positive
Interest rate	91 day treasury bill rate	Negative
Inflation	Annual percentage change in inflation	negative

Source: Author's Construct, 2019

3.5 Estimation Techniques

The study adopted tests for Stationarity tests, Autoregressive Distributed Lag (ARDL) bounds testing for cointegration, ARDL model for both long run and short run analysis, diagnostic and stability tests. The stationarity test was used to check for the presence of unit root in the time series data. The ARDL bounds test was used to examine the series for cointegration relationships. The ARDL model was used to estimate the long run and short run effects of stock market development on economic growth in Ghana. Lastly, diagnostic and stability tests were conducted to ensure reliability of the model and its estimates.

3.5.1 Stationarity Test

It is important to test for unit root of the variables to determine the order of integration of each of the variables as is required for the use of time series data for analysis. This is to ensure that the variables are stationary and that shocks are only temporary and will dissipate and revert to their long-run mean. Varied tests have been established to understand the stationarity of time series data. These include the Dickey–Fuller (1979) test, Augmented Dickey–Fuller (1981) test and the Phillips–Perron (1988) test. The Augmented Dickey–Fuller (ADF) test is widely used because it is simple and thorough thus, this study employed it to test for the presence of unit roots in all the variables.

The computed regression for Dickey–Fuller test is stated as:

$$\Delta X_t = \beta + \rho t + \delta X_{t-1} + \sum_{v=0}^{\rho} \gamma_v \Delta X_{t-v} + \mu t \dots \dots \dots (3.3)$$

If the null hypothesis: $H_0: \delta=0$ (the variable under consideration is a unit root) is not rejected, then it indicates that the variable is non-stationary and if the alternate hypothesis: $H_1: \delta<0$ is found to be true, then the variable under consideration is stationary.

3.5.2 Autoregressive Distributed Lag (ARDL)

This study employed the ARDL method to explore the short run and long run relationships among the variables. ARDL model was used because it can be used when the regressors are a combination of I (1) and I(0). However, it is required that none of the variables are integrated of order 2 (Pesaran et al, 2001).

There is the need to conduct a cointegration test to check for long run relationships. This demands confirming the existence of a stable or long-term equilibrium

relationship between the variables. The underpinning premise of co-integration analysis is that even though time series may be non-stationary, a linear combination of the variables may be stationary. Non-stationary macroeconomic series are said to be co-integrated when they can be altered into a single series that displays Stationarity.

The study used the ARDL bounds testing to test for the presence of cointegration among the variables

$$\Delta X_t = a_0 + a_1t + a_2X_t + a_3Z_t + \sum_{i=1}^p A_i X_{t-i} + \sum_{j=0}^q B_j Z_{t-j} + \mu_t \dots\dots\dots(3.4)$$

$$H_0: a_2 = a_3 = 0$$

$$H_1: a_2 \neq a_3 \neq 0$$

The hypotheses stated above can be determined through the use of the standard F-statistic. The computed F-statistic is compared with the critical values at 1%, 5% and 10% levels. The decision rule is that when the F-statistic is above the upper critical value, there is cointegration. However, when the F-statistic is below the lower bound critical value, there is no cointegration and in a case where it falls between the lower bound and the upper bound critical value, the results is inconclusive. Further, when the null hypothesis is rejected, it means there is co-integration among variables otherwise there is no co-integration among the variables

Following the confirmation of a long run relationship, the ARDL error correction was performed. An Error Correction Model (ECM) is specified as this;

$$\begin{aligned} \Delta \ln RGDP_t = & \gamma_{01} + \sum_{i=1}^p \gamma_{1i} \Delta \ln RGDP_{t-i} + \sum_{i=1}^p \gamma_{2i} \Delta \ln SMC_{t-i} \\ & + \sum_{i=1}^p \gamma_{3i} \Delta \ln VALT_{t-i} + \sum_{i=1}^p \gamma_{4i} \Delta \ln TR_{t-i} + \sum_{i=1}^p \gamma_{5i} \Delta \ln LS_{t-i} \\ & + \sum_{i=1}^p \gamma_{6i} \Delta \ln SMI_{t-i} + \sum_{i=1}^p \gamma_{7i} \Delta \ln GCF_{t-i} + \sum_{i=1}^p \gamma_{8i} \Delta \ln OPEN_{t-i} \\ & + \sum_{i=1}^p \gamma_{9i} \Delta \ln INT_{t-i} + \sum_{i=1}^p \gamma_{10i} \Delta \ln INF_{t-i} + \phi ECT_{t-1} \\ & + \omega_t \dots\dots\dots 3.5 \end{aligned}$$

Where ECT_{t-1} is the error correction term with ϕ as the speed of adjustment parameter

$$ECT_{t-1} = (\ln RGDP_{t-1} - \theta X_t) \dots \dots \dots 3.6$$

θ which is the long run parameter is given by $\frac{\sum_{i=0}^p \beta_i}{\psi}$

ϕ is given $(1 - \sum_{i=1}^p \delta_i)$

$\gamma_{1i}, \dots, \gamma_{6i}$ are the models adjustment to the long run equilibrium by the short run coefficient

The long run model takes this form.

$$\begin{aligned} \ln RGDP_t = & \alpha_{01} + \sum_{i=1}^p \eta_{1i} \ln RGDP_{t-i} + \sum_{i=1}^p \eta_{2i} \ln SMC_{t-i} + \sum_{i=1}^p \eta_{3i} \ln VALT_{t-i} \\ & + \sum_{i=1}^p \eta_{4i} \ln TR_{t-i} + \sum_{i=1}^p \eta_{5i} \ln LS_{t-i} + \sum_{i=1}^p \eta_{6i} \ln SMI_{t-i} \\ & + \sum_{i=1}^p \eta_{7i} \ln GCF_{t-i} + \sum_{i=1}^p \eta_{8i} \ln OPEN_{t-i} + \sum_{i=1}^p \eta_{9i} \ln INT_{t-i} \\ & + \sum_{i=1}^p \eta_{10i} \ln INF_{t-i} + \sigma_{tt} \dots \dots \dots 3.7 \end{aligned}$$

In case of no cointegration, which indicates no long run relationship, the ARDL model is specified as below for the short run relationship

$$\begin{aligned} \Delta \ln RGDP_t = & \gamma_{01} + \sum_{i=1}^p \gamma_{1i} \Delta \ln RGDP_{t-i} + \sum_{i=1}^p \gamma_{2i} \Delta \ln SMC_{t-i} \\ & + \sum_{i=1}^p \gamma_{3i} \Delta \ln VALT_{t-i} + \sum_{i=1}^p \gamma_{4i} \Delta \ln TR_{t-i} + \sum_{i=1}^p \gamma_{5i} \Delta \ln LS_{t-i} \\ & + \sum_{i=1}^p \gamma_{6i} \Delta \ln SMI_{t-i} + \sum_{i=1}^p \gamma_{7i} \Delta \ln GCF_{t-i} + \sum_{i=1}^p \gamma_{8i} \Delta \ln OPEN_{t-i} \\ & + \sum_{i=1}^p \gamma_{9i} \Delta \ln INT_{t-i} + \sum_{i=1}^p \gamma_{10i} \Delta \ln INF_{t-i} \\ & + \omega_{tt} \dots \dots \dots 3.8 \end{aligned}$$

3.5.3 Diagnostic Tests

The diagnostic tests conducted in this study included a tests for heteroskedasticity, serial correlation, and functional form. Heteroscedasticity occurs when sub populations have different variance and it is simply the absence of homoscedasticity. The Breusch-Pagan test for heteroscedasticity was used to check heteroskedasticity in this study. Serial correlation means that the error term of one time period is correlated

with the error term of the successive time period and it was tested with Breusch-Godfrey test for serial correlation. Ramsey RESET test was used to check for functional form to make sure model was correctly specified. The stability tests conducted included plots of the Cumulative Sum (CUSUM) and the Cumulative Sum of Squares (CUSUMSQ).

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CHAPTER FOUR RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the results and discussion of findings from the impact of stock market development on economic growth of Ghana. The various sections include; summary statistics of variables, stationarity tests, ARDL bounds test for cointegration, ARDL long run and short run result. Finally the diagnostic and stability tests are presented in the last section.

4.1 Summary Statistics of Variables

The summary statistics of the variables of the study include the means, standard deviation, variance, skewness and kurtosis. Table 4.1 shows the results obtained

Table 4. 1: Summary Statistics of Variables

Variable	Mean	Std. dev	Variance	Skewness	Kurtosis	Obs.
Real GDP growth	1.7181	0.3242	0.1051	1.1278	4.1653	22
Stock market cap	2.5752	0.3640	0.1325	0.5487	2.2741	22
Value traded	-0.9154	0.5444	0.2964	-0.5446	2.1768	22
Turnover ratio	1.2782	0.6263	0.3923	-0.0435	2.0217	22

No. of listed securities	3.3969	0.2474	0.0612	-0.3088	1.4838	22
Stock market index	9.1913	2.3306	5.4316	0.2679	1.6879	22
Gross capital formation	23.5773	3.274	10.7198	0.7044	2.6368	22
Trade Openness	156.0211	71.0307	5046.36	0.6646	1.7514	22
Interest rate	31.9186	72.7714	5295.669	4.2793	19.5692	22
Inflation	17.6046	9.0072	81.1290	1.6478	5.3711	22

Source: Author's Computation using data, 2019

From Table 4.11, it can be observed that the mean value for real GDP growth from 1996 to 2017 was 1.7181 with a standard deviation of 0.3242. The mean value of stock market capitalization was 2.5752 with a standard deviation of 0.3640. For the stock value traded, the mean for the period was -0.9154 with a standard deviation of 0.544. Turnover ratio had a mean value of 1.2782 with a standard deviation of 0.6263. The mean value of the number of listed securities from 1996 to 2017 was 3.3969 with a standard deviation of 0.2474. Stock market index had a mean of 0.1913 with a standard deviation of 2.3306. Average gross capital formation for the period was 23.5773 with a standard deviation of 3.274. The average for trade openness was 156.0211 with a standard deviation of 71.0307. Interest rate and inflation had means of 31.9186 and 17.6046 respectively. Apart from real GDP and stock market capitalization, all other variables were negatively skewed.

4.2 Trend Analysis of Stock Market Development and Economic Growth in Ghana

This section provides a trend analysis of stock market capitalization and economic growth on one hand, stock market index and economic growth in Ghana on the other, value of stocks traded and economic growth on another and turnover ratio and economic growth on the other.

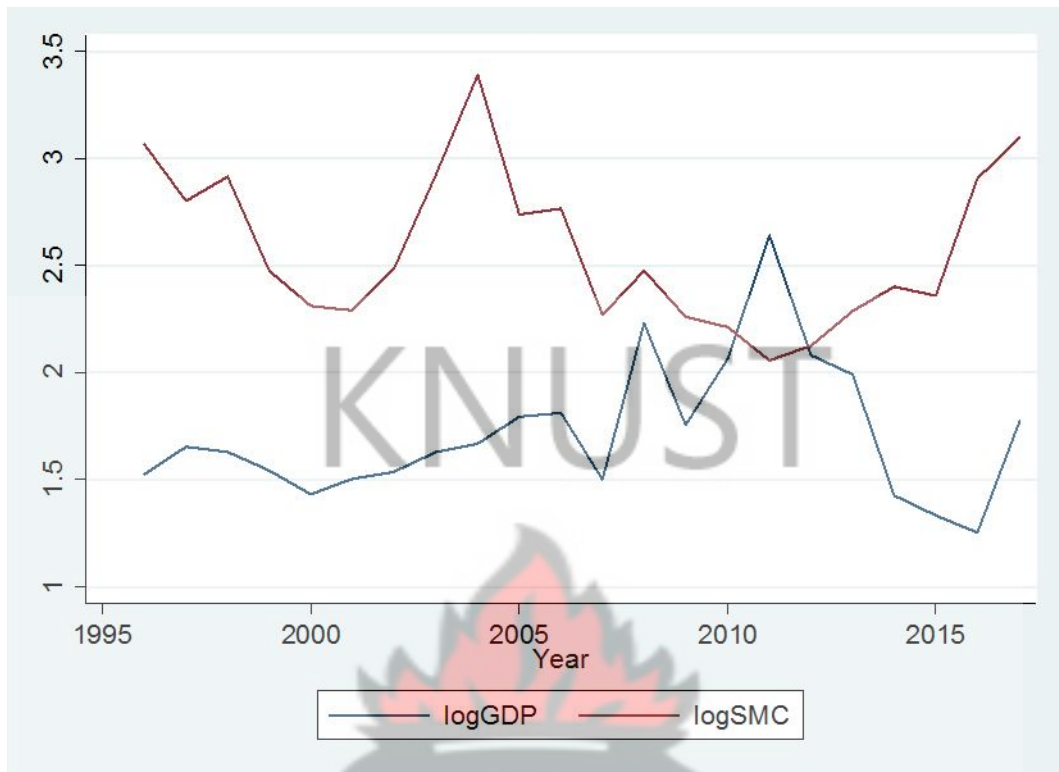


Figure 4. 1: Trend Analysis of Stock Market Capitalization and Real GDP growth

Author's Construct, 2019

From Figure 4.1, it can be seen that the growth in stock market capitalization had a similar trend as the economic growth from 1996 to 2017. These two variables tend to increase and decrease at the same rate. However, it can be observed that in 2010 GDP growth was high but market capitalization was low. This is because the total value of shares on the Ghana Stock Exchange dropped.

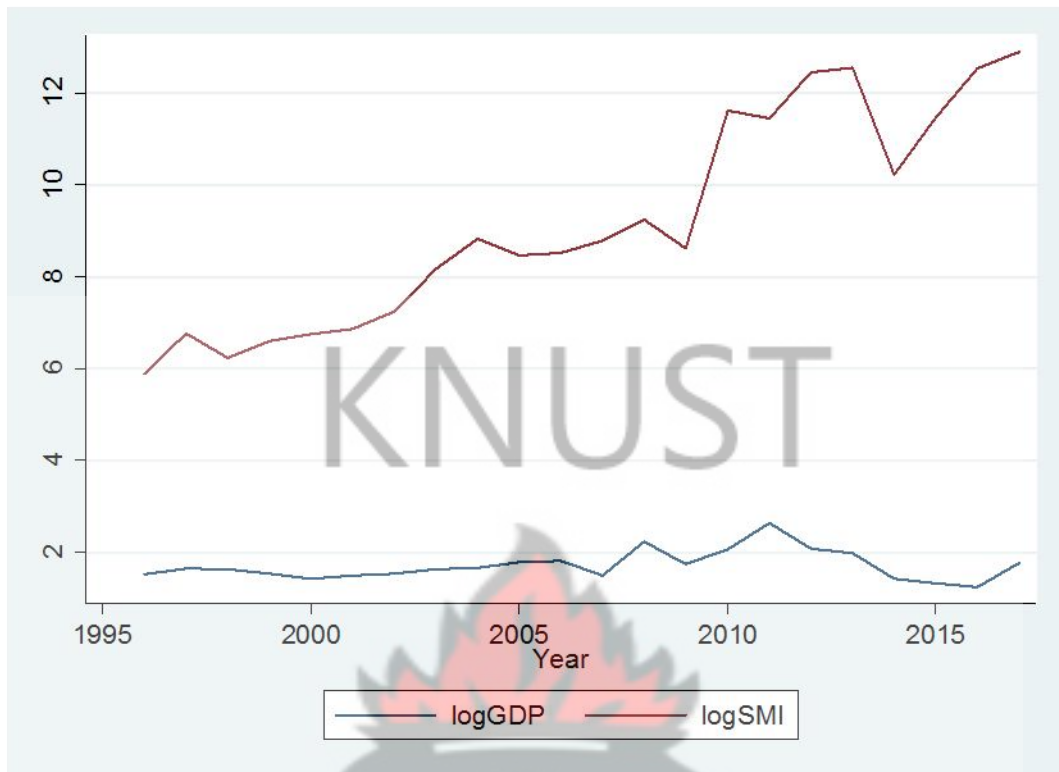


Figure 4. 2: Trend Analysis of Stock Market Index and Real GDP growth
Author's Construct, 2019

Stock market index was also seen to have the same behaviour as real GDP growth. From 1996 to 2005 there was a steady growth in both variables. From 2005 to 2010, the movement in both variables was similar. However, from 2010 to 2017, it can be seen that stock market index experienced sharp growths and sharp declines whilst the growth and decline in GDP was steady. This is attributed to the gradual depreciation of the Ghana cedi and its volatility which caused the prices of stock to fluctuate. A fall in stock prices negatively affect the stock market index and the vice versa.

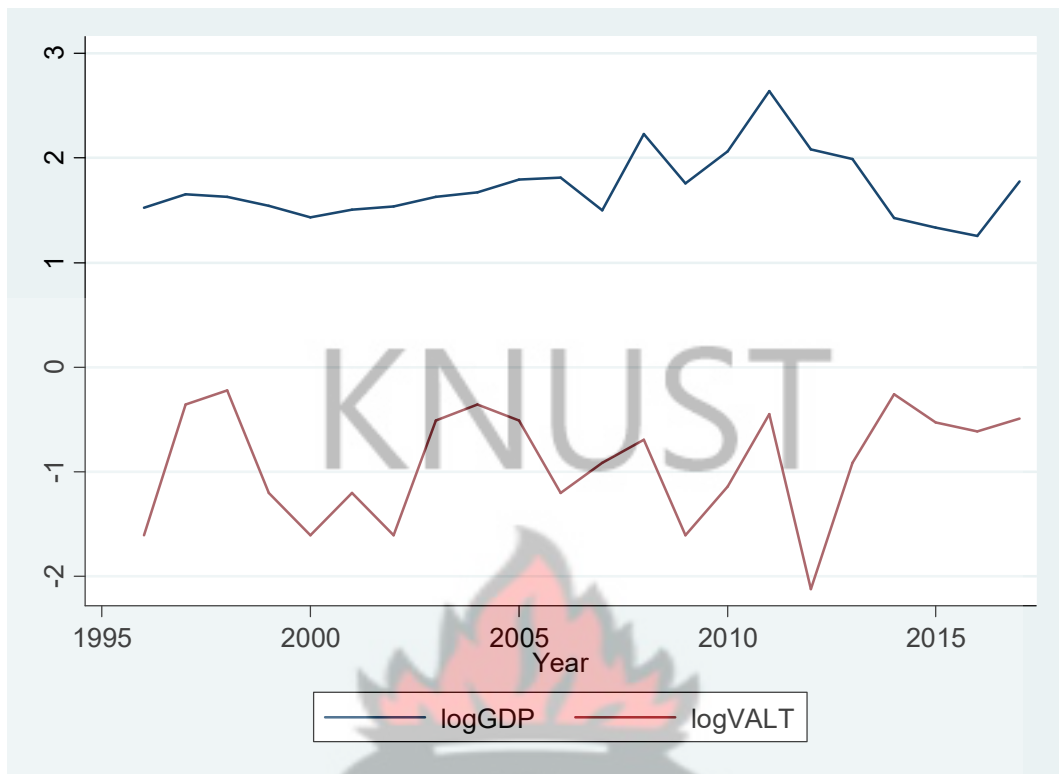


Figure 4. 3: Trend Analysis of Stock Market Index and Real GDP growth
Author's Construct, 2019

From Figure 4.3, it can be observed that the movement in real GDP was steady from 1996 to 2005 but from 2006 to 2017 Real GDP exhibited volatility in movement. On the other hand, value traded of stock was high volatile during the entire period; from 1996 to 2017.

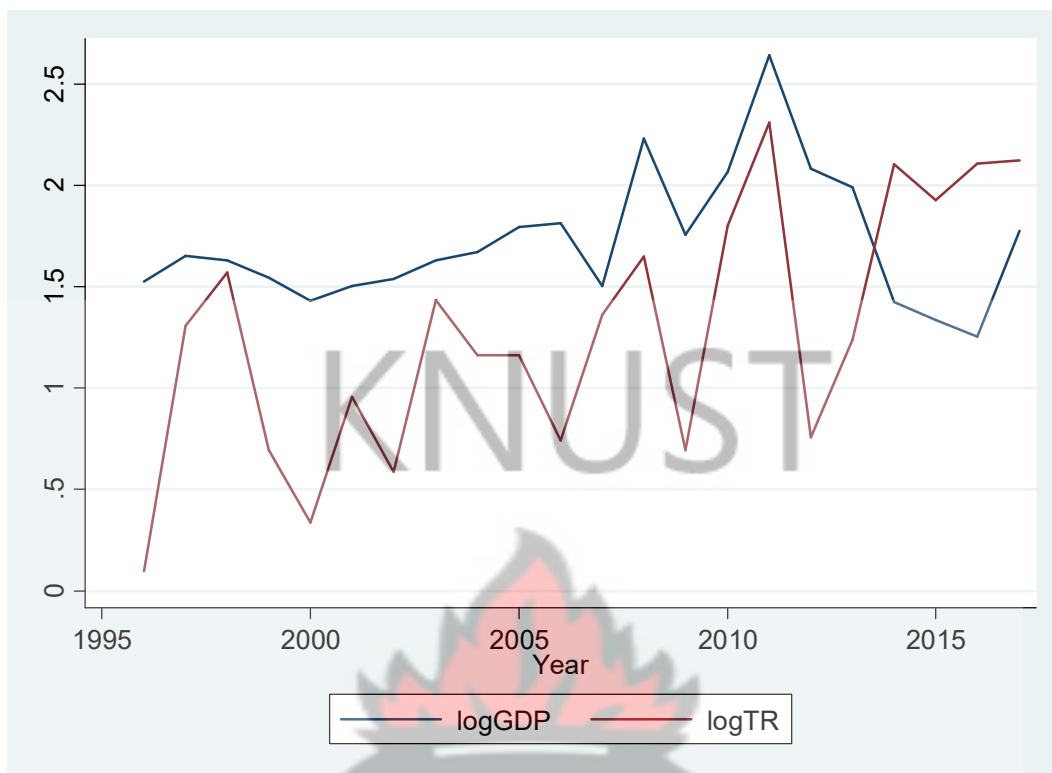


Figure 4. 4: Trend Analysis of Stock Turnover Ratio and Real GDP growth

Author's Construct, 2019

From Figure 4.4, it can be observed that the movement in real GDP growth of Ghana from 1996 to 2005 was steady but stocks turnover ratio was highly volatile within the period. From 2006 to 2017, the movements in both real GDP and stocks turnover ratio were volatile. Therefore, the relationship between the two variables may be inconclusive from this graph.

4.3 Stationarity Tests

The stationarity test was conducted using the ADF test was used as stated in the methodology. Table 4.2 shows the results of the ADF test

Table 4. 2: Results of the ADF Test for Stationarity

Variables	Level		First difference		Order of integration
	Coefficient	P value	Coefficient	P value	
RGDP	-0.5243	0.017	-1.3658	0.000	I(0)
SMC	-0.3791	0.051	-1.0419	0.006	I(1)
VALT	-0.9510	0.000	-1.2755	0.000	I(0)
TR	-0.7191	0.003	-1.2817	0.000	I(0)
LS	-0.0137	0.422	-1.0526	0.010	I(1)
SMI	-0.0820	0.419	-1.3014	0.000	I(1)
GCF	-0.8616	0.001	-1.1782	0.000	I(0)
OPEN	0.0011	0.985	-0.9138	0.001	I(1)
INT	-0.4807	0.022	-1.3970	0.000	I(0)
INF	-0.6290	0.002	-1.1846	0.000	I(0)

Source: Author's Computation using data, 2018

From Table 4.2, it can be observed that real RGDP growth, value traded and stock turnover ratio are stationary at level at 1% level as shown by their p values which are less than 1%. However, stock market capitalization, number of listed securities, stock market index and trade openness are not stationary at level. Based on this, the variables were transformed to their first differences and all the non-stationary variables at level became stationary as shown by their p-values. The inference was that the variables are integrated at order zero and order one.

4.4 ARDL Bounds Test for Cointegration

The ARDL bounds test for cointegration was used to examine the existence of a long run relationship among the variables of the study. Table 4.3 shows the results obtained.

Table 4. 3: Result of ARDL Bounds Test for Cointegration

Test Statistic	Bounds	10%	5%	1%
----------------	--------	-----	----	----

F statistic	Lower bound	1.88	2.14	2.37
4.308	Upper bound	2.99	3.30	3.60

Source: Author's Computation using data, 2019

The decision rule for the ARDL bounds test for cointegration establishes that if F statistic is greater than the upper bound (I(1)) there is cointegration but if the F statistic is lower than the lower bound (I(0)), there is no cointegration. From Table 4.3, it can be witnessed that, the F statistic of the model was 4.308 which was greater than the upper bound of 10%, 5% and 1% critical values and higher than the lower bound of 10%, 5% and 1% critical values. Consequently, it was settled that there was cointegration, therefore a long run relationship was present among the variables of the study.

4.5 Analysis of Regression Results

This section presents the ARDL models for long run and short run results. The ARDL model was used after confirming that the variables were integrated at order one and order zero. A lag structure of 1,0,0,0,1,0 was used to estimate the models. Table 4.4 and 4.5 shows the results.

4.5.1 Long run Results for the relationship between Stock Market Development and Economic Growth in Ghana

Table 4. 4 Long run Results

Variables	Coefficient	Std. Error	P-value
Stock Market Capitalization	0.3959	0.1489	0.015
Value Traded	0.3167	0.0737	0.000
Turnover Ratio	0.7726	0.6005	0.234
Number of Listed Securities	-0.1503	1.8222	0.936
Stock Market Index	0.0334	0.0118	0.010
Gross capital formation	0.6990	1.0289	0.516
Openness	-1.0164	1.0091	0.343

Interest rate	-0.5182	0.2234	0.032
Inflation rate	-0.2288	0.1203	0.081

Source: Author's Computation using data, 2019

From Table 4.4, it can be witnessed that stock market capitalization is statistically significant at 5% level in the long run. A positive coefficient of 0.3959 suggests that a 1 percent increase in stock market capitalization leads to a 39.59 percent increase in economic growth in Ghana. However, this relationship is found to be fairly weak as shown by the size of the coefficient. The positive relationship is because stock market mirrors the size of the stock exchange thus as it increases, investors get more attracted because the size of a stock market gives an indication of the risks involved. This is as a result of smaller stock markets tending to be more sensitive to economic downturns. This finding was consistent with Nurudeen (2009), Osamwonyi & Kasimu (2013) and Bist (2017) who found that stock market capitalization increases economic growth.

The study also found that the value traded on the Ghana Stock exchange has a statistically significant and negative relationship with real GDP in the long run. However, this relationship is found to be fairly weak. A coefficient of 0.3167 indicated that a 1% increase in value traded, leads to a 31.67% increase in economic growth. This result was expected because the value of stocks traded gives an indication of the liquidity of the stocks available on the exchange. Liquidity entices most investors to invest funds in the stock market. Bringing more investors on board means increasing capital formation which in turn increases investment in an economy leading to an increase in economic growth. In addition, the value traded has an effect on stock prices as they usually move in the same direction because liquidity can have a profound effect on how violently prices of stock moves.

Stock market index was found to have a statistically significant relationship with real GDP growth at 1% level in the long run as shown by a p-value of 0.010. A positive coefficient of 0.0334 suggested that a 1 percent increase in stock market index increases economic growth by 3.34 percent. This relationship was however found to be very weak. Stock market index was expected to have a positive effect on economic growth because as the index increases cost of capital increases and thus equity funds allocated for investments rises and therefore economic growth increases. Further, prospective investors perceive the future outlook of the stock market through the stock market index. In this case, investors become enticed to invest funds into the stock exchange.

Further, the study found that interest rate is negatively related to economic growth as shown by a coefficient of -0.5182 and a p value of 0.03. This suggested that a 1% increase in interest rate leads to a 51.82 percent decrease in real GDP growth, a relationship found to be strong. This is because an increase in interest rate increases the cost of capital and an increase in the cost of capital reduces levels of investment thereby reducing economic growth.

With regard to inflation, the study found a statistically significant and negative effect on economic growth at 10% significance level. A coefficient of 0.2288 suggested that a 1% increase in inflation leads to a 22.88 percent decrease in economic growth. This is because inflation causes distortions in the economy with regard to savings and investment. Also, inflation reduces purchasing power of consumers which causes spending on goods and services to reduce thereby affecting overall production of goods and services in an economy.

Nonetheless, in the long run, the study found no statistically significant relationship between the number of listed securities. This is not consistent with Osamwonyi & Kasimu (2013) who found that listed securities increase economic growth. The explanation given is that the number of securities may not matter to economic growth if the performance of the listed firms is very poor. Similarly, the study found no statistically significant effect of turnover ratio on economic growth. This was not expected because high turnover ratio indicates a high liquidity of stocks encouraging investors to invest more into the stock market. The explanation given to this unexpected results is that, stock liquidity in Ghana is very volatile. For instance, GCB bank is believed to be one of the most traded stocks with a high turnover ratio but this position keeps changing. Ecobank Ghana stays in a similar position. It is worth noting that most investors in Ghana are more comfortable putting their funds into savings accounts and treasury bills. These investors usually may also be less knowledgeable about financial investment alternatives such as stocks. Therefore as much as stocks are easily liquidated, it changes hands among the few investors who understand the stock market thereby having an insignificant growth on the economic

4.5.2 Short run Results for the relationship between Stock Market Development and Economic Growth in Ghana

Table 4. 5 Short Run Results

Variables	Coefficient	Std. Error	P-value
Ecm (-1)	-0.7610	0.3525	0.063
Stock Market Capitalization	0.3013	0.1234	0.024
Value Traded	0.2844	0.1540	0.085
Turnover Ratio	0.0214	0.3223	0.949
Number of Listed Securities	-0.1144	1.3532	0.935
Stock Market Index	0.0254	0.0116	0.060
Gross capital formation	0.5320	0.9235	0.580

Openness	0.7735	0.1629	0.000
Interest rate	-0.3944	0.3646	0.311
Inflation	-0.1741	0.1010	0.096
Constant	5.0927	7.0462	0.490

Source: Author's Computation using data, 2019

From Table 4.5, it can be observed that the error correction term (ecm-1) is negative and statistically significant at 10% level. This confirmed that there is a long run causality running from the growth and stock market development indicators to economic growth as shown by the bounds test for cointegration. The coefficient of the error correction term indicates that in the incidence of economic shocks to the growth and stock market development variables, the speed with which economic growth adjusts to equilibrium is 76.10 percent.

In the short run, the study found that stock market capitalization has a positive and statistically significant effect on economic growth at 5% level. A coefficient of 0.3013 suggested that a 1% increase in stock market capitalization leads to a 30.13 percent increase in economic growth. As stated earlier, stock market capitalization mirrors the size of the stock market and thus the higher the SMC the higher the level of capital formation and thus economic growth.

The study found that the value traded of stocks has a statistically significant effect on economic growth at 10% as shown by a p-value of 0.085. A positive coefficient of 0.2844 suggested that a 1 percent increase in value traded increases economic growth by 28.44 percent. This is because value traded increases when more buyers and sellers are interested in a particular stock signifying the level of liquidity. As explained earlier liquidity has an effect on stock price, usually a positive one. An increase in stock prices positively affects real GDP growth. This finding conforms to Churchill,

Arhenful, and Agbodohu (2013) who found that stock market liquidity promotes economic growth.

Further, stock market index was found to have a statistically significant relationship with economic growth at 10% as shown by a p-value of 0.060. A positive coefficient of 0.0254 suggested that a 1 percent increase in stock market index leads to a 2.54 percent increase in economic growth, all things being equal. Stock market index was expected to have a positive influence on real GDP growth because as it increases, the cost of capital increases and thus equity funds allocated for investments rises and therefore economic growth increase.

Also, in the long run trade openness had a positive and statistically significant effects on economic growth at 1%. This means that trade openness leads to economic growth in Ghana in the short run. This is probably because trade openness indicates the level of interaction between a country and the outside world, a high level of openness reduces risks of production and increases over output growth. Inflation was also found to have a significant and negative influence on economic growth in the short run at 10%.

However, the study found no relationship between stock market capitalization and economic growth in the long run from 1996 to 2017. This finding conforms to Bist (2017) who found a positive and statistically significant effect on economic growth. This is because in the long run economic shocks are usually corrected therefore the level of risks associated with the size of the market capitalization of a stock market may be minimized. This means that whether stock market capitalization is small or huge, potential risks associated with it do not really matter for the economic growth of a country.

Similarly, no statistically significant relationship was found between the number of listed securities and economic growth. This is because the number of listed securities may not necessarily increase real GDP because security prices need to be high enough, less volatile and have a high turnover ratio to promote the development of a stock market which in turn promotes economic growth.

4.6 Results of Diagnostic and Stability Tests

As explained in the methodology, diagnostic and stability tests are conducted to check for robustness and reliability of the estimated model. Table 4.6 presents results of tests for heteroskedasticity, serial correlation, functional form and stability of the model estimates.

Table 4. 6 Results of Diagnostic and Stability Tests

Test	Test statistic	P value	Conclusion
Breusch-Pagan test for Heteroskedasticity	1.30	0.2541	Constant variance
Breusch-Godfrey Serial Correlation LM Test	0.422	0.5161	No serial correlation
	1.35	0.3182	No omitted variables
Ramsey RESET test for Functional form			Stable
CUSUM			Stable
CUSUM Q			

Source: Author's Computation using data, 2018

The Breusch Pagan test for heteroskedasticity has a null hypothesis of constant variance. A test statistic of 1.30 with a p-value of 0.2541 suggested that the null hypothesis should be accepted as the statistic is not statistically significant. This led to the inference that the model was free from heteroskedasticity. Further, it was witnessed that the probability value of the Breusch-Godfrey LM test is statistically

insignificant ($p= 0.5161$) which meant that the null hypothesis of no serial correlation cannot be rejected. It was thus decided that there was no serial correlation among the variables of the study. Ramsey RESET test for functional form has a null hypothesis of no omitted variables, thus a p value of 0.3182 suggested that the null hypothesis cannot be rejected.

Figure 4.5 and 4.6 shows the CUSUM and CUSUMSQ stability plots respectively. it can be seen that the plots lie within the confidence intervals.

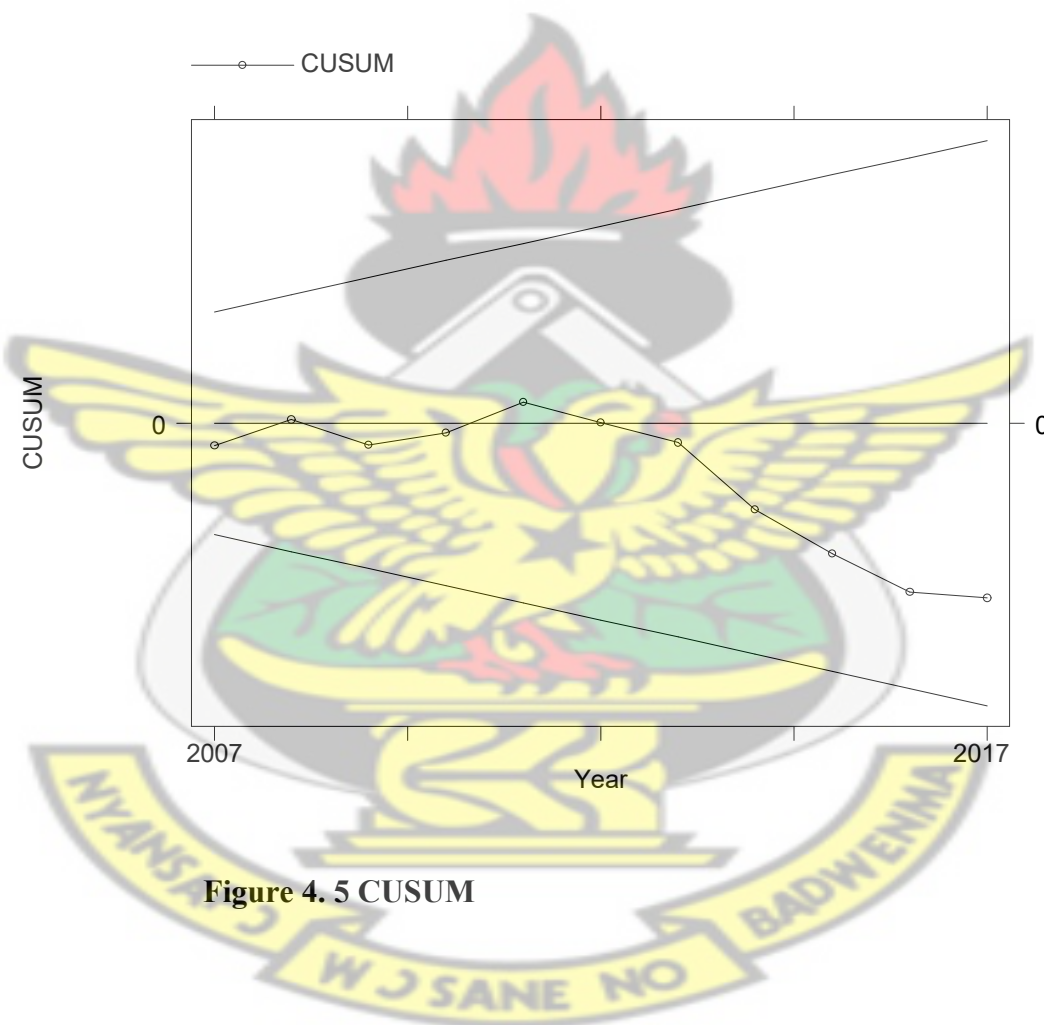


Figure 4. 5 CUSUM

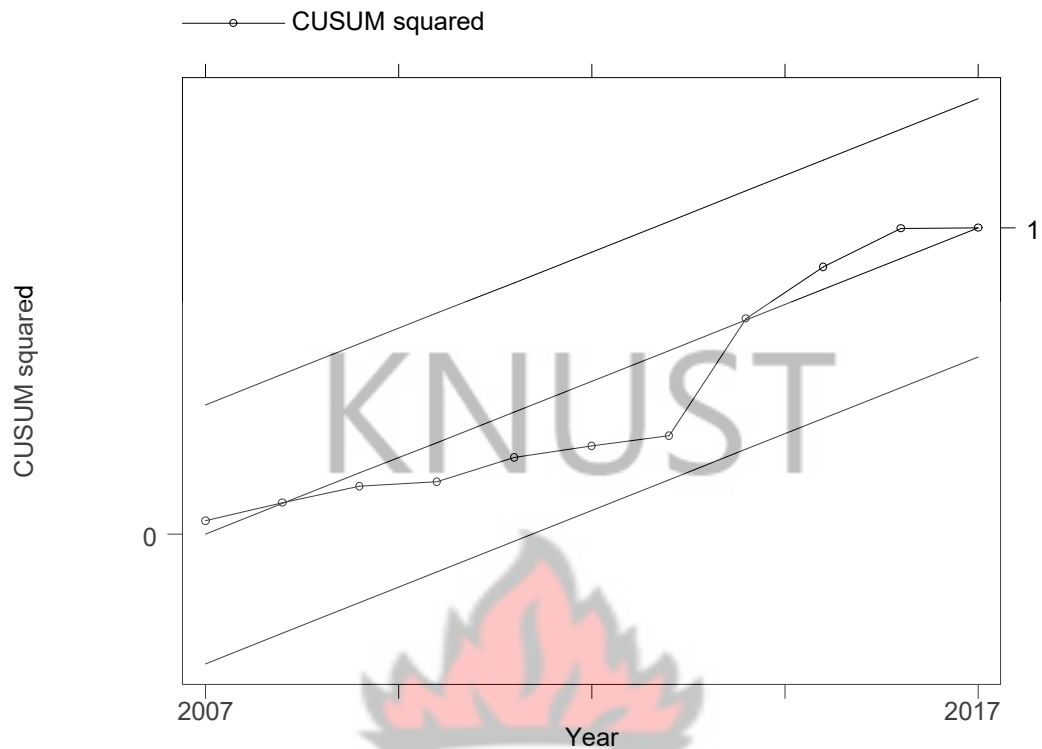


Figure 4. 6 CUSUMS square

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of the study, conclusions drawn from findings and recommendations.

5.1 Summary of Major Findings

Based on the discussions in Chapter Four, the following are the major findings:

The trend analysis revealed that the movement of real GDP over the period was similar to that of the stock market capitalization, value traded and turnover ratio. However, for stock market index, the movements were dissimilar to the movement of

real GDP. The ARDL bounds tests revealed cointegration, therefore a long run relationship was present among the variables of the study. The coefficient of the error correction term indicates that in the incidence of economic shocks to the stock market development variables, the speed with which economic growth adjusts to equilibrium is 56.26 percent.

The study further found that, stock market capitalization is statistically significant in the long run. A positive coefficient of 0.3959 suggests that a 1 percent increase in stock market capitalization leads to a 39.59 percent increase in economic growth in Ghana. The study also found that the value traded on the Ghana Stock exchange has a statistically significant and positive relationship with real GDP in the long run. Stock market index was found to have a statistically significant relationship with real GDP growth in the long run. A positive coefficient of 0.0334 suggested that a 1 percent increase in stock market index increases economic growth by 3.34 percent. It was also found that inflation and interest rate negatively affect economic growth in the long run.

In the short run, the study found that stock market capitalization has a statistically significant effect on economic growth. A positive coefficient of 0.3013 suggested that a 1 percent increase in stock market capitalization increases economic growth by 30.13 percent. Value traded was found to have a statistically significant effect on economic growth in the short run. A positive coefficient of 0.2844 suggested that a 1 percent increase in stocks value traded increases economic growth by 28.44 percent. Inflation was also found to have a significant and negative influence on economic growth in the short run and trade openness increases economic growth. Lastly, in both

the long and short run, the study found no statistically significant relationship between number of listed securities

5.2 Conclusions

This study sought to analyse the trend of stock market development and economic growth in Ghana as well as the effect of stock market development on economic growth in Ghana. The study used annual time series data of Ghana from 1996 to 2017. The study adopted tests for Stationarity tests, Autoregressive Distributed Lag (ARDL) bounds testing for cointegration, ARDL model for both long run and short run analysis, diagnostic and stability tests. The stationarity test was used to check for the presence of unit root in the time series data. The ARDL bounds test was used to examine the series for cointegration relationships. The ARDL model was used to estimate the long run and short run effects of stock market development on economic growth in Ghana. Also, diagnostic and stability tests were conducted to ensure reliability of the model and its estimates.

The study concludes that stock market development is very important to the economic growth of Ghana. Specifically, in the long run, stock market capitalization, stocks value traded and the stock market index are important stock market development indicators which affect economic growth in Ghana. Alternatively, in the short run stock market capitalization, value traded, and stock market index are the stock market development indicators which affects the economy. In addition, inflation and interest rate negatively influence economic growth in the long run. Trade openness and inflation rate influence economic growth in the short run. The conclusion drawn from these findings is that stock market liquidity and the size of the Ghana stock exchange are important for the growth of Ghana. Therefore policies should be geared towards boosting the confidence investors have in the share market and policies that ensure

liquidity. This is because most Ghanaian investors may be more interested in other investment avenues like treasury bills which are highly liquid compared to stocks.

5.3 Recommendations

The ensuing recommendations have been made by the study;

The government and other regulatory bodies are endeavoured to encourage firms operating in the Ghanaian economy to be listed on the Ghana stock exchange. This could be achieved through the eliminations of the obstructions to being listed and increase public education on the need to raise capital through the stock market.

Lastly, the study recommends that the Ghana Stock Exchange adopt various strategies to create awareness on the need to invest in the stock market. This would bring more investors on board especially those who are less knowledgeable about the stock exchange. It is believed then when more investors trade, shares can be quickly bought and sold thereby increasing liquidity.

Strategies should be focused on a more vibrant stock market which is an important for the economic growth of Ghana. This could be achieved by ensuring a stable macroeconomic environment in which businesses will thrive.

REFERENCES

- Acquah-Sam, E. and Salami, K (2014). Effect of Capital Market Development on Economic Growth in Ghana. *European Scientific Journal* 10(7); 511-534
- Adefeso, H.A.; and Egbetunde, T.; Alley, I. (2013). Stock market development and growth in Nigeria: A causal analysis. *Arabian J. Bus. Manag. Rev.* 2, 78–94.
- Anaman, K.A. (2004) Determinants of Economic Growth in Brunei Darussalam. *Journal of Asian Economics*, 15(4); 777-796.
- Antwi, S. and Zhao, X. (2013). Impact of FDI and Economic Growth in Ghana: A Cointegration Analysis. *International Journal of Business and Research* 3(1): 89-99
- Aryeetey, E., and Kanbur, R. (2008). Ghana's economy at half-century: Overview of stability, growth and poverty. In E. Aryeetey, and R. Kanbur (Eds.), *The economy of Ghana: Analytical perspectives on stability, growth and poverty* (pp. 1-19). Accra: Woeli Publishing Services.
- Bhasin, V.K., and Obeng, C. K. (2007). Trade Liberalization, Foreign Aid, Poverty and Income Distributions of Households in Ghana. In 12th Annual Conference on Econometric Modelling for Africa. Cape Town: AES. Retrieved from [http://www.africametrics.org/documents/conference07/Day2/Session6/Bhasin Trade Liberalization and Foreign AID.pdf](http://www.africametrics.org/documents/conference07/Day2/Session6/BhasinTradeLiberalizationandForeignAID.pdf)
- Capasso, S. (2006). Stock Market Development and Economic Growth. World Institute for Development Economic Research, *Research paper* NO.2006/102.

- Churchill, R. Q., Arhenful, P., and Agbodohu, W. (2013). Stock Market Capitalization and Economic Growth in Ghana. *Research Journal of Finance and Accounting*, 4(17), 23-45.
- Deb, S. G., and Mukherjee, J. (2008). Does Stock Market Development Cause Economic Growth? A Time Series Analysis for Indian Economy. *International Research Journal of Finance and Economics*, 21(3), 142-149.
- Dewan-Muktadir-Al-Mukit, M., Uddin, M., Islam, M. T., and Arif, M. Z. U. (2014). Stock Market Development and Economic Growth: An Evidence from SAARC Countries. *International Journal of Management (AIJM)*, 3(1), 45-60.
- Dickey, D. A. and Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive times series with a unit root. *Econometrica*, 49 (4), 1057- 1072.
- Dowling, J.M., and Valenzuela, M. R. (2010). Economic Development in Asia (2nd ed.). Singapore: CENGAGE Learning.
- Duut, A.K. (2010). Equilibrium, Stability and path dependence in post-Keynesian models of growth. In Birolo et al. eds., Production, distributions and trade: Alternative perspectives. London: Routledge, forthcoming.
- Government of Ghana (2006). Growth and Poverty Reduction Strategy (GPRS II) (2006-2009) Volume 1: Policy Framework, National Development Planning Commission, Accra, Ghana, 147 pp.
- Granger, C.W.J. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*, 37(3), 424-438

GSE (2007). Ghana stock exchange fact book. Accra: Buck Press Ltd.

GSE (2015). Ghana stock exchange fact book. Accra: Buck Press Ltd.

GSE (2016). Ghana stock exchange fact book. Accra: Buck Press Ltd.

Gujarati, D. N. (2001). *Basic econometrics* (4th ed). New York: The McGraw- Hill Companies Inc.

Gurusamy, S. (2008). *Financial Services and Systems*. 2nd Edition, Tata McGraw-Hill Education

Haley, J. D. (1993). A Cointegration analysis of the relationship between underwriting margins and interest rates: 1930-1989. *The Journal of Risk and Insurance*, 60(3), 480-493.

Haley, J. D. (1995). A by-line cointegration analysis of underwriting margins and interest rates in the property-liability insurance industry. *The Journal of Risk and Insurance*, 62(4), 755-763.

International Monetary Fund (2012). *Statistics on the Growth of the Global GDP from 2003-2013* retrieved from www.statistica.com on June 19, 2018

International Monetary Fund (2012) *Back to Basics: What is Money?* Retrieved from www.imf.org on June 19, 2018

Johansen, S. (1988). Statistical analysis of co-integrating vectors. *Journal of Economic Dynamics and Control*, 12, 231-254.

- Johansen, S., and Juselius, K. (1992). Testing structural hypothesis in a multivariate cointegration analysis of the purchasing power parity and the uncovered interest parity for UK. *Journal of Econometrics*, 53, 211-244.
- Kilby, C., and Dreher, A. (2010). The Impact of Aid and Growth Revisited: Do Donor Motives Matter? *Economics Letters*, 107(3); 338–340.
- Manu, F. (2017). Performance of the Ghana Stock Exchange and Economic Growth. A thesis submitted to the Department of Business Administration, Ashesi University College. Submitted in partial fulfilment of the requirements for the award of Bachelor of Science Degree in Business Administration.
- Nurudeen, A. (2009). Does Stock Market Development Raise Economic Growth? Evidence from Nigeria. *Review of Finance & Banking*, 1(1).
- Olweny, T. O., and Kimani, D. (2011). Stock market performance and economic growth: empirical evidence from Kenya using causality test approach. *Advances in Management and Applied Economics*, 1(3): 153-196.
- Odhiambo, N. M. (2010). Stock Market Development and Economic growth in South Africa: AN ARDL-BOUNDS Testing Approach. South Africa: University of South Africa Pretoria.
- Owusu, E.L.; and Odhiambo, N.M. (2014). Stock Market Developments and Economic Growth in Ghana: An ARDL-Bounds Testing Approach. *Appl. Econ. Lett.* 21: 229–234.
- Ovat, O.O. (2012) Stock Market Development and Economic Growth in Nigeria: Market Size versus Liquidity. *Can. Soc. Sci.*, 8; 1-12.

- Osamwonyi, I.O., and Kasim U, A. (2013). Stock Market and Economic Growth in Ghana, Kenya and Nigeria. *International Journal of Financial Research*, 4(2); 83-98
- Osaze, B. E. (2007). Capital Markets: African & Global. Nigeria: Bookhouse Company.
- Phillips, P. C. (1987). Time Series Regressions with a Unit Root. *Econometrica*, 55, 277-30. <http://dx.doi.org/10.2307/1913237>
- Pradhan. R. P. (2009). The Nexus between Financial Development and Economic Growth in India: Evidence from Multivariate VAR Model. *International Journal of Research and Reviews in Applied Sciences*, 1(2), 141-151.
- Quaidoo, C. (2011). Stock Market Capitalization and Economic Growth in Ghana. A thesis submitted to the Department of Economics, Faculty of Social Sciences, University of Cape Coast in Partial Fulfilment of the Requirements for Award of Master of Philosophy Degree in Economics
- Quartey, P., Ackah, C., Dufe, G., and Agyare-Boakye, E. (2010). Evaluation of the Implementation of the Paris Declaration on Aid Effectiveness: Phase II, Final Country Report for Ghana. Accra. Retrieved from <http://www.oecd.org/countries/ghana/47651795.pdf>
- Regmi, U. R. (2012). Stock Market Development and Economic Growth: Empirical Evidence from Nepal. *Administration and Management Review*, 24(1); 1-28.

- Ross, V. (2011). Developing Stock Exchanges in Developing Countries. Kellogg Insight, Northwestern University
- Senbet, L., and Otchere, I. (2008). Beyond Banking: Developing Markets; African Stock Market. *African Finance for the 21st Century High-Level Seminar Organized by the IMF Institute in Collaboration with the Joint Africa Institute*, Tunis, Tunisia, March 4-5.
- Shahbaz, M., Ahmed, N., and Ali, L. (2008). Stock Market Development and Economic Growth: ARDL Causality in Pakistan. *International Research Journal of Finance and Economics*, 14(1), 182-195.
- Sililo, M. (2010). *Stock Market Development and Economic Growth: A Case for Zambia*. Research Report Presented in Partial Fulfillment of the Requirements for the Degree of Masters of Business Administration at the University of Stellenbosch.
- Ucak, A. (2015). Adam Smith: The Inspirer of Modern Growth Theories. *Procedia-Social and Behavioral Sciences*, 195: 663-672
- United Nations. (2002). Monterrey Consensus of the International Conference on Financing for Development. Washington DC. Retrieved from <http://www.un.org/esa/ffd/monterrey/MonterreyConsensus.pdf>
- Vazakidis, A., and Adamopoulos, A. (2009). Stock Market Development and Economic Growth. *American Journal of Applied Sciences*, 6(11), 1933 – 1941.
- World Bank (2010). Development and Regulation of Non-bank Financial Institutions

World Bank (2018). Ghana Overview. Retrieved from www.worldbank.org on April 20, 2018

Yartey, C. A., and Adjasi C. K. (2007). Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges. IMF Working Paper 07/209. Washington DC: International Monetary Fund.

Yartey, A. C. (2008). *The determinants of stock market development in emerging economies: Is South Africa different?* IMF Working Paper No. WP/08/32. Washington D.C.: International Monetary Fund.

Yartey, A. C., and Adjasi, K. C. (2007). *Stock market development in Sub-Saharan Africa: critical issues and challenges*. IMF Working Paper No. WP/07/ 209. Washington D.C.: International Monetary Fund.

