UNIVERSITY OF CAPE COAST

DETERMINANTS OF STOCK MARKET DEVELOPMENT IN EMERGING ECONOMIES

BY

ERNEST CHRISTIAN WINFUL

Thesis Submitted to the Department of Economics of the Faculty of Social Sciences, College of Humanities and Legal Studies, University of Cape Coast in Partial Fulfilment for the Award of Doctor of Philosophy Degree in Economics

JULY 2017

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere

Candidate's Signature.......................... Date. 7/08/17

Name: Ernest Christian Winful

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis as laid down by the University of Cape Coast.

Principal Supervisor's Signature.......................... Date. 21/08/2017

Name: Prof. Vijay K. Bhasin

Co-supervisor's Signature.......................... Date. 7/08/17

Name: Prof. Samuel K. Annim

ABSTRACT

There is no advanced economy that has achieved a remarkable economic development without the establishment and the development of capital markets. Well-functioning stock markets are expected to influence growth through increased capital accumulation and by influencing the efficiency of capital allocation. Singh (1999) argues that capital market might face serious challenges in emerging economies due to the huge costs and the poor financial structures. These problems are magnified in emerging economies with their weaker regulatory institutions and greater macroeconomic volatility. The objectives of this thesis are to examine the relationship between education and stock market development; institutional quality and stock market performance; and some selected macro-economic (Consumer Price Index and Money Supply) and stock market development. A panel data of 41 emerging economies for the period 1996 to 2011 is used to estimate the results. The techniques employed on these models are the Dynamic Ordinary Lease Squares and Newey-West to account for different characteristics of emerging economies. The main findings are that education interacts with GDP to influence stock market development; institutional quality interacts with GDP to affect stock market development, then finally selected macroeconomic variables such as Money Supply and Consumer Price Index, all of which interact with GDP to influence stock market development. Recommendations for emerging economies are; the education ministers should reduce illiteracy rate by increasing secondary school enrolment; Security and Exchange Commission to establish transparent regulatory framework that will resolve industrial disputes and create liquid securities market; finally, finance ministers have to broaden investor base to include more foreigners and then stabilizing the macroeconomic indicators.

Credit: Ernest Christian Winful (PhD thesis, 2017)

KEY WORDS

Emerging Economies

Stock Market Capitalization

Consumer Price Index

Money Supply

Gross Domestic Product per Capita

Education

Institutional Quality

ACKNOWLEDGEMENTS

I express my sincere gratitude to all those who played key roles in making my Ph.D. work a success. My sincere appreciation goes to Prof. Vijay K. Bhasin, main supervisor who kindly agreed to supervise this thesis. To Prof. Samuel K. Annim, a mentor and my co-supervisor, I say thank you so much for being an eye opener to me and also encouraging me when it becomes very difficult to progress with the thesis. My sincere appreciation also goes to Prof. Isaac K. Acheampong my mentor.

I owe a debt of gratitude to Dr. Camera Obeng and Dr. Peter Aglobitse for their administrative support. I say thank you to Bale of Ghana Stock Exchange for his support in relation to data gathering. I cannot forget Prof. Travis bits of pieces of advice. Last but not the least I thank the entire staff and students of Department of Economics for their time and input to my work.

To my late Dad I say, I love you for your prayers, support and encouragement when started the program. I appreciate it so much I will forever remember you. My appreciation also goes to my mother for being there for me all these difficulty times. God richly bless you all.

DEDICATION

To my wife Akua Dufie and children (Matilda, Ernestina, Lydia and Samuel)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AIC	Akaike Information Criterion
CC	Control of Corruption
DOLS	Dynamic Ordinary Lease Squares
E	Education
EMH	Efficient Market Hypothesis
EXCH	Exchange Rate
FGLS	Feasible Generalized Lease Squares
GDP	Gross Domestic Product
GE	Government Effectiveness
GLS	Generalized Lease Squares
HDI	Human Development Index
IFC	International Finance Corporation
IQ	Institutional Quality
LM	Lagrangian Multiplier
M1	Narrow Money Supply that Consist of Currency Outside Banks and Demand Deposits
M2	Narrow Money Supply that consist of M1 and time and saving deposits
MS	Money Supply
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PA	Political Stability
PVM	Present Value Model
RL	Rule of law
RQ	Regulatory Quality
SMC	Stock Market Capitalization
UNESCO	United Nations Educational, Scientific and Cultural Organization
VA	Voice and Accountability
VIF	Variance Inflation Factor
WDI	World Development Indicators
WGI	World Governance Indicators

CHAPTER ONE: INTRODUCTION

Background

The stock market plays a vital role in the modern economy since it acts as a mediator between lenders and borrowers. Financial markets, and especially stock markets, have contributed considerably to the development of emerging economies over the last two decades. This trend is recorded at the same time that these economies are characterized with growth in the literacy rate of the citizenry, growth in Gross Domestic Product (GDP), improvement in institutional quality, relatively stable macroeconomic variables, privatization of state-owned enterprises, and domestic financial reform and capital account liberalization. All these have aided in their growth.

Another point is that globalization has also advanced in the last two decades with increased cross-border capital flows, tighter links among financial markets, and greater commercial presence of foreign financial firms around the world. These global trends are likely to accelerate as access to information, literacy levels and institutional quality improves. As a means to ensure efficient resource mobilization and allocation these trends are however raising questions with regards to the emphasis that countries need to place on developing capital markets.

The market capitalization of emerging stock markets rose from \$604 billion to \$3,074 billion for the period 1990 to 1999. The trend continued in the 2000 with countries like Malaysia, Jordan, Jamaica, Chile, Saudi Arabia, Thailand, and Philippines accounting for the rise in stock market capitalization. This trend is supported by the figure below. It could be deduced that after 2000 most markets saw an increase in Stock Market Capitalization (SMC) as shown by markets sampled in this thesis.

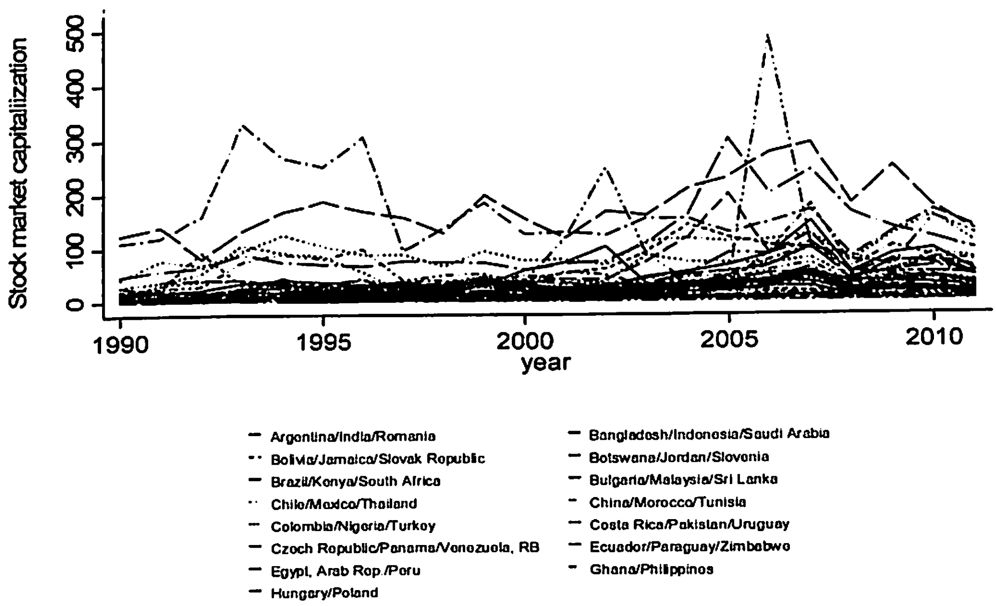


Figure 1 Stock Market Capitalization Trend by Market (1990 – 2011)

Interestingly, countries cited as having high stock market capitalization over the period under study recorded low average GDP. The trend shows an inverse relationship between GDP and stock market capitalization which does not conform to literature reviewed in this thesis and hence raises questions which are worth researching.

Theories identify the two major factors of development, that is, human capital and technology. According to the Director-General of UNESCO, Irina Bokova, to achieve sustainable development, technology, political regulations and financial incentives will not suffice – we need to change the way that we think and act, as individuals and as societies. This can be realized through educational reforms or increased access to education. There are basically two reasons for expecting to find some link between education and the performance of the stock market. The general reason is that it is intuitively plausible that living standards have risen so much over the last millennium because of education. Progress of the sort enjoyed in Europe was not observed in the illiterate societies that have gradually merged into the world economy over the last two hundred years. To the most casual observer it must seem that there is a link between scientific advance and the way in which education has facilitated the development of knowledge. Education is needed for people to benefit from scientific advance as well as to contribute to it. A well functioned economic system with high literacy rate will perform better relation to growth in GDP. A more specific reason is that, a wide range of econometric studies indicates that the incomes individuals can command depend on their level of education. If people with education earn more than those without, shouldn't the same be true of countries? If not the rate of change of output per hour worked, at least the level of output per hour worked in a country ought to depend on the educational attainment of the population. If spending on education delivers returns of some sort, in much the same way as spending on fixed capital, then it is appropriate to talk of investing in human capital, as the counterpart to investing in fixed capital. Benhabib and Spiegel (1994) and Klenow and Rodriguez Clare (2006) confirmed in their articles that highly educated professionals and workers are functional to the creation and adoption of highly productive technologies that are, in turn, a fundamental engine of growth. With education, emerging markets could tap into potentially large amounts of financial wealth which exist outside of the financial systems and improve on the liquidity of capital markets.

Theories of firm behavior, no matter how they differ in other respects, almost invariably ignore the effect of the productive process itself on worker productivity. This is not to say that no one recognizes that education affects stock market performance; but the recognition has not been formalized, incorporated into economic analysis, and its implications worked out. This is a gap this thesis seeks to fill.

Human capital is one of production elements which can generate added-values. The method to utilize human capital can be categorized into two types. The first is to utilize 'human as labor force' in the classical economic perspective. This meaning depicts that economic added-value is generated by the input of labor force as other production factors such as financial capital, land, machinery, and labor hours. Until the monumental stock market performance of the 1980's, most economists had highlighted the importance of such quantitative labor force.

Improving financial literacy, in other words the educational levels of the citizenry, contributes positively to the financial markets and the economy. From the work of Volpe, Ronald; Kotel, Joseph; Chen, Haiyang, (2002) and OECD (2005), financially educated investors help financial markets to operate efficiently, as they take better trading decisions based on fundamental and or technical analysis instead of acting irrationally. In addition, those people are in better position to protect themselves from financial frauds.

Furthermore, financially educated customers demand more customized products which increase competition between businesses, encourage innovations, and improve products quality. Moreover, the increase in households saving associated with high financial literacy, has positive impact on investment level and financial markets liquidity, hence stock market development. For emerging economies, financially educated consumers can help ensure that the financial sector makes an effective contribution to stock market performance and poverty reduction.

The average trend of SHS enrolment for markets sampled over the research period has been on the increase as shown in the figure below. It is expected that this increase SHS enrolment should result in increase in stock market capitalization. As knowledge or literacy of the citizenry in an economy increases, income also increases thereby making money available for investment and hence improvement in the performance of the stock markets of emerging markets. The increasing trend in SHS enrolment over the years could explain the improvement of stock markets in emerging economies.

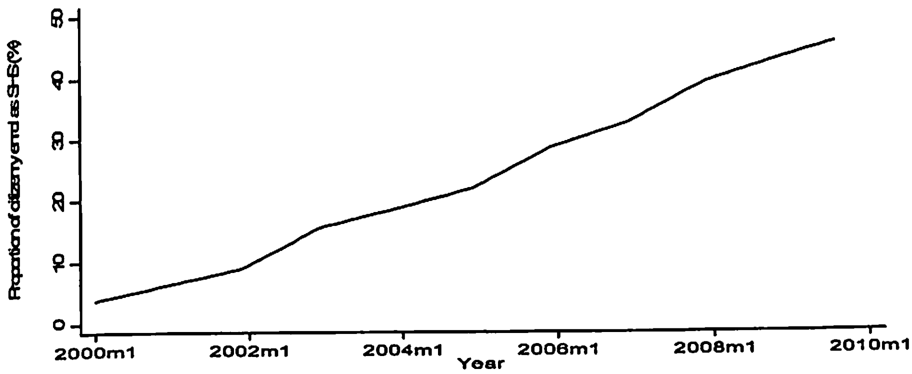


Figure 2 Average Trend of SHS Enrolment

Emerging economies continue to grow faster than more advanced countries. Non-OECD economies' share in world GDP surpassed that of OECD economies in 2010. Since its first edition in 2010, the annual perspectives on global development have investigated the trends in "shifting wealth", the increasing economic weight of emerging economies in the world economy. This has received a boost through the rise of China, which has also led to positive spillover effects on emerging economies that supply China's demand for resource-based products and intermediates. However, even at their higher rates of growth since 2000, the per capita incomes in emerging economies – including many middle-income economies – will not reach the levels of developed countries by 2050. Brazil, Russia, India, Indonesia, China, and South Africa average growth rate fell from 6.3 percent to 5.3 percent. Going forward, their average GDP is projected to grow by 4.7 percent a year until 2020. China will continue to have the fastest growth among these countries. With the increasing GDP of these emerging markets, our study expects stock market capitalization in these economies also to increase.

Boosting stock market performance in emerging economies could stem this trend, and this notion is the focus of this thesis. Over the past decade, productivity growth in a number of middle-income economies was insufficient to close the gap in productivity between emerging economies and advanced countries. In Brazil, Mexico, and Turkey, the gap even widened. In contrast, China's record is impressive, with labour productivity in manufacturing and services rising by 10 per cent, year on year. At the same time, this growth needs to be inclusive so that a real convergence in living standards can take place.

Figure 2 below shows that institutional quality over years has being improving for the markets sampled. Before 2002, almost all the 41 countries sampled for this thesis were classified as having weak institutional quality. For the period between 2002 and 2005, some countries were still having weak institutional quality in regulatory quality, rule of law, and the control of corruption, whiles voice and accountability, political stability, and good governance had improved for most countries. For the period after 2005, almost all the 41 countries sampled could be described as having on the average strong institutional quality.

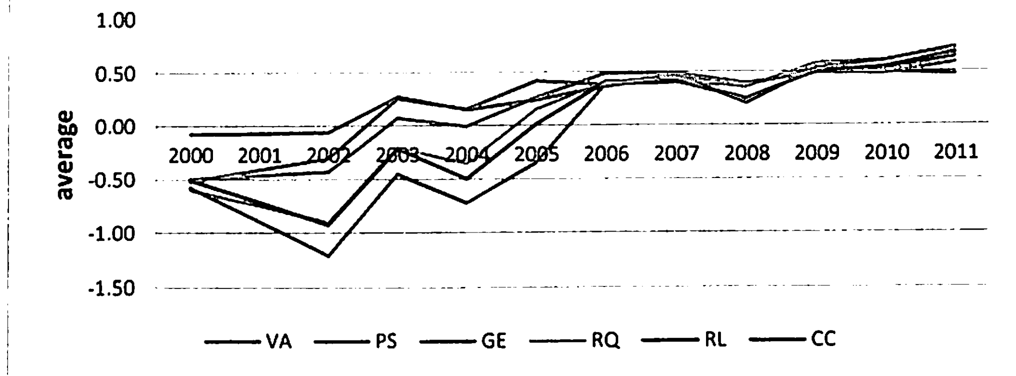


Figure 3 Institutional Quality Trend (1996 – 2011)

A well-functioning stock market plays a vital role in the modern economy since it acts as a mediator between lenders and borrowers. It does this through two important channels: boosting savings and allowing for a more efficient allocation of resources. Economic theory suggests that stock prices should reflect expectations about future corporate performance, and corporate profits generally reflect the level of economic activities. If stock prices accurately reflect the underlying fundamentals, then the stock prices should be employed as leading indicators of future economic activities, and not the other way around. Therefore, the causal relations and dynamic interactions among macroeconomic variables and stock prices are important in the formulation of the nation's macroeconomic policy. Macroeconomic variables such as Money Supply have effects on stock prices. The efficient market hypothesis suggests that competition among the profit-maximizing investors in an efficient market will ensure that all the relevant information currently known about changes in macroeconomic variables are fully reflected in current stock prices, so that investors will not be able to earn abnormal profits through prediction of the future stock market movements (Chong and Koh (2003)).

According to intuitive financial theory, various macroeconomic variables affect stock market behavior (Maysami and Koh 2000). The existing literature provides a number of theories illustrating the link between stock market behavior and macroeconomic variables. The effect of macroeconomic variables on the stock market behaviour is a well-established theory in financial economics literature. However, more studies are focused on the developed countries such as the US, UK and Japan [see e.g. Fama (1981) and Chen (1991) for the US; Hamao (1988) for Japan; and Poon and Taylor (1992) for the UK] than our study present the case of emerging economies as provided by our study.

The work of Garcia and Liu (1999) established that macroeconomic volatility does not affect stock market performance, while Maku and Atanda (2010) revealed that the stock market performance in Nigeria is mainly affected by macro-economic forces in the long-run. Ting, H. L., Feng, S. C., Weng, T. W., and Lee, W. K., (2012) established that Kuala Lumpur Composite Index is consistently influenced by interest rate, Money Supply and Consumer Price Index in the short run and long-run in Malaysia. Mehwish (2013) recognized a negative relationship between real interest rate and stock market performance in Pakistan. Consumer Price Index and Interest Rate have significant impact on the stock market performance in Bangladesh, according to the findings of Jahur et al. (2014).

A regression analysis conducted by Aduda, Masila, and Onsongo (2012) reported that there is no relationship between stock market development and Macro-economic stability - inflation and private capital flows. Also, Songole (2012) established that market interest rate, Consumer Price Index and exchange rate have a negative relationship with stock return. Ochieng and

Adhiambo (2012) established that 91 – day T-bill rate has a negative relationship with the NASI, while inflation has a weak positive relationship with the NASI. Kimani and Mutuku (2013) showed that there is a negative relationship between inflation and stock market performance.

Statement of the Problem

There is no advanced economy that has achieved a remarkable economic development without the establishment and the development of capital markets. Thus, an emerging economy, which aspires to emulate the achievements of advanced economies must establish and develop its capital markets. Financial development's association with economic growth remained an important area of discussion since last many decades. Levine (2001) states that a well-functioning stock markets are expected to influence growth through increased capital accumulation and by influencing the efficiency of capital allocation. In a market economy, the role of the capital market is very important. Goldsmith (1969) states that financial superstructure of an economy accelerates economic growth and improves economic performance to the extent that it facilitates the migration of funds to the place in the economic system where the funds will yield the highest social return. As far back in the 60s capital markets were shown to offer tremendous potential to economic growth by tapping not only into domestic financial resources, but also into international financial markets. They provide liquidity to investors and make funds available for the undertaking of long-term projects also influence significantly the quality of investment decisions. Economic growth, driven by market forces, has become the main economic pursuit of modern states and emerging markets. It is regarded as one of the ultimate economic measure of countries competitiveness and economic performance. Capital markets are viewed as the sine qua non for economic development. The usefulness of capital markets is pretty much established. Literature reviewed show that remarkable economic development chalked advance economies has been as result of the development of capital market. Hence, an emerging economy, which seeks to emulate the achievements of advance economies must establish and develop its capital markets. During the last two decades, many emerging markets have opened their domestic stock markets to foreign investors, but equity markets in some countries remain largely closed to foreign participation. Permitting foreigners is one way of obtaining access to international equity capital.

There has been a considerable development in the stock market since the early 1990s. Prior to 1989, there were just few stock markets in the economies sampled for this thesis. The strengthening in emerging market growth since the late 1990s is very pronounced, as exactly expected. Not only have the growth rates of the developed world fallen relative to the emerging economies since the late 1990s, but they have actually fallen in absolute terms as well. It is believed that a large part of the decline in western growth has been due to the collapse of the financial sector in 2008. This means that investment capital is being taken out of developed economies and injected into emerging market economies.

The growing sophistication of financial markets means consumers are not just choosing between interest rates on two different bank loans or savings plans, but are rather being offered a variety of complex financial instruments for borrowing and saving, with a large range of options. At the same time, the responsibility and risk for financial decisions that will have a major impact on an individual's future life, notably pensions, are being shifted increasingly to workers and away from government and employers.

The level of financial literacy is very high for emerging economies relative to developed economies. Individuals will not be able to choose the right savings or investments for themselves, and may be at risk of fraud, if they are not financially literate. But if individuals do become financially educated, they will be more likely to save and to challenge financial service providers to develop products that truly respond to their needs, and that should have positive effects on both investment levels and economic growth. Individuals are increasingly being asked to take on sole responsibility for complex savings tasks which were previously at least shared with governments or employers. But how can individual workers or parents be expected to weigh the risks and make responsible choices in an ever more sophisticated financial market?

Financial education can complement, but can never replace, other aspects of successful financial policy such as consumer protection and the regulation of financial institutions. There has being no research in an attempt to explain the current performance of stock markets in emerging economies in relation to institutional quality, education and macroeconomic variables that have seen remarkable improvement for emerging economies over the sampling period of this thesis 1996 to 2011. The study argues that weak institutional quality exacerbates fiscal and macroeconomic instability and ceteris paribus negatively impacts upon stock market development.

This thesis seeks to fill the gap of severe data limitations on the link between education and stock market performance. As Goh (1979) states, a nation's wealth in the 21st century will depend on the capacity of its people to learn. The study also contributes to the debate on the effect of institutional quality and also macroeconomic variables on stock market capitalization of emerging economies which the study believes has received very little attention from researchers. In contrast to our study, many researchers like Harvey, Solnik and Zhou (2002) and Fama and French (1989) have based their analysis on business cycle variables or stock market valuation measures such as the term spread or default spread for the former category or dividend yield or earnings yield for the latter. Barro and Xavier Sala-i-Martin (1995), Sala-i-Martin (1997) and others concluded that the relationship between schooling and growth is too weak to plausibly explain more than one-third of the observed relation between schooling and growth. Another important consideration, however, is that part of the relation between schooling and growth may reflect omitted factors that are related both to schooling rates. Identifying the nature and importance of any such factors is a subject for further study.

Another motivation is that the role of capital markets in stimulating economic progress is less debatable as there are well established theoretical frameworks for aprori expectations to be in the affirmative. However, there are considerable debates about the findings and empirical evidence across countries and the arguments are quite inconclusive and with mixed results. For instance Kraay, (1998) and Rodrick, (1998) found that capital market does not affect growth, while Levine (2001), Bekaert et al. (2003) and others stood their ground that the effect is positive.

Singh (1999) has argued that the capital market might face serious challenges in emerging economies and may not perform efficiently and that it may not be feasible for such economies to promote capital markets given the huge costs and the poor financial structures. These problems are magnified in emerging economies with their weaker regulatory institutions and greater macroeconomic volatility. It is for this reasons this thesis is looking into the determinants of stock market development in emerging economies.

Objectives

The main objective of this thesis is to establish the determinants of stock market development in emerging economies. Other supporting objectives are;

i. To examine the relationship between the Education which is proxy by SHS yearly enrolment levels and GDP which measures economic growth on stock market development of emerging economies,

ii. To determine the effect of institutional quality such as control corruption, voice and accountability, rule of law, government effectiveness, political stability and regulatory quality on stock market development of emerging countries. This is because strengthening of institutional quality broadens appeal and confidence in stock market investment (Perotti and Van Oijen, 2001).

iii. To examine the effect of the selected macro-economic (Consumer Price Index and Money Supply) and GDP on stock market development in emerging economies.

Hypotheses

In view of the above objectives and the gap in literature concerning stock market performance, education and institutional variables, this thesis tests the following hypotheses below at 0.05 significance level;

i. H_0: There is no relationship between Education and stock market performance of emerging economies.

   H_1: There is a positive relationship between Education and stock market performance of emerging economies.

ii. H_0: There is no relationship between Strong Institutional factors such as control of corruption, voice and accountability, rule of law, government effectiveness, political stability and regulatory quality and stock market performance of emerging economies.

   H_1: There is relationship between Strong Institutional factors such as control of corruption (+), voice and accountability (+), rule of law (+), government effectiveness (+), political stability (+) and regulatory quality (+) and stock market performance of emerging economies.

iii. H_0: There is no significant relationship between the designed macroeconomic variables and stock market performance of emerging countries. This hypothesis tests the relationship between Consumer Price Index and Money Supply.

   H_1: There is significant relationship between the designed macroeconomic variables and stock market performance of emerging countries. This hypothesis tests the relationship between Consumer Price Index (-) and Money Supply (+).

Significance of the Study

Stock market performance in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. Absent of an effective set of financial institutions, productive projects will remain unexploited. Inefficient financial institutions will have the effect of taxing productive investment and thus reducing the scope for increasing the stock of equipment needed to compete globally. The effect is to substantially cut growth from what would have been possible given appropriate policies and market structures.

The study findings will be of great benefit in the formulation and implementation of policies related to share pricing as well as regulating of stock exchange trading. The government will also be informed on how to make policies, rules and regulations regarding trading rules that will help protect investors so as to encourage investments and spur stock market performance for emerging economies.

The findings will also assist firms and individuals in understanding the factors that affect share prices and they will be better informed on how to gauge their investment options while banks and other financial institutions will be able to offer better financial advice and products to investors who seek funding to finance share purchases. In addition, scholars and researchers will find this study useful if they wish to use the findings as a basis for current and further research on the subject.

Contribution

The contributions of this thesis are based on three perspectives; operational, policy formulation, and then interventional guidance. Possible beneficiaries are Securities Exchange Commission and other stakeholders like the Ministers of finance and fund managers. The following are the operational recommendations; the thesis redefines the equation of education into the stock market development model. Also introducing a composite index of elements of institutional quality into stock market development model. In the area of policy formulation, the following are novelty worth noting by policymakers; adoption of standards and transparent regulatory framework to resolve industrial disputes, reducing illiteracy rate by increasing school enrolment, and then broadening investor base to include more of foreigners and incentivizing and encouraging the middle class to invest. Finally, it contributes to literature in the following interventional guidance; institutional quality (+), education (+), money supply (+) and consumer price index (-), each interacting with GDP as important drivers for stock market development.

Organization of the Study

The rest of this thesis is organized as follows. Chapter two is a snapshort of emerging economies in relation to macroeconomic variables, institutional quality elements, and stock market development. Theoretical and empirical literatures on stock market development are discussed in chapter three. Chapter four discusses theoretical as well as the empirical models for this thesis. Chapter 5 to 7 discusses the relationship between education, institutional quality and macroeconomic variables respectively. The final chapter covers conclusions, summary of findings and recommendations.

Limitation of Study

This thesis is a well thought out thorough work. Effort is taken to reduce if not eliminate any limitations but there are still some shortcomings.

First of all, the research covered the emerging economies. However, but the selection of these economies was based on the availability of existent data hence might not represent the case of emerging economies. It is unavoidable that in this study, certain degree of subjectivity can be found.

Second, the study is based on proxy literacy with senior high school enrolment rate. Even though it is the most preferred proxy for literacy it does not take into consideration informal education which is also relevant for this thesis. The enrolment rate was also not computed by the researcher hence it cannot vouch for reliability and accuracy. The same holds for data on institutional quality. The study compared the data with other data collected within the same time period of the study. The same applies to data on institutional quality.

Time is the third limitation. Since this is an academic exercise which has to be finished within a specified time it was difficult to search for gaps in my data. To resolve the problem of data gaps our study extrapolated. These extrapolations may not be the true values hence it can affect the reliability of the result.

CHAPTER TWO: STOCK MARKET OF EMERGING COUNTRIES

Introduction

This chapter covers historical information about African stock Market development and also emerging stock markets at large. Description of emerging economies in relation to macroeconomic variables and institutional quality elements are also discussed.

African Capital Markets

There has been a considerable development in the African capital markets since the early 1990s. Prior to 1989, there were just five stock markets in sub-Saharan Africa and three in North Africa. Today there are 19 stock exchanges ranging from starts ups like Uganda and Mozambique stock exchanges to the Nigeria and Johannesburg stock exchanges. With the exception of South Africa, most African stock markets doubled their market capitalization between 1992 and 2002. Total market capitalization for African markets increased from US$113,423 million to US$ 244,672 million between 1992 and 2002. The rapid development of stock markets in Africa does not mean that even the most advanced African stock markets are mature. In most of these stock markets, trading occurs in only a few stocks which account for a considerable part of the total market capitalization. Beyond these actively traded shares, there are serious informational and disclosure deficiencies for other stocks. Further, supervision by regulatory authorities is often far from adequate. The less developed of the stock markets suffer from a far wider range of such deficits.

Indicators of stock market development show that African markets are small with few listed companies and low market capitalization. Egypt, Nigeria, South Africa and Zimbabwe are the exceptions with listed companies of 792, 207, 403 and 79 respectively. The average number of listed companies on sub-Saharan African markets excluding South Africa is 39 compared with 113, with the inclusion of Egypt and South Africa. Market capitalization as a percentage of GDP is as low as 1.4 in Uganda. The Johannesburg Securities Exchange in South Africa has about 90% of the combined market capitalization of the entire continent. Excluding South Africa and Zimbabwe the average market capitalization is about 27% of GDP. This is in contrast with other emerging markets like Malaysia with a capitalization ratio of about 161%. African stock markets suffer from the problem of low liquidity. Liquidity as measured by the turnover ratio is as low as 0.02% in Swaziland compared with about 29% in Mexico. Low liquidity means that it will be harder to support a local market with its own trading system, market analysis, brokers, and the like because the business volume would simply be too low. Despite the problems of small size and low liquidity, African stock markets continue to perform remarkably well in terms of return on investment. The Ghana Stock Exchange was adjudged the world's best-performing market at the end of 2004 with a year return of 144% in US dollar terms compared with 30% return by Morgan Stanley Capital International Global Index (Databank Group, 2004). Within the continent itself five other bourses—Uganda, Kenya, Egypt, Mauritius and Nigeria apart from Ghana—were amongst the best performers in the year.

Stock Market Development in Emerging Markets

Emerging markets possess some general characteristics, which distinguish them from the established developed markets. Commonly emerging economies demonstrate a relatively high economic growth on average in comparison to developed markets. Among other economic attributes of emerging markets is high dependence on a particular industry or sector, which makes emerging economies vulnerable to adverse macroeconomic movements. Due to traditional dependence on a particular industry, developing economies usually demonstrate poor or average level of industrialization, and poorly developed infrastructure. In most developing countries the market structure is characterized by an oligopolistic and cartelized banking System (Cho, 1986). Emerging markets have been growing at phenomenal speed for the last two decades. Their total market capitalization grew from US$145 billion at the end of 1980 to US$6,000 billion in 2005 (Brodie-Smith, 2005). For some individual markets the growth was astonishingly remarkable: between 1980 and 1992 stock market capitalization in Thailand rose by 4,731%, while in South Korea it rose by 3,829% during the same period (Kassimatis and Spirou, 1999). The stock market development was also accompanied by the sharp increase in the number of securities, traded on these stock markets. The phenomenal development of stock markets in developing countries was backed by good prospects of economic growth in these countries, reflected in GDP growth. For instance, the annual average growth of the East Asian countries in the period 1985-2003 was 5.1% and in Latin America 2.9%. In the OECD countries the annual average real GDP growth in the same period was 2.6%. Divehi, Drachm and Stefek (1992) define an emerging market as one which has the following characteristics: securities, which are traded in a public market, high economic growth, being of interest to global institutional investors, and having a reliable source of data. However, they are also characterized by high dependence on a particular industry or sector, poor or average level of industrialization and poorly developed infrastructure. The equity markets development in these countries can be seen as a result of market liberalization policies, which led to the opening up of the markets, providing a wider access. An emerging market is defined by the World Bank as a country with low or lower/upper middle income based on the estimation of a country's gross national income (GN1). Economies are divided according 2004 GNI per capita, calculated using the World Bank Atlas method, as follows: low income - US$825 or less; lower middle income - US$826-US$3,255; upper middle income - US$3,256-US$10,065. Another factor, which has contributed to the emerging markets development, is their increased attractiveness due to perceived potential benefits in international portfolio diversification by foreign investors. Both of these factors and more or less steady economic growth have contributed to the rapid development of the emerging equity markets. However, during the past two decades emerging markets have also experienced several severe financial and economic shocks, which have slowed down the economic growth in these countries, lowered average equity market returns, and increased market volatility (Bekaert, 1999).

A considerable number of researchers agree with the fact that the emerging stock markets possess specific characteristics, which are different from those of the developed markets. Among these characteristics the following are the most common: high volatility (Bekaert and Harvey, 2003); low correlation with developed markets and among the emerging markets (Bekaert and Harvey, 2003); weak relation to market fundamentals (Hargis, Maloney, 1997), non-normality of the equity returns (Harvey, 1995a;); High volatility; Non-normality of the equity returns This means that larger stocks, which make up a huge proportion of the overall market capitalization, dominate these markets. Divecha, Drach and Stefek (1992) argue that because large stocks dominate the overall market return, there are not many opportunities for diversification. Their results also show some anomalies: for instance, Pakistan, Jordan, Colombia, Nigeria, and Zimbabwe display relatively low risk over the sample period, which mostly reflect the lack of liquidity in these markets rather than genuine volatilities. Chuhan (1992) argues that one of the characteristics of emerging markets is poor liquidity, which stops foreign investors from investing in those markets. Using the zero return measure as a proxy for illiquidity, Bekaert, Harvey and Lundblad (2003) found a strong association between higher illiquidity and higher expected returns. Although they did not find a great effect of liberalization on the relation between illiquidity and expected returns, they argue that the effect of illiquidity on expected returns is larger in the post-liberalization period.

Along with a small number of listed companies and market participants as the main characteristic of the emerging markets Hargis (2000) mentions the lack of developed local pension and mutual funds and the limited float of closely held companies. Hargis (2000) argues that a limited number of companies and market participants reduce the risk sharing opportunities and liquidity of the stock market, which inhibits its development. Another major problem in emerging countries, which is linked to a small number of market participants, is a shortage of savings relative to investment needs (Bekaert and Harvey, 2003). Divecha, Drach and Stefek (1992) find that stock returns in the emerging markets tend to be more homogeneous than in developed markets implying that unlike the developed markets, which tend to have forces that affect diverse sectors of the economy differently, the emerging markets tend to have a strong market-related force that affects all stocks within a market, which accentuates its volatility. Keane (1993) argues that the emerging equity markets are characterized by high total risk and low systematic risk. By contrast, Errunza (1994) describes emerging markets as possessing high domestic systematic risk. It is argued that a large part of the total risk in emerging markets is constituted by country risk or political risk, while Keana (1993) insists on the above average risk in emerging markets.

Descriptive Statistics of Emerging Stock Market Sampled

To understand the economic importance of the stock market in our sample of 41 countries, the study examines the stock market capitalization ratio. The choice of countries and times series data for this thesis rests on the availability of data. Data for this thesis are from Worldwide Governance indicators, World Development Indicator (WDI) and Global Finance and Development (GFD). The stock market capitalization ratio is defined as the value of domestic equities traded on the stock market relative to GDP. As can be observed from Appendix 1, stock market development indicators exhibit a considerable variability across countries, according to the stock market capitalization ratio. The top ten countries in terms of mean stock market capitalization for the period under review are South Africa, Malaysia, Jamaica, Jordan, Chile, Zimbabwe, Saudi Arabia, Thailand, Philippines and India in that order. The countries with the lowest stock market capitalization are Ecuador, Slovak Republic, Bangladesh, Paraguay and the least, Uruguay. As can be seen, stock market development in terms of total value trade as percentage of GDP, South Africa moved from the first to third position with Saudi Arabia occupying the first position, from our sample. Stock market capitalization has very little to do with the size of a country. China, which has the largest economy by far among these countries, has a smaller average market capitalization than Hong Kong over the period. South Africa and Taiwan approach China in terms of stock market capitalization despite vastly smaller population and GDP. Again even though Nigeria has a larger economy than Ghana, Ghana is ahead of Nigeria in terms of stock market capitalization as a measure of development of the capital market.

A National Bureau of Economic Research (NBER) Working Paper in April 2013 on Financial Development in 205 Economies, 1960 to 2010, has gathered substantial evidence that financial institutions (such as banks and insurance companies) and financial markets (including stock markets, bond markets, and derivative markets) exert a powerful influence on stock market development, poverty alleviation, and economic stability. Stock market development has been central to the domestic financial liberalization programs of most emerging markets. Apart from their role in domestic financial liberalization, the stock markets have also been very important in recent years as a major channel for foreign capital flows to emerging economies. Net equity flows to the emerging markets have grown over the years, providing an important source of capital for development. The share of foreign direct investment and portfolio equity in the finance mix of many developing countries has grown in recent years. Equity flows accounted for 80 percent of total external financing to developing nations during 1999–2003, compared with just 60 percent during 1993–98 (Global Development Finance, 2005). Cross-border capital flows, which include lending, foreign direct investment and purchases of equity and bonds, rose to a peak of $11.8 trillion in 2007, primarily due to the acceleration in interbank lending with a smaller share being the flow of funds to real economy borrowers. According to a McKinsey Global Institute (MGI) study, as of 2012, cross-border capital flows had declined by 61 percent from the 2007 peak to $4.6 trillion. Most of this reduction was in intra-European flows, thus raising the share of global capital flows to emerging economies to 32 percent in 2012 ($1.5 trillion) from 5 percent in 2000. Capital flows out of developing countries rose to $1.8 trillion in 2012.

Development of stock markets in emerging markets does not imply that even the most advanced emerging stock markets are mature. Trading occurs in only a few stocks which account for a considerable part of the total market capitalization. Beyond these actively traded shares, there are serious informational and disclosure deficiencies for other stocks. There are serious weaknesses in the transparency of transactions on these markets. The less developed of the stock markets suffer from a far wider range of such deficits. Compared with the highly organized and properly regulated stock market activity in the US and the UK, most emerging markets do not have such a well-functioning market. Not only are there inadequate government regulation, private information gathering and dissemination firms as found in more developed stock markets are inadequate. Moreover, young firms in emerging stock markets do not have a long enough track record to form a reputation. As a result, one expects share prices in emerging markets to be arbitrary and volatile (Tirole, 1991). Empirical evidence indicates that share prices in emerging markets are considerably more volatile than in advanced markets.

Despite this volatility, large corporations have made considerable use of the stock market. For example, the Indian stock market has more than 8,000 listed firms, one of the highest in the World. Looking at the corporate financing pattern in emerging markets it was found that contrary to expectation, emerging market corporations rely heavily on external finance and new equity issues to finance long term investment, and the stock markets have been successful in providing considerable funds.

Market liquidity is one of the measures of stock market development. Market Liquidity is ability for investors to buy and sell shares. The study measures the activity of the stock market using total value traded as a share of GDP, which gives the value of stock transactions relative to the size of the economy. According to the work of Levine and Zervos (1998) this measure is used to gauge market liquidity. This is because it measures trading relative to economic activity. Of the 41 countries Pakistan, Saudi Arabia, Bangladesh, Turkey and India turn out to be countries with liquidity as shown in figure 4 below. The liquidity in these countries was recorded around the late 90's and the early part of 2000 was the time most of these countries undertook successful financial liberalization.

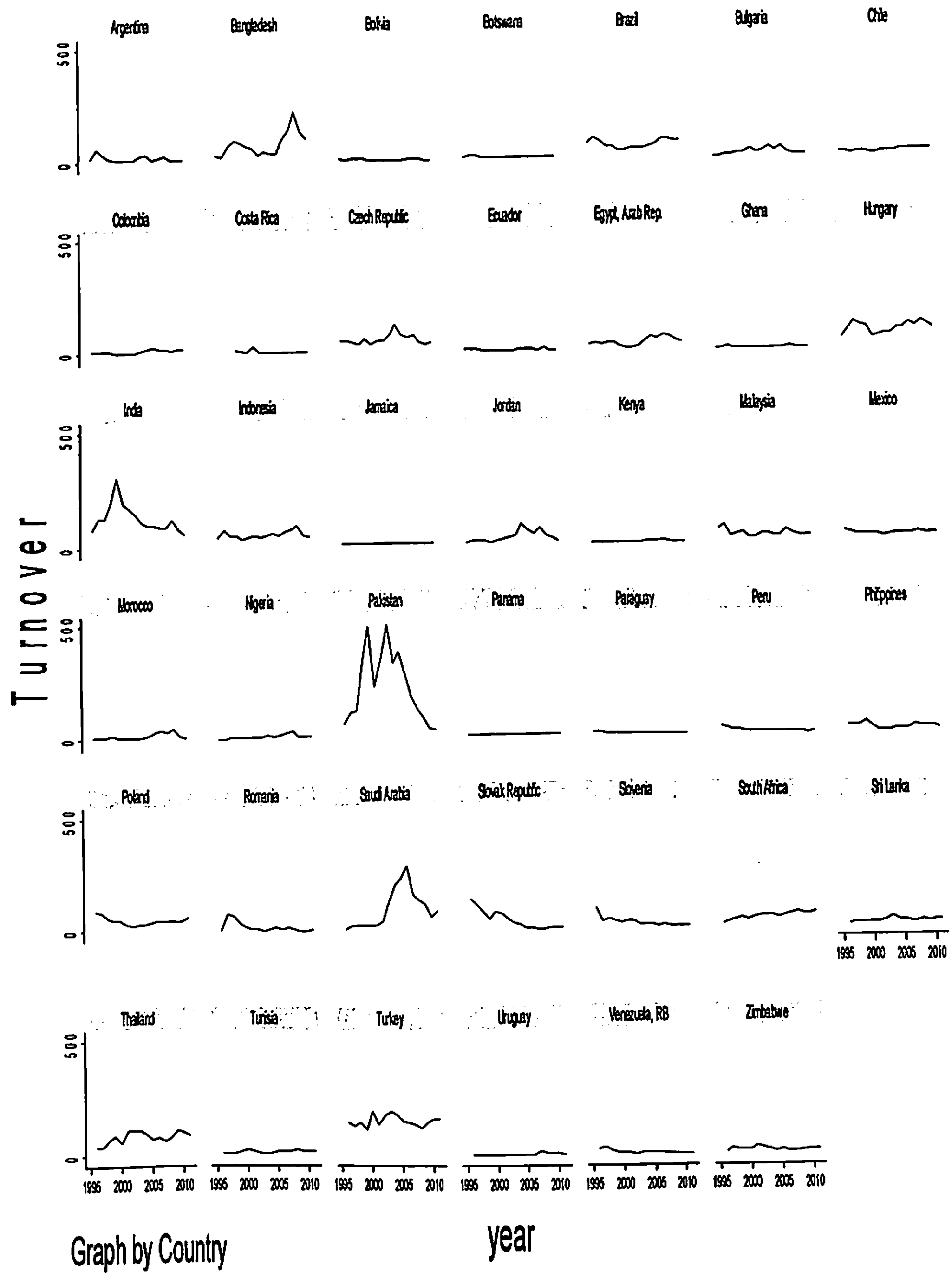


Figure 4 Annual percentage changes of Turnover (1996-2011)

The Consumer Price Index for the emerging economies sampled for this thesis has been increasing over the period under investigation. Morocco, Panama, Peru and Tunisia are countries with relatively stable growth rate of Consumer Price Index. Countries with relatively high growth rate were Venezuela, Romania, Ghana, Nigeria and Turkey. The trend for consumer price indices for emerging economies sampled for this thesis are as shown in figure 5 below.

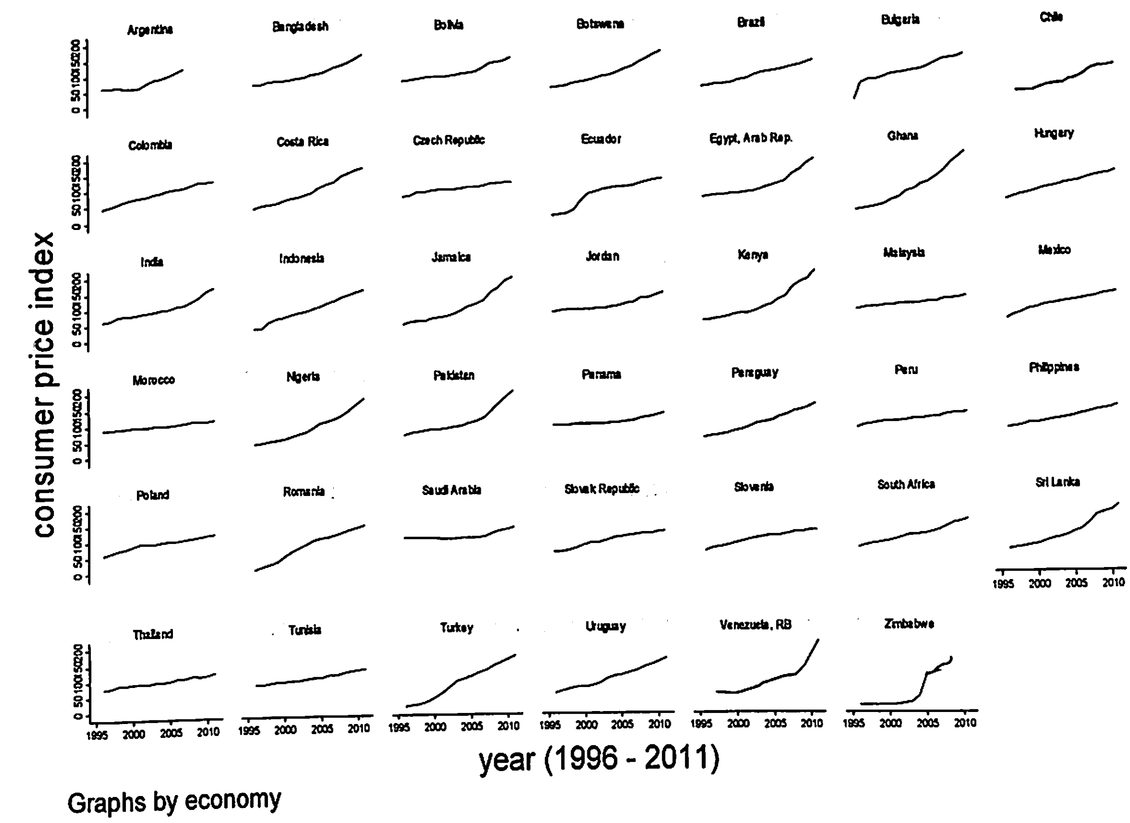


Figure 5 Annual percentage changes of Consumer Price Index (1996-2011)

Economies with high volatility in their policy rate were Thailand, Slovenia, South Africa, Malaysia, Slovenia and Panama. Other countries recorded relatively stable trend for the period under study.

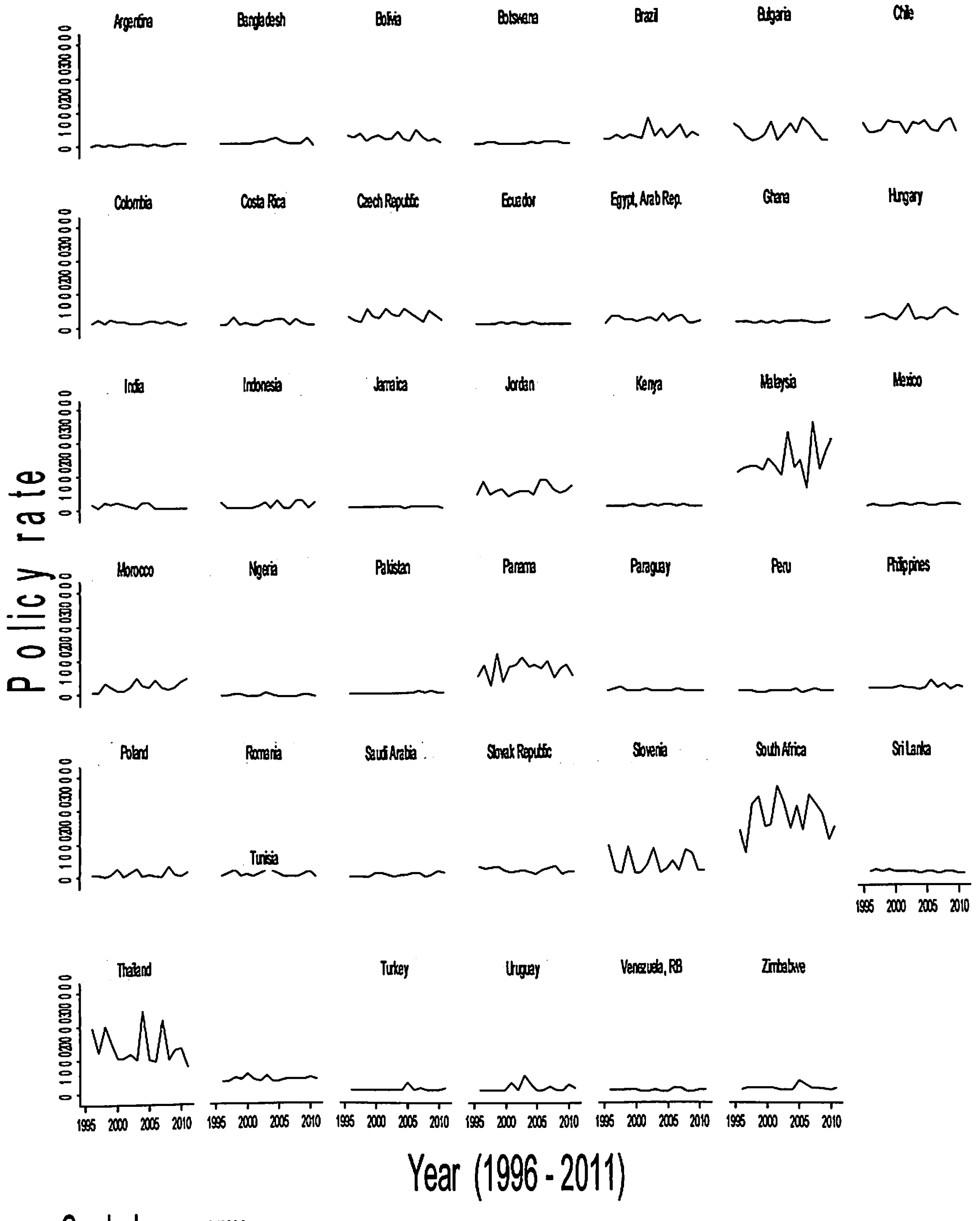


Figure 6 Annual percentage changes of Policy Rate (1996-2011)

The growth rate of total value traded over the period was relatively stable for all countries with the exception of Saudi Arabia, Turkey, Jordan, and India. The relatively low growth rate could be attributed to macroeconomic instability in these countries.

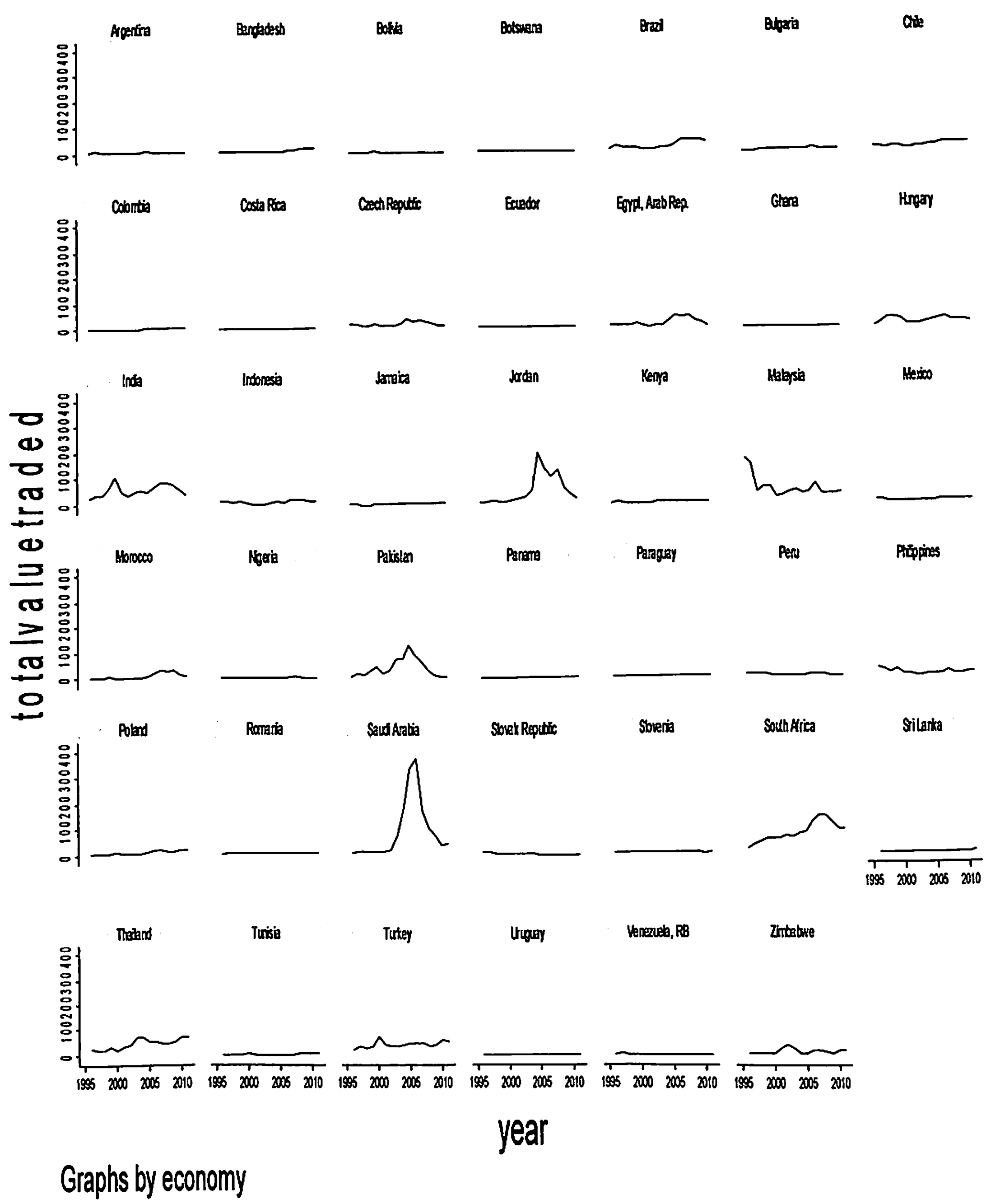
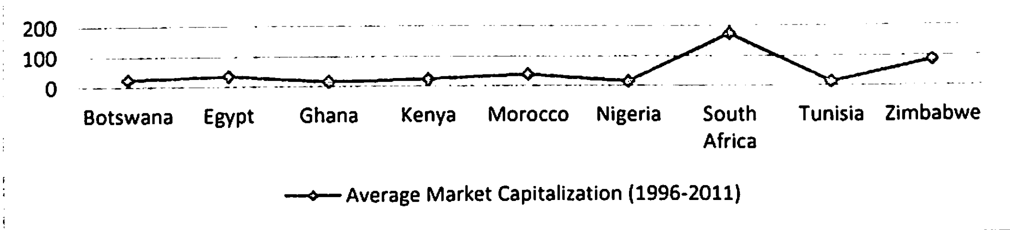


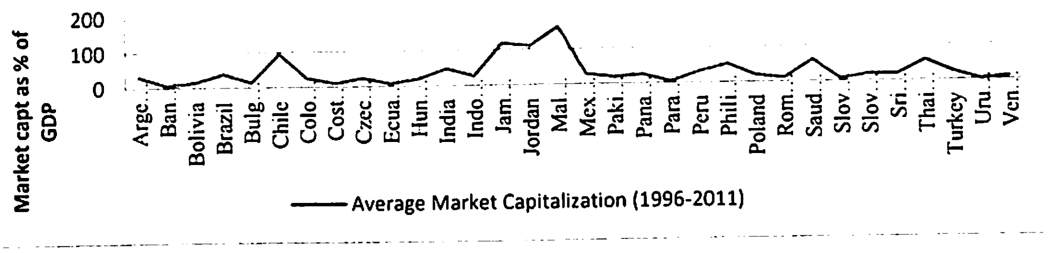
Figure 7 Annual percentage changes of Total Value Traded (1996-2011)

Of the economies sampled nine of them are from Africa and thirty two from other continents. Stock market capitalization a measure of stock market development had being relatively stable for emerging African economies sampled for this thesis. The proxy for this measure is stock market capitalization relative to GDP in percentage terms. South Africa and Zimbabwe are the only African economies sampled that have stock market capitalization making more than 50% of their GDP as shown figure 8. All the other African countries sampled were below 50% of their GDP.



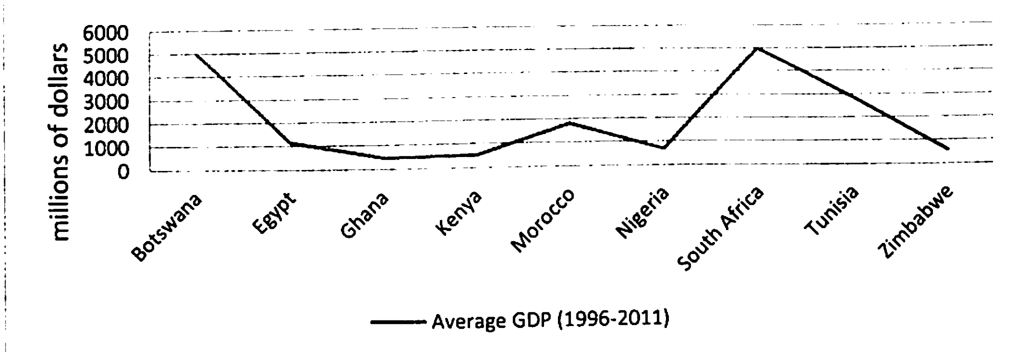
Source: WDI & FDI, 2012
Figure 8 Emerging Economies in Africa

The market capitalization of emerging stock markets rose from $604 billion to $3,074 billion for the period 1990 to 1999. The trend continued in the 2000 with countries like Malaysia, Jordan, Jamaica, Chile, Saudi Arabia, Thailand, and Philippines accounting for the rise in stock market capitalization as portrayed in figure 9 below. In terms of stock market capitalization most of the economies sampled are making less than 50% of GDP.



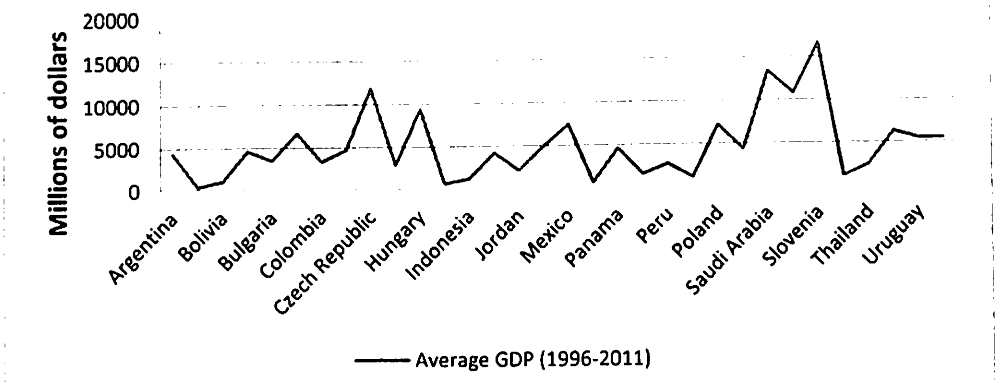
Source: WDI & FDI, 2012
Figure 9 Emerging Economies excluding Africa

With the African economies sampled economies with high stock market capitalization it is only South Africa, Morocco, and Egypt. Botswana with GDP like South Africa in percentage terms is cited as having low stock market capitalization and Zimbabwe with high stock market capitalization cited with low GDP as shown in figure 10 below.



Source: WDI & FDI, 2012
Figure 10 Emerging Economies in Africa (GDP)

In the case emerging economies outside Africa, countries cited with high stock market capitalization are cited in figure 11 below with relatively not high GDP. Slovenia with low stock market capitalization is cited here as the country with the highest GDP so is Czech Republic.

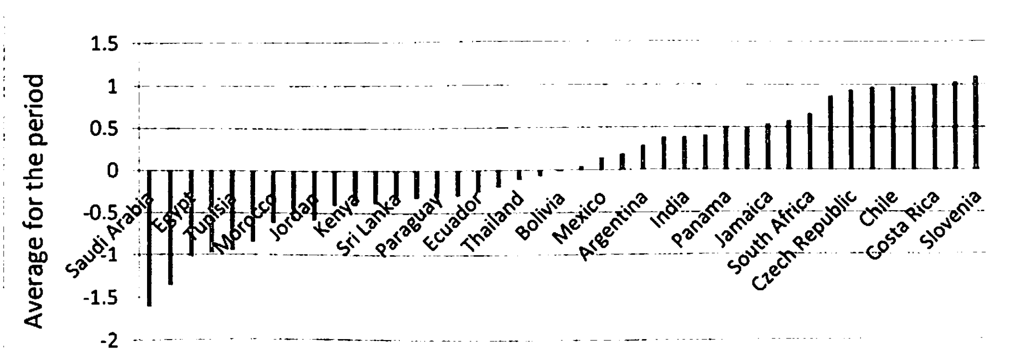


Source: WDI & FDI, 2012
Figure 11 Emerging Economies excluding Africa (GDP)

Voice and accountability

The dimension of voice and accountability covers those issues of the degree of citizen participation in government and in the policy making process. Accountability can be used synonymously with such concepts as responsibility, answerability, blameworthiness, liability, and other terms associated with the expectation of account-giving. It may be divided into various types such as moral, administrative, political, managerial, market, legal, constituency, and professional accountability (Jabbra and Dwivedi, 1989). To enhance the quality of this indicator, civil liberties in terms of the freedom of speech, assembly, demonstration, religion, and equal opportunity should be not only properly and systematically secured, but also significantly improved. Also the political rights in terms of free and fair elections, representative legislative, free vote, political parties, no dominant group, respects for minorities should appropriately be secured, and the military involvement in politics and the inclusiveness and patronage practice should not be exercised.

In order for people's voices to be heard properly and in a timely fashion into the governing body and be accountable, news media should be able to publish or broadcast stories of their choosing without fear of censorship or retaliation. People should not be imprisoned because of their ethnicity, race, or their political, religious beliefs as well. The transparency of public action in the economic field and governmental policy such as fiscal, taxation, monetary, and exchange-rate should be systemized in the governance structure as well as the fare and competition-based award of public procurement contracts, and delegation of public service must be in orderly arrangement. Countries with higher scores of WGI have scores of positive 2.5 while those in lower scores have under negative 2.5.



Source: WDI & FDI, 2012
Figure 12 Voice and Accountability Average index (1996-2011)

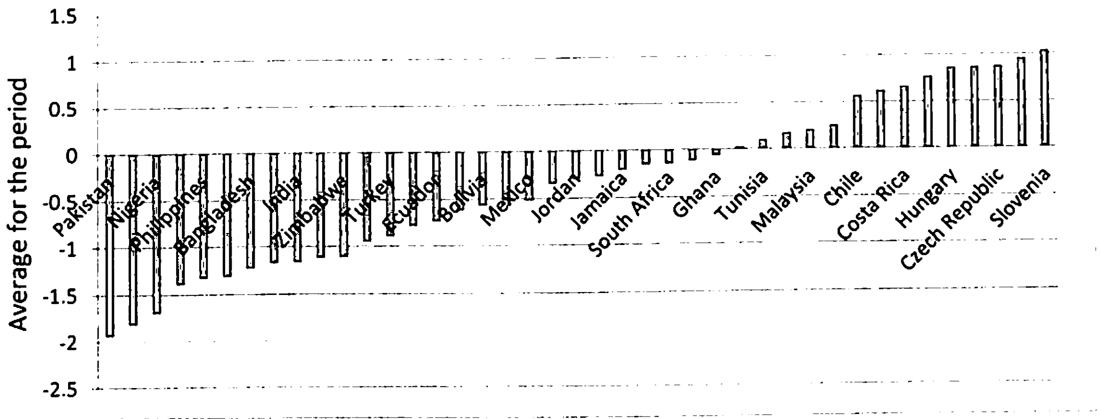
Figure 12 above shows the mean value voice and accountability for the various countries sampled for this thesis. From figure 12 slightly about 50% of emerging countries sampled have good voice and accountability. Slovenia came out as the country with good voice and accountability with Saudi Arabia recorded as the country with worse voice and accountability. For African countries in the sampled South Africa, Botswana and Ghana came out with good voice and accountability index.

Political Stability and Absence of Violence (PV)

This indicator addresses those factors which undermine political stability such as conflicts of ethnic, religious, and regional nature, violent actions by underground political organizations, violent social conflicts, and external public security. Also included are assessments of fractionalization of the political spectrum and the power of these factions, fractionalization by language, ethnic or religious groups and the power of these factions and restrictive measures required to retain power. Societal conflict involving demonstrations, strikes, and street violence are also considered in this indicator, as well as the military coup risk. Major insurgency and rebellion, political terrorism, political assassination, major urban riots, armed conflict, and state of emergency or martial law are also major determinants of this indicator.

Internal conflict like political violence and its influence on governance is assessed in this measure and external conflict measure is also employed to assess both the risk to the incumbent government and to inward investment. Government stability is measured for the government's ability to carry out its declared programs, and its ability to stay in office. Ethnic tensions component measures the degree of tension within a country attributable to racial, national, or language divisions.

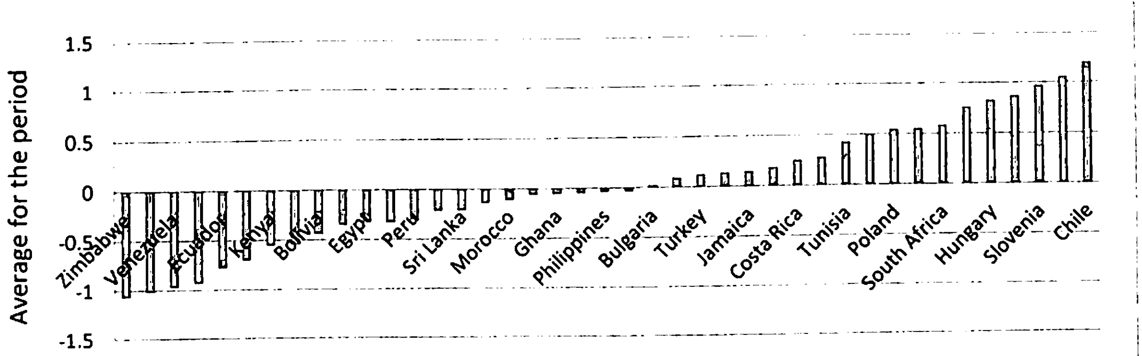
Figure 13 below shows that 34% of emerging countries sampled have good political stability index with 66% having bad political stability record. Slovenia and Botswana are the two emerging countries with the highest recorded of good political stability and Pakistan, Colombia and Nigeria had the worst record for political stability respectively. Ghana and South Africa also had bad political stability record.



Source: WDI & FDI, 2012
Figure 13 Political Stability Average index (1996-2011)

Government Effectiveness (GE)

Government effectiveness measures the quality of public services and policy formulation and implementation, and thus indicates the credibility of the government's commitment to such policies. Government effectiveness covers an even wider range of measures such as government citizen relations, quality of the supply of public goods and services, and capacity of the political authorities. The negative aspects of this measure include government instability with significant personnel turnover rate, government ineffectiveness with low personnel quality, institutional failure which deteriorates government capacity to cope with national problems as a result of institutional rigidity which affect stock market performance. It also includes the low level of global e-government, and low quality of bureaucracy with excessive bureaucracy or red tape. Most of all among others, the quality of bureaucracy plays a critical role in improving government effectiveness. It is determined by the measures of institutional strength and quality of the civil service, and assessed by how much strength and expertise bureaucrats have and how able they are to manage political alternations without drastic interruptions in policy changes. The better the bureaucracy the quicker decisions are made and the more easily foreign investors can go about their business.



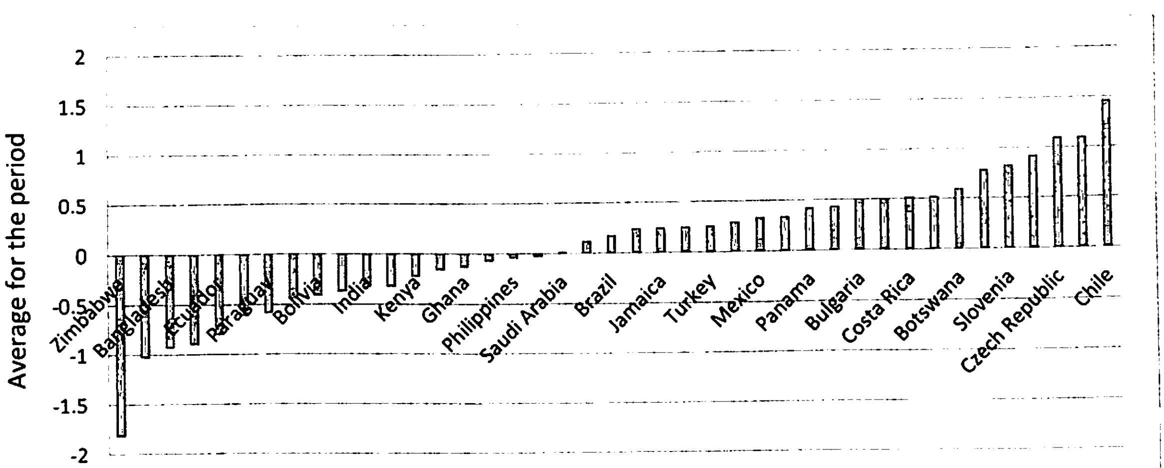
Source: WDI & FDI, 2012

Figure 14 Government Effectiveness Average index (1996-2011)

Figure 14 above also show that 46% of emerging countries sampled for this thesis have positive government effectiveness. Chile and Malaysia have the highest positive value with Zimbabwe and Nigeria having the highest absolute negative value.

Regulatory Quality (RQ)

The regulatory quality indicator of WGI defines the capacity for government to formulate and implement sound policies and regulations that permit and promote private sector development. It covers the concept of business start-up formalities set by government, the difference between government-regulated administrative prices and self-controlled market prices, the ease of market entry for new firms, and the competition regulation arrangements between or among businesses. It also includes the issues of export and import regulations, restrictions on ownership of business and equity by non-residents, unfair competitive practices, price controls, discriminatory tariffs, excessive protections, government regulations on stock exchange or capital markets, and foreign investment. A distorted tax system, heavy import barriers, limited local market competition, ineffective anti-monopoly policy, overly environmental regulations, and complex tax collection system may also become factors to be considered. In developing countries particularly, the rural region regulations on local financial services, local businesses, and agricultural produce market may determine the quality of this indicator as well. Other factors affecting regulatory quality indicators also include financial institutions' transparency, public sector contracts open to foreign bidders, anti-protectionism measures to other countries, and reduction of subsidies to specific industries. As portrayed in figure 15 56% of the emerging market countries sampled had good regulatory quality and 44% bad. Chile, Hurgary, Czech Republic, Slovenia, Poland and Botswana were identified as countries with good regulatory quality respectively. On the other hand Zimbabwe, Venezuela, Bangladesh and Nigeria were tagged with bad regulatory quality.

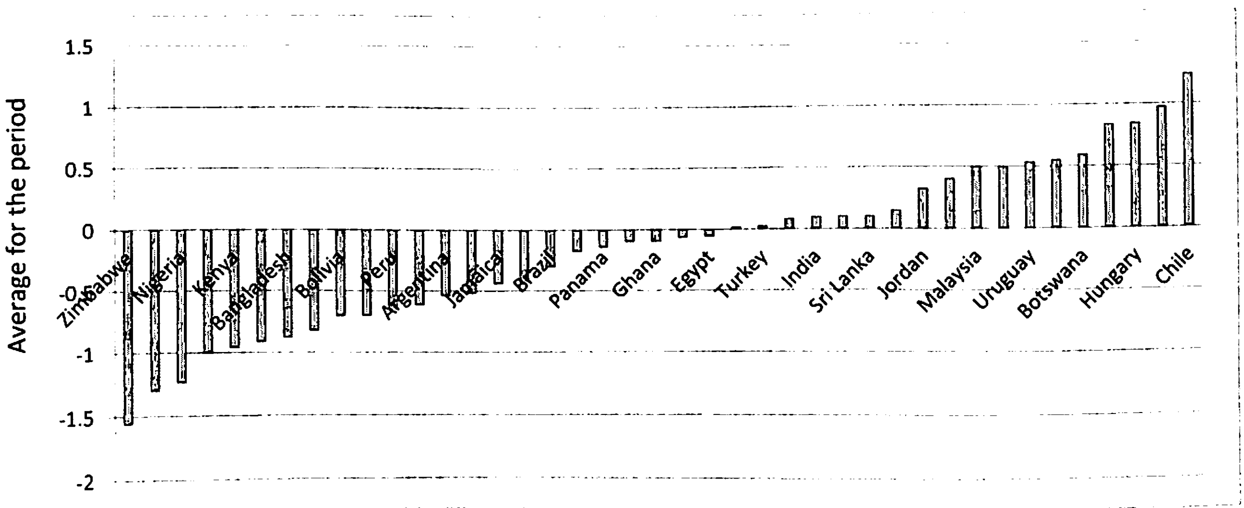


Source: WDI & FDI, 2012
Figure 15 Regulatory Quality Average index (1996-2011)

Rule of Law (RL)

Different people may have different interpretations about the exact meaning of rule of law due to the philosophical nature of the term. For example, in the legal profession, rule of law is an independent, impartial judiciary; the presumption of innocence; the right to a fair and public trial without undue delay; a rational and proportionate approach to punishment; a strong and independent legal profession; strict protection of confidential communications between lawyer and client; equality of all before the law; these are all fundamental principles of the Rule of Law (IBA, 2009).

Nevertheless, in Asian traditional and cultural contexts, the rule of law is a governmental principle that many Asians hesitate to embrace since people seem to view good governance as rule by leaders who are benevolent and virtuous. One study indicates that throughout East Asia, only South Korea, Japan, and Hong Kong have societies that are robustly committed to a law bound state (Chu, et al., 2008: 31-32), whereas the rule of law in Thailand, Cambodia, and most of Asia is weak or nonexistent (Thi, 2008). The term 'rule of law' in WGI defines the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. To be more specific, it covers such topics as the respect for law in relations between citizens and the administration, the security of persons and goods, organized criminal activity, the importance of the informal economy, the importance of tax evasion in the formal sector, and the importance of customs evasion. Also the running of the justice system, the security of traditional property rights and contracts between private agents, the degree of governmental respect for contracts, the settlement of economic disputes, and arrangements for the protection of intellectual property. Not only the arrangement of system, but also the enforceability of government or private contracts is considered as well. Also included are direct financial fraud, money laundering and organized crime, losses and costs of crime, kidnapping of foreigners, the fairness and speediness of the judicial process, confiscation/expropriation, nationalization/expropriation, common and organized crime imposes costs on business, quality of police, the independence of the judiciary from political influences of members of government, citizens or firms, the insufficient legal framework to challenge the legality of government actions, and the degree of the threat that businesses face from crime such as kidnapping, extortion, street violence, burglary, etc. Of the total sample 44% of the emerging market countries sampled were tagged with practicing rule of law whiles the rest had bad records in relation to rule of law as depicted in fig 13 below. Once again Chile and Slovenia were on top whiles Zimbabwe and Venezuela were at the tale of end of countries with bad record on rule of law.



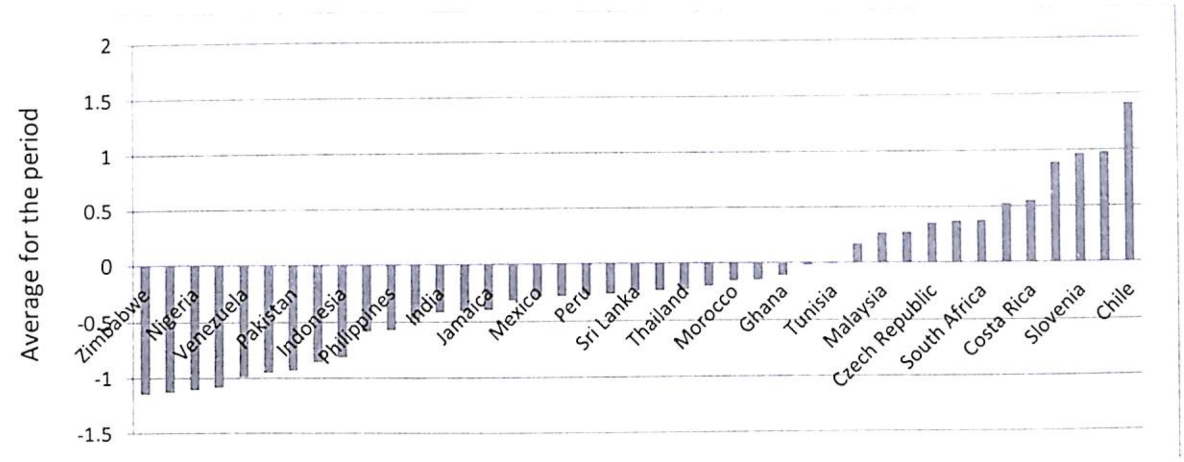
Source: WDI & FDI, 2012

Figure 16 Rule of Law Average index (1996-2011)

Control of Corruption (CC)

The word 'corruption' has many different meanings. The most frequently used concept among others is the concept of political corruption which means the abuse of public power, office, or resources by government officials or employees for personal gain, e.g. by extortion, soliciting or offering bribes (Chinhamo and Shumba, 2007). More simply put, Transparency International (TI) defines corruption as "the abuse of entrusted power for private gain". (Transparency International, 2007). WGI defines corruption as the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests. The control of corruption indicator is decided by the frequency of corruption, cronyism, government efforts to tackle corruption, and the internal causes of political risk and mentality including xenophobia, nationalism, corruption, nepotism, and willingness to compromise. It covers indirect diversion of funds and losses and costs of corruption. Government efforts to tackle corruption and public trust in financial honesty of politicians are another source of the indicator. The frequencies for firms to make extra payments connected to import/export permits, public utilities, awarding of public contracts, and getting favourable judicial decisions are measures of WGI as well. It also measures corruption within the political system, which distorts the economic and financial environment, reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introduces an inherent instability in the political system. The corruption involvement of elected leaders such as parliamentarians or local councilors, judges and magistrates, government officials, border and tax officials, and other public figures are included in this indicator as well.

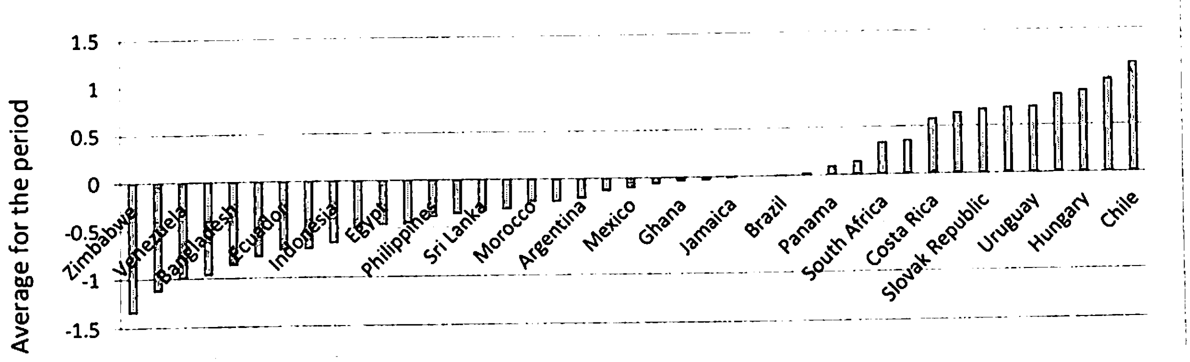
26% of emerging countries sampled were tagged as having good record on control of corruption. Brazil and Tunisia were neutral in relations to whether good or bad. As Chile, Uruguay, Slovenia and Botswana are ranked high in terms of good policies to control of corruption; Zimbabwe, Paraguay and Nigeria were rank high for poor control of corruption as shown in figure 17 below.



Source: WDI & FDI, 2012
Figure 17 Control of Corruption Average index (1996-2011)

Institutional Quality

This is a composite index computed by row average of component of institutional quality computed by the researcher. The data used to compute the composite index is from World Development Indicator (WDI). Figure 18 below shows how good an emerging economy is term of institutional quality. A value of 2.5 means very good and negative 2.5 means bad institutional quality. Of the emerging economies sampled for this thesis 39% of them on the average are classified as having good institutional quality with the remaining 71% having bad institutional quality. Out of 39% countries like Chile, Slovenia, Hurgary, Czech Republic, Uruguay and Botswana came on the top respectively in relation to good institutional quality. Zimbabwe, Nigeria, Venezuela, Pakistan and Bangladesh were also identified as emerging countries with bad institutional quality as depicted in the diagram below.



Source: WDI & FDI, 2012
Figure 18 Institutional Quality Average index (1996-2011)

Conclusion

Emerging markets are sought by investors for the prospect of high returns, as they often experience faster economic growth as measured by GDP. Investments in emerging markets come with much greater risk due to political instability, domestic infrastructure problems, currency volatility and limited equity opportunities. The stock markets in emerging markets have seen considerable development since the early 1990s.

Research on emerging equity markets has suggested a number of empirical regularities: high volatility, low correlations with developed markets and within the emerging markets, high long-horizon returns, and predictability above and beyond what is found in developed market returns. It is also well-known that emerging markets are more likely to experience shocks induced by regulatory changes, exchange rate devaluations, and political crises.

CHAPTER THREE: REVIEW OF RELATED LITERATURE

Introduction

This chapter covers two main areas. The first part presents the theoretical literature on education and investment, political institutions and investment, macroeconomic stability factors and investment and finally stock volatility and investment. The second part is empirical literature on relationship between Education, institutional quality, and macroeconomic variables.

Theoretical Literature

Ability of Individuals and Investment

Human capital is one of production elements which can generate added-values through inputting it. Until the monumental stock market performance of the 1980's, most of economists had supported the importance of such quantitative labor force to create products. The other is based on the assumption that the investment of physical capital may show the same effectiveness with that of human capital on education and training (Little, 2003). The latter being more important, human capital expansively includes the meaning of 'human as creator' who frames knowledge, skills, competency, and experience originated by continuously connecting between 'self' and 'environment'.

Economists in the 1950's discovered that the investment of human capital is more effective than that of physical capital (Woodhall, 2001). Throughout the investment of human capital, an individual's acquired knowledge and skills can easily transfer to certain goods and services (Romer, 1990). Considering that accumulation of knowledge and skills takes charge of important role for that of human capital, there is a widespread belief that learning is the core factor to increase the human capital. In other words, learning is an important component to obtain much knowledge and skills through lots of acquisition ways including relationship between the individual and the others (Sleezer, Conti, Nolan, 2003).

The origin of human capital goes back to the emergence of classical economics in 1776, and thereafter developed a scientific theory (Fitzsimons, 1999). After the manifestation of that concept as a theory, Schultz (1961) recognized the human capital as one of important factors for a national economic growth in the modern economy. With the emergence and development of human capital as an academic field, some researchers expansively attempted to clarify how the human capital could contribute to sociopolitical development and freedom (Grubb & Lazerson, 2004; Sen, 1999).

The concept of human capital can be variously categorized by each perspective of academic fields. The first viewpoint is based on the individual aspects. Schultz (1961) recognized the human capital as 'something akin to property' against the concept of labor force in the classical perspective, and conceptualized 'the productive capacity of human beings in now vastly larger than all other forms of wealth taken together'. Most of researchers have accepted that his thought viewing the capacity of human being is knowledge and skills embedded in an individual (Beach, 2009). Similar to his thought, a few researchers show that the human capital can be closely linked to knowledge, skills, education, and abilities (Garavan et al., 2001; Youndt et al., 2004). Rastogi (2002) conceptualizes the human capital as 'knowledge, competency, attitude and behavior embedded in an individual'.

There is the second viewpoint on human capital itself and the accumulation process of it. This perspective stresses on knowledge and skills obtained throughout educational activities such as compulsory education, postsecondary education, and vocational education (De la Fuente & Ciccone, (2002)). Despite the extension of that concept, this perspective neglects that human being would acquire knowledge and skills throughout his/her own experience.

The third is closely linked to the production-oriented perspective of human capital. Romer (1990) refers to the human capital as 'a fundamental source of economic productivity'. Rosen (1999) states the human capital as 'an investment that people make in themselves to increase their productivity'. More recently, Frank & Bemanke (2007) define that human capital is 'an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's marginal product'. Considering the production-oriented perspective, the human capital is 'the stock of skills and knowledge embodied in the ability to perform labor so as to produce economic value' (Sheffin, 2003). Furthermore, some researchers define that human capital is 'the knowledge, skills, competencies and attributes in individuals that facilitate the creation of personal, social and economic well-being' with the social perspective (Rodriguez & Loomis, 2007).

Consequently, human capital simultaneously includes both of the instrumental concept to produce certain values and the 'endogenous' meaning to self-generate it. In order to dependently/independently create these values, there is no doubt that leaning through education and training can be an important in terms of defining the concept of human capital. Considering that experience can be included as a category of knowledge, the human capital is a synonym of knowledge embedded in individuals.

It is also believed that an individual is more likely to participate in the stock market when a higher fraction of individuals in the local community are stock market investors. In the same vain our study establishes that an individual is more likely to participate in the stock market when a higher fraction of individuals in the local community are educated. Guiso, Sapienza, and Zingales (2004) show that individuals who live or were born in areas with higher levels of social capital are more likely to invest in stocks.

There is a concern in the literature with what might be called "social" rates of return that include true social benefits, or externalities. Efforts to make such estimates are numerous, but the estimates vary widely. The earnings of educated individuals do not reflect the external benefits that affect society as a whole but are not captured by the individual. Such benefits are known as externalities or spillover benefits, since they spill over to other members of the community. They are often hard to identify and even harder to measure. In the case of education, some have succeeded in identifying positive externalities but few have been able to quantify them. If one could include externalities, then social rates of return may well be higher than private rates of return to education. A recent review by Venniker (2001) finds that empirical evidence is scarce and inconclusive, providing some support for human capital externalities, but not very strong. These studies estimate externalities in the form of individual's human capital enhancing the productivity of other factors of production through channels that are not internalized by the individual (similar to Lucas' (1988) theory). As Venniker (2001) states, evidence is not unambiguous. In fact, some estimates give negative values, while others give very high estimates.

Conventional Measurement Method of Human Capital

The conventional standard to measure human capital stock has been largely categorized into three parts: Output, Cost, and Income-based approach. School enrollment rates, scholastic attainments, adult literacy, and average years of schooling are the examples of output-based approach.

For the purpose of analyzing relationship between human capital and stock market performance, some economists attempted to measure the stock of human capital utilizing 'school enrollment rates' as a proxy of human capital (Barro, 1991; Barro & Lee, 1993). Throughout calculating the ratio between individuals of school age and students enrolling in the educational institutions, the economists show the stock of human capital that each country holds. However, the method includes a drawback that a student's effectiveness can be recognized after participating in production activities.

In the perspective of educational attainment, Nehru, Swanson, & Dubey (1993) attempted to measure relationship between human capital and students' 'accumulated years of schooling' in the employable age as educational attainment. Assuming that the stock of human capital is the sum of each individual's years of schooling; it is difficult to clearly demonstrate this relationship, because educational attainment is a part of regular education.

Besides measuring the stock of human capital with school enrollment rates and educational attainment, Romer (1990) suggested the ratio between skilled-adults and total adults to measure the stock of human capital in the national economy.

Organization for Economic Cooperation and Development (OECD) utilizes International Adult Literacy Survey (IALS), the ratio between literate adults and total adults, to measure the stock of human capital. However, the method of IALS includes a few drawbacks in that literacy can be slightly related to labor productivity, and the productivity can be increased by informal/non-formal learning activities such as personal learning and On-the-Job training.

Finally, Psacharopoulos & Arriagada (1986) suggested the average years of schooling to measure the stock of human capital. They refer that the average years of schooling is meaningful to measure the stock of human capital as a proxy. This suggestion assumes that an individual's productivity is increased in proportion to his/her average years of schooling; they exemplify that someone's productivity with completing twelve years of schooling is twelve times compared to otherwise productivity with doing one years. As mentioned above, this method includes a drawback that an individual's years of schooling can be slightly related to his/her productivity.

To measure the Education in this thesis the study utilized the ratio secondary school enrolment to population. This is believed to cover qualitative benefits of human capital. This suggests that as the ratio increases the individual's ability to invest increases thereby increasing the probability of the stock market performing.

Institutional Quality and Investment

The view that better institutions lead to greater financial development and better economic performance is powerfully captured by Adam Smith in The Wealth of Nations. This view receives support from a number of recent empirical studies, including those by Knack and Keeffer (1995) and Acemoglu, Johnson and Robinson (2001 and 2002). Smith (1976) relates the differences in investment rates (hence, the differences in growth rates) to the extent to which the 'rule of law' and property rights exist. In all economies where there is tolerable security, every man of common understanding will endeavour to employ whatever stock he can command in procuring either present enjoyment or future profit.

Neo-classical economics has ignored these early insights for a long time as it strived to explain stock market performance by reference to a technical production function that includes two factors of production (capital and labour) and utility functions that depict the levels of utility associated with different input choices. Once the wider institutional context is assumed away in this manner, it was relatively straightforward to demonstrate that resource allocation would be Pareto-optimal if there was perfect competition. In addition, any Pareto-optimal resource allocation that is technically feasible can be achieved by establishing free markets. The problem with this institution-free view of the world has always been that it cannot explain why different non-market institutions coexist with markets, how market and non-market institutions interact, and whether different rates of growth performance may be related to differences in institutional characteristics of national economies.

Another, but potentially more significant, problem with the neo-classical view is that the reduction of economic activity to a technical production function is not compatible with their 'background' assumptions concerning the existence of property rights and conclusion of contracts with a degree of confidence (Rodrik, 2000). If the existing definition of property rights is not credible due to the existence of a highly intrusive or excessively weak state, or if contract enforceability is low due to low judicial quality, the technically-feasible outcomes may remain socially-unfeasible.

Moreover, the technical view of economic development is not compatible with the persistence of the development gap between the least-developed and developed economies. Given that scarcity leads to higher rates of return on capital in the least-developed economies, the latter should have been able to attract capital, increase output and catch up with their developed counterparts. True, policy failures or perverse policies may inhibit the flow of foreign capital and the accumulation of domestic capital, leading to slower growth. Such policy failures, however, beg the following question: why should such sub-optimal policies persist in under-developed economies? In other words, why are less developed economies caught in a 'vicious circle' of 'wrong' policies and low growth whereas developed economies enjoy a 'virtuous circle' of 'right' policies and high growth rates?

The general preoccupation with mathematically tractable hypotheses was such that works guided by an institutional perspective remained largely excluded from mainstream publication outlets. An exception the study could identify was an article published by Charles Wolf Jr. (1955). That paper he argued that the absence of the 'right institutions' might be a more significant determinant of low capital formation compared to the shortage of savings. What is meant by 'right institutions' is that kind of institutions '... which permit or stimulate, rather than impede, the adoption of new techniques and the formation of productive capital'. In other words, institutions may contribute to stock market performance not only by encouraging the adoption of new technologies, but also by accelerating the rate at which capital is combined with labour – i.e., by increasing the rate of investment. In terms of causation, Wolf Jr. suggests that institutions stimulate or impede stock market performance rather than the other way round. Specifically, institutions affect stock market performance through their effects on: (i) the economic agents' calculation of costs and benefits; (ii) the predictability and probability of economic relationships; (iii) knowledge of economic opportunities; and (iv) motivations and values. This specification is in line with the 'institutions as rules of the game' approach, which focuses on how institutions shape the incentive structure faced by economic actors.

The deficiency of an institutional viewpoint sustained to characterize the mainstream economics until mid-1980s, when Kormendi and Meguire (1985) and Scully (1988) came up with two pioneering papers that explored the effect of institutions on cross-country growth and investment. Rodrik (2000) indicated that the liberalization reforms of the 1980s and 1990s demonstrated that economic actors in both developed and developing economies were sensitive to price signals. Price signals would be conducive to increased national welfare only if there were institutions ensuring predictable property rights, curbing the worst forms of corruption and corporate abuse, ameliorating moral hazard problems, mitigating risks, and managing social or political conflicts.

Institutional quality can be categorized into; Property rights institutions (norms and rules that confer and guarantee control on the returns to the assets invested or values produced), Regulatory institutions (correspond to norms, rules and regulations that can prevent or mitigate market failures and agency problems) Institutions for macroeconomic stabilization (institutions that could reduce macroeconomic instability either by minimizing the incidence of policy-induced macroeconomic volatility or by increasing the resilience of the economy to adverse external shocks).

Institutional quality effect on economic performance can also be classified into two market-creating effect (capture the extent to which existing institutions encourage/support the emergence) and growth of markets (where economic actors can engage in mutually beneficial economic activities).

Linking this to the financial market a growing body of theoretical and empirical work identifies the ability of a country's institutional quality as one of the key explanations for the persistent disparity in financial market development and economic performance across countries.

Indeed, Williamson (1995) has been among the earliest groups of researchers highlighting the vital role of institutions and good governance in shaping countries' path of success. Since these breakthroughs, several applied researchers have investigated into the ways and means institutions or their functionality could hinder the economic progress of an economy.

Institutional quality is important for stock market development because efficient and accountable institutions tend broaden appeal and confidence in equity investment. Equity investment thus becomes gradually more attractive as political risk is resolved over time. Therefore, the development of good quality institutions can affect the attractiveness of equity investment and lead to stock market development. Good institutions quality such as law and order, democratic accountability, bureaucratic quality are important determinants of stock market development in Africa because they reduce political risk and enhance the viability of external finance. Bekaert (1995) provides evidence that higher levels of political risk are related to higher degrees of market segmentation and consequently low level of stock market development. Erb et al (1996a) show that expected returns are related to the magnitude of political risk. They find that in both developing and developed countries, the lower the level of political risk, the lower is required returns. The evidence in the literature suggests that political risk is a priced factor for which investors are rewarded and that it strongly affects the local cost of equity, which may have important implications for stock market development.

The view that better institutions lead to greater financial development and better economic performance is powerfully captured by Adam Smith in The Wealth of Nations: Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law, and in which the authority of the state is not supposed to be regularly employed in enforcing the payments of debts from all those who are able to pay. Commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government.

The discovery that relative prices matter a lot, and that therefore neo-classical economic analysis has much to contribute to development policy, led for a while to what was perhaps an excessive focus on relative prices. Price reforms were the rallying cry of the reformers of the 1980s, along with macroeconomic stability and privatization. By the 1990s, the shortcomings of the focus on price reform were increasingly evident. The encounter between neo-classical economics and developing societies served to reveal the institutional underpinnings of market economies. A clearly delineated system of property rights, a regulatory apparatus curbing the worst forms of fraud, anti-competitive behavior, and moral hazard, a moderately cohesive society exhibiting trust and social cooperation, social and political institutions that mitigate risk and manage social conflicts, the rule of law and clean government-these are social arrangements that economists usually take for granted, but which are conspicuous by their absence in poor countries. Hence it became clear that incentives would not work or generate perverse results in the absence of adequate institutions. The broader point that markets need to be supported by non-market institutions in order to perform well took a while to sink in. Three sets of disparate developments conspired to put institutions squarely on the agenda of reformers. One of these was the dismal failure in Russia of price reform and privatization in the absence of a supportive legal, regulatory, and political apparatus. A second is the lingering dissatisfaction with market-oriented reforms in Latin America and the growing realization that these reforms have paid too little attention to mechanisms of social insurance and to safety nets. The third and most recent is the Asian financial crisis which has shown that allowing financial liberalization to run ahead of financial regulation is an invitation to disaster.

The question before policy makers therefore is no longer "do institutions matter?" but "which institutions matter and how does one acquire them? Following Lin and Nugent (1995), it is useful to think of institutions broadly as "a set of humanly devised behavioral rules that govern and shape the interactions of human beings, in part by helping them to form expectations of what other people will do.

Macroeconomic Variables and Stock Market Development

The existing literature provides a number of theories illustrating the link between stock market behavior and economic activity as proxied by different macroeconomic variables. Among these theories are the efficient market hypothesis (EMH) and asset pricing theory.

The basic idea underlying the EMH developed by Fama (1965, 1970) is that asset prices promptly reflect all available information such that abnormal profits cannot be produced regardless of the investment strategies utilized. Formally, the EMH can be explained using the following equation:

$$\Omega^{*}_{t} = \Omega_{t}$$

The left side represents a set of relevant information available to the investors, at time "t". The right side is the set of information used to price assets, at time "t". The equivalence of these two sides implies that the EMH is true, and the market is efficient. Fama (1970) distinguished between three forms of market efficiency based upon the level of information used by the market: weak form, semi-strong, and strong form market efficiency.

From an economic standpoint, an efficient stock market will assist with the efficient allocation of economic resources. For instance, if the shares of a financially poor company are not priced correctly, new savings will not be used within the financially poor industry. In the world of the EMH, the level of asset price fluctuations, or volatility, fairly reflects underlying economic fundamentals. Along these lines, our study argues that policymaker's interventions may disrupt the market, and cause it to be inefficient. In the literature, the three forms of the EMH are usually used as guidelines rather than strict facts (Fama, 1991). Also, most empirical studies have examined the EMH in its weak or semi-strong forms, partly because the strong form is difficult to measure, and there is a high cost associated with acquiring private information.

The EMH implies that stock market prices fully and rationally incorporate all relevant information. Thus, past information is useless in predicting future asset prices. For that reason, only new, relevant information is used to explain stock market movements (Fama, 1965).

The theory of asset pricing, in general, demonstrates how assets are priced given the associated risks. The Arbitrage Price Theory (APT) suggested by Ross (1976) has been an influential form of asset price theory. APT is a general form of Sharpe's (1964) capital asset price model (CAPM). While the CAPM suggests that asset prices or expected returns are driven by a single common factor, the APT advocates that they are driven by multiple macroeconomic factors. Mathematically APT can be expressed as:

$$R_{i,t} = r_i^f + \beta_i x_t + \varepsilon_t$$

Where $R_{i,t}$the return of the stock i at time t is, r_i^f is the risk free interest rate or the expected return at time t. x_t is a vector of the predetermined economic factors or the systematic risks while β_i measures the sensitivity of the stock to each economic factor included in x_t. ε_t, the error term, represents unsystematic risk or the premium for risk associated with assets that cannot be diversified.

Ross (1976) shows that there is an approximate relationship between the expected returns and the estimated β in the first step provided that the no arbitrage condition is satisfied, i.e., the expected return increases as investors accept more risk, assuming all assets in the market are priced competitively.

Interestingly, APT does not specify the type or the number of macroeconomic factors for researchers to include in their study. For example, although Ross, et al. (1986) examined the effect of four factors including inflation, gross national product (GNP), investor confidence, and the shifts in the yield curve, they suggested that the APT should not be limited to these factors. Therefore, there is a large body of empirical studies that have included a large number of different macroeconomic factors, depending on the stock market they studied. In this study, four macroeconomic and one stock market variable will be included to examine their effect on stock market capitalization. Also, analysts face the challenge of identifying factors that play a significant role in explaining fluctuations of individual stock markets. Even though analysts can predetermine some economic factors, their selection must be based upon reasonable theory (Chen et al., 1986).

Asset pricing theory such as the arbitrage price theory (APT), and the Present Value Model (PVM), illustrates the dynamic relationship between the stock market and economic activities (Ross, 1976, and Semmler, 2006). In the last three decades, numerous empirical studies have examined the dynamic relationships between stock market behavior and economic activity, particularly for developed stock markets such as the U.S., United Kingdom (UK), Germany, and Japan; examples of pioneer studies are Fama (1981, 1990), Geske and Roll (1983), and Chen, Roll, and Ross (1986). Related studies are different in terms of their hypotheses and the methods used. Several studies investigated the predictive power of stock returns for real economic activity. These studies stress the issues of market efficiency, or the existence of the efficient market hypothesis. A large body of research focuses on the integration of stock markets across economies. Other previous studies have examined the short and long run relationship between stock prices or returns and some macroeconomic and financial variables such as inflation, interest rate, output, etc. Within this group of studies, some studies seek to examine local and international economic factors that affect stock prices or returns, while others examine factors that determine stock return volatility (Semmler, 2006). Some other explores the role of monetary policy in responding to or altering the stock market (Sellin, 2001).

Based on the 'intuitive financial theory' (Maysami and Koh, 2000, Gjerde and Sættem, 1999), our study hypothesize that macroeconomic variables such as Money Supply M2, inflation and policy rate affect stock market behavior.

McKinnon-Shaw (1973) criticized the dominant neo-classical monetary theories and the Keynesian counter arguments. The neo-classical monetary growth models postulate that high-positive interest rate have a direct impact on savings and investment. Within this school of thought, money is regarded as a substitute for physical assets and productive investments. Keynesian economists on the other hand McKinnon-Shaw argue that low-interest rate increases investment, income and eventually savings. McKinnon-Shaw (1973) advances an argument in favor of a complementary relationship between financial and physical assets as opposed to the substitutability theory by the neoclassical in a critique of the Keynesian theory. Paddy (1992) contends that macroeconomic and fiscal environment is one of the building blocks which determine the success or otherwise of securities market. Conducive macroeconomic environment promotes the profitability of business which propels them to a stage where they can access securities for sustained growth.

General theory suggests that there exist negative relationship between stock prices & inflation. Actual inflation will be positively correlated with unanticipated inflation, and will, ceteris, paribus move asset prices in the opposite direction. It may be argued that the effect on the discount rate would be negated if cash flows increase at the same rate as inflation. However, cash flows may not go up in same proportion with inflation. DeFina (1991), among others, suggests that the pre-existing contracts would deny any immediate adjustments in the firm's revenues and costs. Indeed, one might argue that cash flows should initially decrease if output prices lag input costs in response to rising inflation. Therefore, the expected relationship between inflation and stock prices is negative.

Fiscal deficits lead to government interference in the financial markets with more attractive instruments that will crowd-out stocks. An increase in government borrowing through the issuance of treasury bills affects the stock market through investors' re-adjustment of portfolio balances. Lower treasury bill rates are expected to stimulate transfers of domestic funds from the money market to the stock market. High and persistent fiscal deficits accommodated by the issuance of high yielding but less-risky government instruments like the Treasury bill adversely affect the demand for securities being issued by private firms for long-term capital. High-treasury bill rates tend to encourage investors to purchase more government instruments. Treasury bills thus tend to compete with stocks and bonds for the resources of investors. This tends to reduce the demand for stock market instruments and cause an eventual reduction in stock prices. The expected relationship between stock prices and treasury bill rates is thus negative. The impact of Treasury bill rate also affects stock market activity much in the same way as interest rate. Agenor (2000) captures these views by stating that interest rate, high inflation, large fiscal deficits and real exchange rate over-valuation are often key symptoms of macroeconomic instability which constraints private sector investment and savings and thereby results in inefficient allocation of resources on the exchange thereby affecting its performance.

Empirical Literature

Education and Stock Market Development

The evidence comes from a few studies. The cross-country regressions take the log of GDP per capita explained by average schooling and additional control variables. The micro studies refer to individual log wage explained by individual years of schooling, average years of schooling in a relevant geographical area, and additional control variables. The social returns equal the sum of the two schooling coefficients. Heckman and Klenow (1997) estimate the externality by comparing the schooling coefficient from cross-country regressions with those from cross-individual regressions. When they take into account differences in technology, social returns become similar to private returns. Rauch (1993) looks at the effect of average education on workers' wages and finds significant externalities. However, average and own education may be highly correlated. Acemoglu and Angrist (2000) correct for this by using instrumental variables. A few studies in Africa have focused on estimating external benefits of education in agriculture using the education of neighboring farmers. A one year rise in the average secondary schooling of neighboring farmers is associated with a 4.3 percent rise in output compared to a 2.8 percent effect of own farmer primary education in Uganda (Appleton and Balihuta

1996, reported in Appleton 2000). Another study finds 56 percent and 2 percent figures for Ethiopia, but seems rather too high (Weir 1999, reported in Appleton 2000). The results overall are inconclusive.

A classic study on return to education was provided by Mincer (1974). He looked at individual earnings as a function of years of education and also other factors such as age and experience. He found that for white males not working on farms, an extra year of education raised the earnings of an individual by about 7%. The introduction of a quadratic effect in schooling and a cross-product term between education and experience suggested a more complicated pattern of returns but pointed to the early stages of education being more valuable than the later stages.

Psacharopoulos (1994) provides an international survey of rates of return to education. The figures cover seventy-eight countries. They show returns to secondary education ranging from 42% p.a. in Botswana to only 3.3% p.a. in the former Yugoslavia and 2% p.a. in Yemen. The largest return for secondary education was 47.6% p.a. in Zimbabwe, falling to only 2.3% in the former Yugoslavia. The range for tertiary education was somewhat narrower, between -4.3% p.a. in Zimbabwe and 24% p.a. in Yemen.

Van Rooij et al (2011) also believe that individuals with high financial literacy are found to be more likely to invest in the stock market because financial knowledge lowers the costs of gathering and processing information and reduces barriers to investing in the stock market. A reason for the positive correlation between literacy and wealth accumulation might be that knowledgeable individuals take advantage of the equity premium on stock investments.

Standard models of portfolio choice typically assume that fully informed investors make rational asset allocation decisions to maximize lifetime utility. As noted by Ellison and Fudenberg (1995), however, “economic agents must often make decisions without knowing the costs and benefits of the possible choices” and thus often “rely on whatever information they have obtained via causal word-of-mouth communication.”

Mankiw et al (1992) assume that there are two types of labour, educate and uneducated. They defined the educated labour as the proportion of the labour force with secondary education. In the work of Maddison (1991) he established that high levels of GDP per capita are associated with high levels of Education some thirty years earlier. That is the effect of education on the economy can be seen after thirty years.

It is believed that an individual is more likely to participate in the stock market when a higher fraction of individuals in the local community are stock market investors. In the same vain our study establishes that individual is more likely to participate in the stock market when a higher fraction of individuals in the local community are educated. Guiso, Sapienza, and Zingales (2004) show that individuals who live or were born in areas with higher levels of social capital are more likely to invest in stocks.

Financial knowledge is believed lowers the costs of gathering and processing information and reduces barriers to investing in the stock market. Individuals with high financial literacy are found to be more likely to invest in the stock market (Van Rooij et al., (2011)). A reason for the positive correlation between literacy and wealth accumulation might be that knowledgeable individuals take advantage of the equity premium on stock investments.

Standard models of portfolio choice typically assume that fully informed investors make rational asset allocation decisions to maximize lifetime utility. As noted by Ellison and Fudenberg (1995), however, "economic agents must often make decisions without knowing the costs and benefits of the possible choices" and thus often "rely on whatever information they have obtained via causal word-of-mouth communication."

Institutional Quality and Stock Market Development

The view that better institutions lead to greater financial development and better economic performance is powerfully captured by Adam Smith in The Wealth of Nations. This view receives support from a number of recent empirical studies, including those by Knack and Keeffer (1995), Hall and Jones (1999), Acemoglu, Johnson and Robinson (2001), and La Porta et al. (1998). In addition, Rodrik, Subramanian and Trebbi (2002) present evidence that, not only do high quality institutions contribute to economic development, institutions are, in fact, the key determinant of economic development. In particular, once institutions are accounted for, the role of geography and trade in promoting economic development are negligible.

Gani and Ngassam (2008) examine the links between institutional factors and stock market development in a sample of eight Asian countries with developing as well as mature stock markets. The results obtained provide strong evidence that stock market performance, diffusion of technology, rule of law and political stability positively aid Asia's stock market expansion. On the other hand, poor regulatory quality and government effectiveness seem to be working against Asia's stock market development. The results support the proposition that institutional quality is an integral part of enhancing the development of stock markets in a country hence institutional quality matters for stock market development.

Analysis of the factors determining stock market performance by Butkiewicz and Yanikkaya (2004) has found that country-specific characteristics have important effects on growth performance. Their evidence suggests that maintenance of institutional variables appear to improve growth performance. These results are especially relevant for developing nations.

Critics of securities market, however, argue that markets characterized by weak institutional control mechanisms may jeopardize investor wealth (Khanna, 2009; La Porta et al., 1998; 1997), more so for foreign investors (World Bank, 2005) who are likely to dispose their shares at discount prices. This phenomenon is more pervasive in developing economies because they are characterized by weak regulatory institutions and poor systems of corporate governance (Hearn and Piesse, 2010).

Numerous recent studies on transition economies have emphasized the relevance of law, judicial efficiency and the regulatory framework. See e.g. Pistor (1999, 2000), Coffee (1999), Hooper, (2009) and La. Porta et al. (1997, 1999).

Empirical evidence suggests that better legal protection of outside shareholders is associated with easier access to external funds in the form of either equity or debt (La. Porta et al. (1997)), higher valuation of listed firms (La. Porta et al. (2002)), and lower private benefits of control (Zingales, 1994; Nenova, 1999). Moreover, it has been shown that the enforcement of law and regulations has much higher explanatory power for the level of equity and credit market development than the quality of the law on the books. See Pistor et al. (2000) and Coffee (1999).

Knack and Keefer (1995) combine the 'institutions as rules of the game' and 'institutions as governance quality' perspectives. They examine the impact of two institutional quality indices on economic performance. The index corresponding to the 'institutions as rules of the game' perspective includes indicators such as contract enforceability, risk of nationalization, rule of law, etc. The index corresponding to the 'institutions as governance quality' perspective is based on indicators such as bureaucratic quality, corruption, bureaucratic delays, etc. The authors report that institutions protecting property rights are significant predictors of stock market performance.

In a subsequent study, Knack and Keefer (1997a) focus on indicators of 'institutions as rules of the game' – namely on trust and civic cooperation norms. The authors test for the impact of differences in trust and civic cooperation norms on investment/GDP ratios and GDP per capita growth. They find that both trust and civic cooperation are positively associated with per capita GDP growth rates. The study corrects for endogeneity by using ethnic cleavage and the number of law students as instrumental variables – i.e., as institutional proxies that are less likely to be influenced by the level of development itself. They find out that trust remains a significant predictor of growth. The authors report similar results for the impact of institutions on investment/GDP ratios.

In a similar study, Knack and Keefer (1997b) examine the impact of institutions on a developing economy's ability to catch up with developed economies. They find that institutional indicators such as rule of law, pervasiveness of corruption, the risk of contract repudiation, etc. have significant effect on a country's ability to catch up. The authors conduct robustness tests and report that institutional factors remain significant determinants of convergence.

Kaufmann, D., A. Kraay and P. Zoido-Lopaton, (1999) also adopt an 'institutions as governance quality' perspective. They use six clusters of institutional quality indicators and examine their effect on development outcomes that include GDP per head, infant mortality and adult literacy. The authors report a strong relationship between governance quality and development outcomes. Their results hold irrespective whether OECD countries are included in or excluded from the sample.

Ades and di Tella (1996), evaluates the empirical literature on the connection between corruption and investment. Majority of the work reviewed leads to two unequivocal conclusions: (i) corruption and judicial system quality are associated positively; and (ii) higher levels of corruption are associated with lower investment levels.

Clague et al (1997a) combined institutional indicators that cut across the two types of institutions – i.e., institutions as rules of the game and institution as governance quality. Their institutional quality indicator is a composite index consisting of 5 ICRG variables, 4 BERI variables and a contract intensity measure defined as contract-intensive money, measured as the ratio of the non-currency money to the money stock (M2). The authors conduct multivariate tests and report that all institutional measures have positive and statistically significant impacts on investment and output growth. Other variables the authors controlled other relevant variables are initial income levels, human capital accumulation, and the relative price of investment goods. The results remain the same irrespective of whether the sample consists of all countries for which data is available or only less developed countries.

Rodrik (2000) in his work addressed a different issue that arises both political economy of policy design and the institutional approach to economic performance. His findings suggest that some economic performance indicators are positively related to democracy.

Edison (2003) found that institutions have a statistically significant influence on economic performance, substantially increasing the level of per capita GDP. These findings hold whether institutional quality is measured by broad-based indicators (such as an aggregate of various perceptions of public sector governance) or by more specific measures (for example, the extent of property rights protection or application of the rule of law). The findings are also consistent for all measures of institutions. Given the dominance of institutional factors in explaining economic performance, is there a role for policies? The results show that there is.

These results suggest that economic outcomes could be substantially improved if developing countries strengthened the quality of their institutions. In other words the results indicate that institutions have a strong and significant impact on per capita GDP growth. This impact may partly reflect the role of institutions in enhancing the sustainability of policies. On average, improving institutional quality by one standard deviation would lead to an increase of 1.4 percentage points in average annual growth in per capita GDP.

Osei (2006) investigates both the long run and the short run associations between the Ghana stock market and macroeconomic variables. The paper establishes that there is cointegration between the macroeconomic variables and Ghana stock market. The results of the short run dynamic analysis and the evidence of cointegration mean that there are both short run and long run relationships between the macroeconomic variables and the index. In terms of Efficient Market Hypothesis (EMH), the study establishes that the Ghana stock market is information ally inefficient particularly with respect to inflation, treasury bill rate and world gold price.

Kuwornu and Owusu-Nantwi (2011) examined the relationship between macroeconomic variables and stock market returns in Ghana using monthly data. Macroeconomic variables used were Consumer Price Index (as a proxy for inflation), crude oil price, exchange rate and 91day Treasury bill rate (as a proxy for interest rate). Full Information Maximum Likelihood Estimation procedure was used in establishing the relationship between macroeconomic variables and stock market returns. The empirical findings reveal that Consumer Price Index (inflation rate) had a positive significant effect, while exchange rate and Treasury bill rate had negative significant influence on stock market returns. On the other hand, crude oil prices do not appear to have any significant effect on stock returns.

Eita (2012) investigates the macroeconomic determinants of stock market prices in Namibia. Using VECM econometric methodology revealed that Namibian stock market prices are chiefly determined by economic activity, interest rates, Consumer Price Index and Money Supply. An increase in economic activity and the Money Supply increases stock market prices, while increases in inflation and interest rates decrease stock prices. The results suggest that equities are not a hedge against inflation in Namibia, and contractionary monetary policy generally depresses stock prices.

Fama (1981) argues that expected inflation is negatively correlated with anticipated real activity, which in turn is positively related to returns on the stock market. Therefore, stock market returns should be negatively correlated with expected inflation, which is often proxied by the short-term interest rate. Kaul (1990) studied the relationship between expected inflation and the stock market, which, according to the proxy hypothesis of Fama (1981) should be negatively related since expected inflation is negatively correlated with anticipated real activity, which in turn is positively related to returns on the stock market.

Spyrou (2001) also studied the relationship between inflation and stock returns but for the emerging economy of Greece. Consistent with Kaul (1990) results, Spyrou (2001) found that inflation and stock returns are negatively related, but only up to 1995 after which the relationship became insignificant.

Kyereboah-Coleman and Agyire-Tettey (2008) used cointegration and the error correction model techniques to show how macroeconomic indicators affect the performance of stock markets by using the Ghana Stock Exchange as a case study. The findings of the study reveal that lending rates from deposit money banks have an adverse effect on stock market performance and particularly serve as major hindrance to business growth in Ghana. Again, while inflation rate is found to have a negative effect on stock market performance, the results indicate that it takes time for this to take effect due to the presence of a lag period; and that investor's benefit from exchange-rate losses as a result of domestic currency depreciation.

Chow et al (1993) using monthly data for the period 1977-1989 found no relationship for monthly excess stock returns and real exchange rate returns. When repeating the exercise, however, with longer than six months horizons they found a positive relationship between a strong dollar and stock returns.

Stock Market Determinants

Many African Countries have invested in developing domestic capital markets as institutions for mobilizing external capital inflow and domestic savings. The development of domestic capital market provides opportunity for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for investment appraisal (Black, 1988). In the view of Osaze (1985) the activity in every stock exchange is often an indicator of economic performance and is measured by the movement and behavior of stock prices. Wai and Patrick (1973) argue that capital markets have generally not contributed positively to the economic development of those countries that created the markets. However, Arowolo (1971), contends that capital market do contribute to economic development. There are certain key indicators of capital market development which are generally accepted in literature. These, according to the International Finance Corporation (IFC) (1991), are the standard quantitative indicators of stock market development: Net increase in Market capitalization, Number of listed companies and Trading of shares in value terms.

Based on the foregoing, the simple indicators of capital market development are increased breadth as measured by new listing; increased size as measured by market capitalization and new issues; increased liquidity as measured by value of traded securities; and increase activity as measured by All Share Index.

Our study can also determine stock market development by looking at the level of shareholder protection in publicly traded companies as stipulated in securities or company laws (Shleifer and Vishny 1997) but the study concentrated stock market capitalization. Stock market development is more likely in countries with strong shareholder protection because investors do not fear expropriation as much. In addition, ownership in such markets can be relatively dispersed, which provides liquidity to the market, (La Porta et al 1999) provide evidence for the importance of minority rights protection by using (De Santis and Imrohoroglu, 1997) report that emerging financial markets exhibits a conditional probability of large price changes than developed stock markets.

(La Porta et al 1997) find that countries with lower quality of legal rules and law enforcement have smaller and narrower capital markets and that the listed firms on their stock markets are characterized by more concentrated ownership. (Demirguc-Kunt and Maksimovic, 1998) show that firms in countries with high ratings for the effectiveness of their legal systems are able to grow faster by relying more on external finance.

Gaps in Research

After reviewing literature, our study found that there is lack of consistent methodological rigor and standard statistical control for the conduct of the study on the effect of macroeconomic variables on stock market performance. The application of different methodologies in the analysis of macroeconomic variables has been mainly the use of econometric models such as the GMM, Fixed and Random effects, VECM, and APTs. The use of multiple regression analysis has been very minimal and virtually absent in emerging markets. The case of emerging markets is even more unique considering that various methodologies have used econometric models instead of a multiple regression approach which this dissertation seeks to address. The study is expected to fill the gap in the current related literature and will make significant differences in the response of the emerging stock markets performance to change in macroeconomic variables such as inflation, exchange rate, and Money Supply and GDP using panel data. Advanced economies have evidence of studies in relation to macroeconomic indicators and intuitional quality (e.g., Fama and French 1989; Jensen, Mercer, and Johnson 1996), but there is no established evidence of whether these indicators strongly suggests an absolute impact on stock market performance. The case of emerging stock markets is also inconclusive. The study also established that there are fewer studies that examine effect of institutional quality and education on stock market performance in emerging market. In the light of these gaps, the study explored the relationship between macroeconomic indicators, institutional quality and education on stock market performance in emerging stock markets.

Conclusion

The empirical finds reveal that there is a significant relationship between stock market returns and macroeconomic variables and institutional quality. The study concludes that education raises the growth rate by countries and hence the performance of stock markets. The rate of catch-up depends positively on the number of years of education, reflecting the view that a high level of education makes it easier to absorb best-practice technology. It is also established that there is a strong relationship between volatility and market performance and that trading volume can be a proxy for information flow for individual stocks, but not for the market indices. The reason for this is asynchronous information arrivals for each firm listed in the index.

Empirical literatures by different authors also reveal that some authors have established a positive relationship between various macro-economic variables and stock market performance, while others have established otherwise. Studies conducted both locally made different conclusions. While some authors established a weak relationship, others found a strong relationship. Yet again, some authors established relationships only in the long-run, while others established long-run and short-run relationship.

CHAPTER FOUR: RESEARCH METHODS

Introduction

This chapter discusses the methodology used to conduct the study. The chapter explains the methods to be used to collect secondary data necessary for the study. The chapter discusses the research design used, the target population and data collection methods. Data analysis has also been discussed in detail with the researcher explaining the model and statistical tools that will be used to analyse the data. Accordingly, the data were obtained from Worldwide Governance indicators (WGI), World Development Indicators (WDI), Statistical Bulletin and other relevant publications. The data collected are for the period 1996 to 2011 using panel data of 41 countries. The approach taken in this thesis is to model the impact of educational, macroeconomic and institutional factors on stock market development in emerging markets.

Theoretical Framework

In formulating a theory of investment behavior based on the neoclassical theory of optimal capital accumulation, a great number of alternative versions of the theory could be considered. Reduced to its barest essentials, the theory requires only that capital accumulation be based on the objective of maximizing the utility of a stream of consumption. This basic assumption may be combined with any number of technological possibilities for production and economic possibilities for transformation of the results of production into a stream of consumption. In selecting among alternative formulations, a subsidiary objective must be borne in mind. The resulting theory of capital accumulation must include the principal econometric models of investment behavior as specializations, but the theory need not encompass possibilities for the explanation of investment behavior not employed in econometric work.

The essentials of a theory of optimal capital accumulation that meets this basic objective are the following: The firm maximizes the utility of a consumption stream subject to a production function relating the flow of output to flows of labor and capital services. The firm supplies capital services to itself through the acquisition of investment goods; the rate of change in the flow of capital services is proportional to the rate of acquisition of investment goods less the rate of replacement of previously acquired investment goods. The results of the productive process are transformed into a stream of consumption under a fixed set of prices for output, labor services, investment goods, and consumption goods. These prices may be considered as current or "spot" prices together with forward prices for each commodity or, alternatively, as current and future prices together with a normalization factor, which may be identified with current and future values of the rate of time discount or interest rate. Both current and forward prices are taken as fixed by the firm. Alternatively, current and future prices together with current and future values of the rate of interest are taken as fixed. Under these conditions, the problem of maximizing utility may be solved in two stages. First, a production plan may be chosen so as to maximize the present value of the productive enterprise. Secondly, consumption is allocated over time so as to maximize utility subject to the present value of the firm.

In human capital theory education is an investment of current resources in exchange for future returns. The benchmark model for the development of empirical estimation of the returns to education is the key relationship derived by Mincer (1974).

The view that better secondary school education lead to greater financial development and better economic performance is powerfully captured by Adam Smith in The Wealth of Nations where he say that abundance or scantiness supply, seems to depend on more skills, dexterity and judgment with which its labour is generally applied. This view receives support from a number of empirical studies, including those by Martin (1995) demonstrate the positive relationship between education and stock market performance. Secondary school education does not only contribute to economic development, but in fact, a key determinant of economic development. In particular, once secondary school education is accounted for, the role of geography and trade in promoting economic development are negligible. The fundamental identification issue here is that current secondary school education is likely to be endogenous, because rich countries can afford good education.

Having identified an appropriate instrument, this thesis regress country level measures of economic or financial performance on secondary school education, appropriately instrumented. Since our study is concerned about stock markets performance of emerging country our unit of analysis is stock markets of emerging countries under consideration in this thesis. Our approach complements the existing literature and also offers some additional insights into how the secondary school education effects investment decisions. The study addresses the endogeneity issue by examining individual country level data. A panel data of 41 countries were used to test the hypothesis. Our model builds on work by Gary S. Becker (1964), Mincer (1974), Sherwin Rosen (1976) and Calderon-Rossell (1990).

Theoretical Models

Individual's Ability to Invest and Investment

The importance of knowledge as an input in the economy is discussed already by Adam Smith in his Wealth of Nations (1776). The acquisition of knowledge by education was by Smith assumed to be regulated by the same mechanisms as the accumulation of material capital.

Several fundamental concepts lie at the root of saving and investment decisions. Three such concepts are: (i) numeracy and capacity to do calculations related to interest rates, such as compound interest; (ii) understanding of inflation; and (iii) understanding of risk diversification. Translating these into easily measured financial literacy metrics is difficult, but Lusardi and Mitchell (2008, 2011a, 2011c) have designed a standard set of questions around these ideas and implemented them in numerous surveys in the United States and abroad. Four principles informed the design of these questions. The first is Simplicity: the questions should measure knowledge of the building blocks fundamental to decision making in an intertemporal setting. The second is Relevance: the questions should relate to concepts pertinent to peoples' day-to-day financial decisions over the life cycle; moreover, they must capture general, rather than context-specific, ideas. Third is Brevity: the number of questions must be kept short to secure widespread adoption; and fourth is Capacity to differentiate, meaning that questions should differentiate financial knowledge to permit comparisons across people.

Accordingly, it is important to understand knowledge of the stock market, as well as differentiate between levels of financial knowledge. Naturally, any given set of financial literacy measures can only proxy for what individuals need to know to optimize behavior in intertemporal models of financial decision making. Moreover, measurement error is a concern, as well as the possibility that answers might not measure "true" financial knowledge. These issues have implications for empirical work on financial literacy.

Theories of firm behavior almost invariably ignore the effect of productive process itself on worker productivity, formally incorporate into economic analysis. Many workers increase their productivity by learning new skills and perfecting old ones while on the job. On the job training raises future productivity but it must be noted that future productivity can be improved only at a cost since this cost could have been used to produce current output if they were not used in raising future output. Included in the cost is a value place on the time and effort of trainees, the teaching provided by others, and the equipment and materials used. By implication the amount spent and the duration of the training period depends partly on the type of training.

Each employee is assumed to be hired for specified time period, and the moment both product and labour markets are assumed to perfectly competitive. If there were no on-the-job training, wage rates would be independent of its actions. A profit maximizing firm would be in equilibrium when marginal products equaled wages. In symbols

$$MP = W \qquad (1)$$

Where W = wages or expenditures

MP= marginal product or receipts.

Firms would not worry too much about the relation between labour conditions in the present and future partly because workers were only hired for one period, and partly because wages and marginal products in the future periods would be independent of a firm's current behavior. It can therefore be assumed that workers have unique marginal products and wages in each period, which are respectively the maximum productivity in all possible uses and the market wage rate. Equilibrium condition would be the set

$$MP_t = W_t \qquad (2)$$

Where t refers to the t^{th} period. The equilibrium condition depends only on the flows during that period. These conditions are altered when account is taken of on the job training and the connection thereby created between present and future receipts and expenditures. The set of equilibrium conditions summarized in equation (2) would be replaced by equality between the present values of receipts and expenditures. If E_t and R_t represent expenditures and receipts during period t, and i the market discount rate, then the equilibrium condition can be written as

$$\sum_{t=0}^{n-1} \frac{R_t}{(1+i)^{t+1}} = \sum_{t=0}^{n-1} \frac{E_t}{(1+i)^{t+1}} \qquad (3)$$

Where n represents the number of periods, and R_t and E_t depend on all other receipts and expenditures. This is generalization of equation (2). If training were given only during the initial period, expenditures during the initial period would equal wages plus the outlay of training, expenditures during other periods would equal wages alone, and receipts during all periods would equal marginal products. Equation (3) becomes

$$MP_0 + \sum_{t=1}^{n-1} \frac{R_t}{(1+i)^t} = W_0 + k + \sum_{t=1}^{n-1} \frac{W_t}{(1+i)^t} \qquad (4)$$

Where k measures the outlay on training. If a new term is defined,

$$G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} \qquad (5)$$

Equation (4) can be written as

$$MP_0 + G = W_0 + k \qquad (6)$$

Since the term k measures the actual outlay on training it does not entirely measures training costs. Excluded is the time that a person spends on this training, time that could have been used to produce current output. The difference between what could have been produced MP'_t and what is produce MP_0 is the opportunity cost of the time spent in training. If C is defined as the sum if opportunity costs and outlays on training, equation (6) becomes

$$MP'_0 + G = W_0 + C \qquad (7)$$

The term G is the excess of future receipts over future outlays, is a measure of the return to the firm from providing training; and therefor, the difference between G and C measures the difference between the return from, and the cost of training. Equation (7) shows that marginal product would equal wages in the initial period only when the return equals costs, or G=C; it would be greater or less than wages as the return was smaller or greater than costs.

Firms would provide general training only if they did not have to pay any of the costs. Persons receiving general training would be willing to pay this cost since training raises their future wages hence the cost as well as the return from general training would be borne by trainees, not by firms.

Since wages and marginal products are raised by the same amount, MP_t must equal W_t for all t=1,............n-1, and therefore

$$G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} = 0 \qquad (8)$$

Equation (7) is reduce to

$$MP'_0 = W_0 + C \qquad (9)$$

Or

$$W_0 = MP'_0 - C \qquad (10)$$

In terms of actual marginal products

$$MP_0 = W_0 + k \qquad (9')$$

Or

$$W_0 = MP_0 - k \qquad (10')$$

According to equation (5) and (7) the equilibrium of a firm providing training in competitive markets can be written as

$$MP'_0 + G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} = W_0 + C \qquad (11)$$

Where C is the cost of training given only in the initial period, MP'_0 is the opportunity marginal product of trainees, W_0 is the wage paid to trainees and W_t and MP_t are the wage and marginal product in period t.

Since MP'_0 measures the marginal product elsewhere and W_0 would measure the wage elsewhere of trainees, $MP'_0 = W_0$. As a consequence G = C, or in full equilibrium, the return from training equals costs.

It must be noted that the equality between wages and marginal product in the initial period involves opportunity, not actual marginal product. The next point is that even if wages equaled marginal product initially, they would be less in the future because the differences between future marginal products and wages constitute the return to training and are collected by the firm.

If G is the present value of the return from training collected by firms, the fundamental equation is

$$MP' + G = W + C \qquad (12)$$

If G' measures the return collected by employees, the total return G'', would be the sum of G and G'. In full equilibrium the total return would equal total costs, or $G'' = C$. Let "a" represent the fraction of the total return collected by firms. Since $G = aG''$ and $G'' = C$, equation (12) can be written as

$$MP' + aC = W + C \qquad (13)$$

Or

$$W = MP' - (1 - a)C \qquad (14)$$

Employees pay the same fraction of costs, $(1 - a)$ as they collect in return, which generalizes the results obtained earlier. For if training were completely general, $a = 0$, and equation (14) reduces to equation (10); if firms collected all the return from training, $a = 1$, and equation (14) reduces to $MP'_0 = W_0$; if $0 < a < 1$, none of the earlier equations are satisfactory.

In this thesis G is the measure of ability of individual to invest. This is so because returns correlate positively with ability of individual to invest (E).

Institutional Quality and Investment

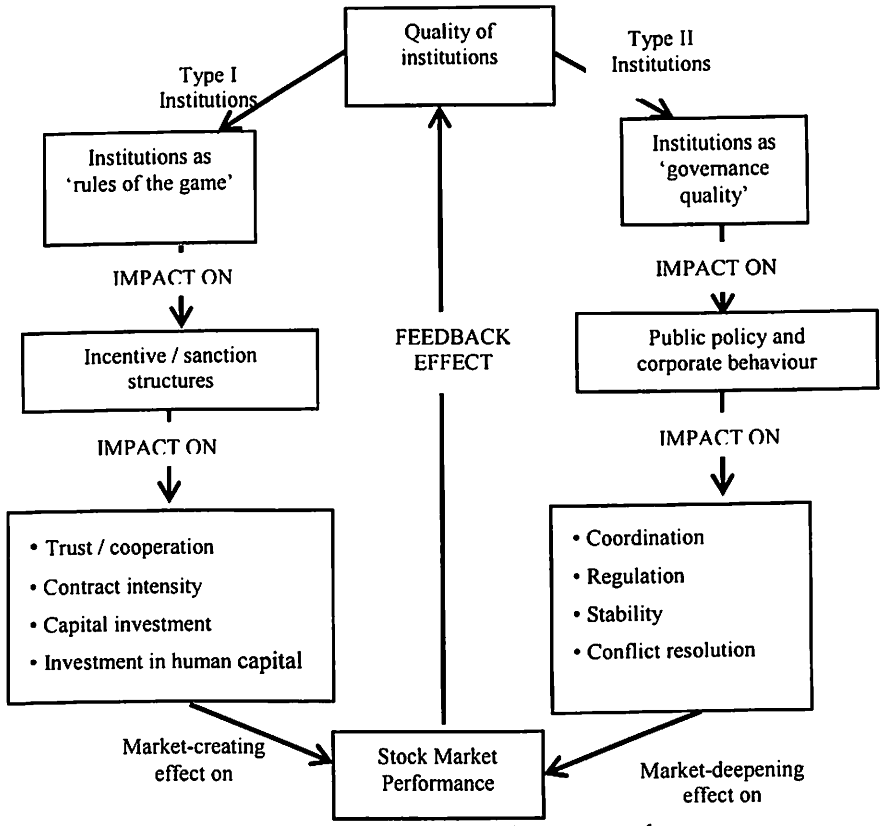
Institutions have two aggregate effects on stock market performance; a market-creating effect and a market-deepening effect. The market-creating effect captures the extent to which existing institutions encourage/support the emergence and growth of markets where economic actors can engage in mutually beneficial economic activities. The higher the institutional quality is, the lower are the transaction costs, the higher are the transaction volumes, and the higher is the probability that economic actors will extend their activities into new areas or sectors. The overall result is an expansion in the set of mutually beneficial economic activities and an increase in stock market performance. This result is underpinned by institutional quality that encourages trust/cooperation, higher levels of contracting, and provides incentives for investment in human as well as physical capital.

The market-deepening effect, on the other hand, refers to increased efficiency of the existing markets in which economic actors interact and conclude mutually-beneficial contracts. This effect is felt as a result of improved public and private governance quality, which enables economic actors to secure higher overall returns on a given volume of contracting. In other words, quality institutions lead to higher levels of governance quality that is conducive to: (i) reduced risks of coordination failures and agency problems; (ii) lower incidence of externalities and market failures; and (iii) improved policy credibility and reduced macroeconomic volatility.

As the quality of governance-supporting institutions increases, economies will be less likely to suffer welfare losses that arise from resource misallocation and distortions.

This literature suggests that it is possible to associate the two effects of the institutions with two institutional types. Type I corresponds to institutions covered by the 'rules of the game' and the 'cooperation-supporting institutions' definitions introduced above. Type I institutions include the 'institutions of property rights' and 'conflict resolution institutions' suggested by Rodrik (2000). The quality of Type I institutions can be measured by the quality of the following indicators: rule of law, contract enforceability, risk of expropriation, power and accountability, judicial competence and impartiality, and trust. Type II institutions, on the other hand, correspond to 'institutions as governance structures' definition and include the remaining 2 categories suggested by Rodrik (2000): regulatory institutions and stabilization institutions. The quality of Type II institutions can be measured by the quality of the following indicators: bureaucratic/government efficiency, policy predictability, company law and corporate governance regimes, and transparency/accountability.

To be able to visualize the impact of institutional quality on cross-country differences in stock market performance over time, the study proposes a diagrammatical model depicted in Figure 19 below. Our model is based on standard assumptions in economics – namely that economic actors are rational and try to maximize utility under certain constraints. The information available to economic actors may not be perfect, but the actors will take account of the existing information and respond to new information that becomes available. In the model, the quality of institutions and institutional change are considered as information signals to which the utility-maximizing economic actors respond in a rational way. The study conceptualize the impact of Type I institutions on stock market performance as a 'market creating effect'. In other words, Type I institutions encourage better stock market performance by creating new incentives for contracting between economic actors who seek to exploit mutually beneficial economic opportunities. The market-creating effect can be traced over three stages. In stage 1, Type I institutions delineate the society's incentive and sanction framework. In other words, they provide information about the range of actions that are encouraged or discouraged, and the likely rewards or costs associated with such actions. In stage 2, the information about incentives and sanctions delineates the level of contract intensity, the level of trust, the incidence of economic/political conflict, and the level of incentives for investment in physical and human capital. Finally, in stage 3, contract and investment intensity affects stock market performance, which can be measured as GDP growth rates and/or GDP per capita levels.



Source: Mehmet Ugur (2010) modified by researcher

Figure 19 Model of Institutions and Stock market performance

The effect of Type II institutions, on the other hand, is conceptualized as a 'market-deepening effect'. Put differently, better Type II institutions enable economic actors to secure higher returns on their economic activities – either because of the predictability of the governance frameworks or because of the limits they impose on collectively sub-optimal courses of action. Again, the market deepening effect can be examined in three stages. In stage 1, governance quality affects the quality of public policy, including its regulatory and stabilization dimensions. In stage 2, public and private governance quality affects the quality of the regulatory frameworks and corporate governance regimes within which economic actors interact with each other. While the quality of the public policy reduces policy-induced uncertainties and risks, the quality of the regulatory frameworks reduces the risks associated with agency problems, coordination failures, and rent-seeking. Finally, in stage 3, the quality of regulation, coordination, and governance affects stock market performance.

Although the distinction between 'market-creating' and 'market-deepening' effects is a useful analytical construct, our study must indicate that the two effects are not mutually exclusive. In other words, our study can be expected to have both market creation and market enhancement effects within each of the channels in the model above. However, our study should also indicate that Type I institutions (the left-hand channel) tend to generate predominantly market-creating effects whereas Type II institutions (the right-hand channel) tend to generate predominantly market-deepening effects. This is because Type I institutions tend to delineate the incentive structure faced by economic actors, whereas Type II institutions tend to determine the efficiency with which the contracts for employment, supply or credit are implemented. Yet, this distinction becomes less relevant when aggregate measures of institutional quality are used for estimation purposes.

The third point to be made about the proposed model is that stock market performance has feedback effects on institutional quality. As the study portray in the discussion of empirical findings, the feedback effect can occur for two reasons. On the one hand, higher levels of stock market performance enable societies to afford the development and implementation costs associated with new institutions. To the extent that this is the case, stock market performance would have a direct feedback effect on institutional quality. On the other hand, stock market performance is likely to have an indirect (or perception) effect on institutional quality because of the way in which institutional quality data is collected. Institutional quality data is usually collected via surveys of economic actors, whose perceptions of existing institutions are likely to be influenced by how well the economy is performing at a given time. The proposed model suggests that the study should isolate the direct and indirect feedback effects when our study examine the impact of institutions on stock market performance over time. As observed in the cross-country empirical studies, the feedback effect (i.e., the endogeneity problem) can be tackled by the use of appropriate instruments or proxies that are less likely to be influenced by stock market performance. In time series analysis, such instrumentation can be introduced by taking lagged values of the institutional quality indicators.

Institutional Quality can act as an effective deterrent against host government interference with investments, thereby deterrence value embedding in the project investment insurance. In addition, Institutional Quality provides leverage value to the project; equivalently it is able to facilitate the assembly of project financing. For example, the tenors provided by the Institutional Quality enables the lenders to extend the terms of their loans and improve the project's amortization, in which long-term debt financing is often critical to the project's continuation. Weak institutional quality is the exposure of investors risk as a result of politically and socially generated change.

The investor is the party to make decision on which country/region to invest. d is a variable measuring the institutional quality of the invested country. When d increases, the risk of investment increases. There are several possible measurements for d. In this empirical chapter the extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.

The study employed utility theory to derive the equilibrium which maximizes the investor's expected utility by modifying West (1996) model.

Let P be the premium for strong institutional quality, L the loss for weak institutional quality, π the probability that a loss event happens, C the compensation for the loss event. r is the expected return on investment the investor makes. The expected utility of the investor is the following:

$$V(W) = \pi(d).U[W + I(d).r(d) - P(\pi(d), C(d)) - L(d) + C(d)]$$
$$+ (1 - \pi(d))U[W + I(d).r(d) - P(\pi(d), C(d))] \qquad (15)$$

subject to $C \leq L$, and C is subject to policy maximization. When $C = L$, the investor is assure of strong institutional quality. W - I is the wealth that the investor retains, I is the amount of the wealth invested in the country with strong institutional quality d. At the end of the period, if weak institutional quality is assured and no loss occurs, the wealth of the firm is $(W - I) + I * (1 + r) = W + I * r$. And, $V(W) \geq U(W)$. Otherwise, the investor would not invest in country. There are some conditions from the model:

$$P(\pi(d), C(d)) \Rightarrow \frac{\partial P}{\partial \pi} \geq 0, \frac{\partial P}{\partial C} \geq 0, \frac{\partial P}{\partial d} \geq 0 \qquad (16)$$

$$r(d) \Rightarrow \frac{\partial r}{\partial d} \geq 0 \qquad (17)$$

Since weak institutional quality affects the probability of loss and strong institutional quality affects the amount of loss, then $\frac{\partial \pi}{\partial d} \geq 0$, is the inverse of weak institutional quality and $\frac{\partial L}{\partial d} \geq 0$ is the inverse of strong institutional quality. As a result, through the creation of the institutional quality index d, the model implicitly takes into account the effect of institutional quality.

The investor achieves the utility maximization by determining which country to invest given that countries' institutional quality. For simplification, let $L = k * I \, and \, C = f * L = k * f * I$ where k is constant and f is institutional quality coverage which depends on d. Both k and f should be less than or equal to one. Therefore, the simplified model is

$$V(W) = \pi(d).U\{W + I(d).[r(d) - k(1-f)] - P(\pi(d), I(d))\} + (1 - \pi(d))U[W + I(d).r(d) - P(\pi(d), I(d))] \quad (17)$$

$$P(\pi(d), I(d)) \Rightarrow \frac{\partial P}{\partial \pi} \geq 0, \frac{\partial P}{\partial I} \geq 0, \frac{\partial P}{\partial d} \geq 0 \quad (18)$$

$$f(d) \Rightarrow \frac{\partial f}{\partial d} \geq 0 \quad (19)$$

Let *0* state be the no loss state and *1* be loss state. With respect to the institutional quality of invested country, *d*, the investment amount, *I*, the minimum required return on the investment given the existence of institutional quality, *r*, and *f*, the investors can achieve the utility maximization using the following first order conditions.

$$\frac{\partial V}{\partial d} = \grave{\pi}(U_1 - U_0) + [\pi \grave{U}_1 + (1-\pi)\grave{U}_0]\left(I.\grave{r} + \grave{I}.r - \frac{\partial P}{\partial \pi}\grave{\pi} - \frac{\partial P}{\partial I}\grave{I} - \frac{\partial P}{\partial f}\grave{f}\right)$$

$$+ \pi.\grave{U}_1.k(\grave{I}(f-1) + I\grave{f}] = 0 \quad (20)$$

The study also assume that $\frac{\partial^2 P}{\partial \pi^2} \geq 0, \frac{\partial^2 P}{\partial I^2} \geq 0, \frac{\partial^2 P}{\partial d^2} \geq 0 \; and \frac{\partial^2 r}{\partial d^2} \geq 0$. This implies that the variance of investment return increases as the risk of institutional quality of the country increases.

$$\Rightarrow \grave{\pi}(U_1 - U_0) + \pi(\grave{U}_1 k \grave{I} - [\pi \grave{U}_1 + (1-\pi)\grave{U}_0]\left(\frac{\partial P}{\partial \pi}\grave{\pi} - \frac{\partial P}{\partial I}\grave{I} - \frac{\partial P}{\partial f}\grave{f}\right) \quad (21)$$

$$= \pi.\grave{U}_1.[\grave{I}r + I\grave{r} + k(\grave{I}f + I\grave{f})] + (1-\pi)\grave{U}_0(\grave{I}r + I\grave{r}$$

The first and the second terms in the left hand side of Equation (21) are the cost of inverse weak institutional quality and the one of inverse strong institutional quality, respectively. This equation shows that the marginal cost from decreasing utility due to increasing d should be equal to the marginal gain from decreasing the probability of loss.

$$\frac{\partial V}{\partial I} = \pi \grave{U}_1[(r - k + kf)] - \frac{\partial P}{\partial I}] + (1 - \pi)\grave{U}_0\left(r - \frac{\partial P}{\partial I}\right) = 0$$

$$\Rightarrow \frac{\partial P}{\partial I} = \frac{\pi \grave{U}_1(r - k + kf) + (1 - \pi)\grave{U}_0 r}{\pi \grave{U}_1 + (1 - \pi)\grave{U}_0} = r + \frac{(-k + kf)}{\pi \grave{U}_1 + (1 - \pi)\grave{U}_0} \quad (22)$$

The price of institutional quality should go up as the investment amount increases. From Equation (22), it is expected to get the lower bound of the expected rate of return:

$$r \geq \frac{\pi \grave{U}_1 . k . (1 - f)}{\pi \grave{U}_1 + (1 - \pi)\grave{U}_0} \quad (23)$$

As mentioned earlier, the firm views investment as a project and evaluate the expected return corresponding to the hurdle rate to determine whether the project should be taken; the minimum expected return on the project (overseas investment) has to satisfy Equation (23) so that the value of $\frac{\pi \grave{U}_1 . k . (1-f)}{\pi \grave{U}_1 + (1-\pi)\grave{U}_0}$ can be viewed as the hurdle rate embedded in the project with which the expected returns are compared. In addition, increasing f, the investor would require less expected rate of return. As long as the expected rate of return is greater than zero, investor will go for this investment opportunity when countries have strong institutional quality.

Macroeconomic variables and Investment

One way of linking macroeconomics variables and stock market returns is through arbitrage pricing (APT) (Ross, 1976), where multiple risk factors can explain asset returns. The *q* approach to the transmission mechanism increases the macroeconomic significance of stock markets which now take on an important role in managing the process of capital accumulation. Early empirical studies on APT focused on individual security returns (for selection of relevant studies see Fama, 1981, 1990; Fama and French, 1989; Schwert, 1990; Ferson and Harvey, 1991; and Black, Fraser, MacDonald, 1997). It is also used in an aggregate stock market framework, where a change in a given macroeconomic variable could be seen as reflecting a change in an underlying systemic risk factor influencing future returns. Most of the empirical studies on APT theory, linking the state of the macro-economy to stock market returns, are characterized by modeling a short run relationship between macroeconomic variables and the stock price in terms of first difference, assuming trend stationarity (Andrew and Peter, 2007).

Portfolio optimization problems under partial information are becoming more and more popular, also because of their practical interest. They have been studied using both major portfolio optimization methodologies, namely Dynamic Programming (DP) and the "Martingale Method"(MM). While DP has a longer tradition in general, also MM has been applied already since some time for the cases when the drift/appreciation rate in a diffusion-type market model is supposed to be an unknown constant, a hidden finite-state Markov process, or a linear-Gaussian factor process. Along this line are the papers Lakner, P., (1995 and 1995 and, more recently Sass, J. and Haussmann, U.G., (2004). The study considers the portfolio maximization problem under a hidden Markov setting, where the coefficients of the security prices are nonlinearly dependent on economic factors that evolve as a k-state Markov chain.

Let us consider a market model with N + 1 securities $(S_t^0,\ S_t) = (S_t^0, S_t^1, \dots\dots, S_t^N)^*$, where S^* stands for the transpose of the matrix S, and an economic factor process X_t (GDP, Consumer Price Index and Money Supply) which is supposed to be finite state Markov chain taking its values in the set of the unit vector $E = \{e_1\ e_{2,\dots\dots,} e_k\}$ in R^k. The share price S_t^0 is assumed to satisfy the ordinary differential equation:

$$dS_t^0 = r(t, S_t)S_t^0 dt, \quad S_0^0 = S^0 \qquad (24)$$

Where r(t, S) is a nonnegative, bounded and locally Lipschitz continuous function in $S \in R_+^N = \{(x^1, x^2, \dots\dots, x^N);\ x^i \geq 0, i = 1,\ 2, \dots N\}$. The other security prices $S_{t,}^1\ i = 1, 2..N$, are assumed to be governed by the following stochastic differential equations:

$$dS_t^i = S_t^i\{a^i(t, X_t, S_t)dt + \textstyle\sum_{j=1}^N b_j^i(t,s)dW_t^j\}, \qquad (25)$$

$$S_0^i = s^i, \qquad i = 1, \dots, N$$

where a^i (t, X, S) and b_j^i (t, S) are bounded and, for each t and X, locally Lipschitz continuous functions in S, b is uniformly non degenerate, i.e. $z^*bb^*z \geq c|z|^2, \forall z \in R^N, \exists c > 0$ and $W_t = (W_t^j)_{j=1,\dots N}$ is an N - dimensional standard Brownian motion process defined on a filtered probability space (Ω, F, F_t, P) and is independent of X_t. The Markov chain X_t can be expressed in terms of a martingale M_t of the pure jump type, namely

$$dX_t = \Lambda(t)X_t dt + dM_t, \qquad (26)$$

$$X_o = \xi,$$

where $\Lambda(t)$ is the Q matrix (transition intensity matrix) of the Markov chain and ξ is a random variable taking its values in E. Set

$$G_t = \sigma(S_u; u \leq t)$$

and let us denote by $h_t^i, (i = 0, 1, \ldots, N)$ the portfolio proportion of the amount invested in the i[th] security relative to the total wealth V_t that the investor possesses. It is defined as follows:

$(h_t^0, h_t) \equiv (h_t^0, h_t^1, \ldots\ldots, h_t^N)^*$ is said to be an investment strategy if the following conditions are satisfied;

i) h_t is an R^N valued G_t - progressively measurable stochastic process such that $\sum_{i=1}^N h_t^i + h_t^0 = 1$

ii) $P(\int_0^T |h_s|^2 ds < \infty) = 1$

The set of all investment strategies will be denoted by H(T). When $(h_t^0, (h_t^*)0 \leq t \leq T \in H(T)$ it is often write as $h \in H(T)$ for simplicity.

For given $h \in H(T)$, and under the assumption of self-financing, the wealth process $V_t = V_t(h)$ satisfies

$$\begin{cases} \dfrac{dV_t}{V_t} = \sum_{i=0}^{N} h_t^i \dfrac{dS_t^i}{S_t^i} \\ \quad = h_t^0 r(t,\ S_t)dt + \sum_{i=1}^{m} h_t^i \{a^i(t, X_t, S_t)dt + \sum_{j=1}^{m} b_j^i(t, S_t)dW_t^j \\ V_0 = v \end{cases}$$

Taking into account i) above, V_t turns out to be the solution of

$$\begin{cases} \dfrac{dV_t}{V_t} = r(t, S_t)dt + h_t^*(a(t, X_t S_t) - r(t, S_t)1)dt + h_t^* b(t, S_t)dW_t \\ V_0 = v, \end{cases}$$

where $1 = (1, 1, \ldots, 1)^*$

Our problem is the following. For a given constant $\mu < 1, \mu \neq 0$ maximize the expected (power) utility of terminal wealth up to the time horizon T, namely

$$J(v;\ h;\ T) = \frac{1}{\mu} E[V_T(h)^{\mu}] = \frac{1}{\mu} E\left[e^{\mu \log V_T(h)}\right], \tag{27}$$

where h ranges over the set $A(0, T)$ of all admissible strategies.

The study considers here the maximization problem with partial information, since the economic factors X_t (in this case Consumer Price Index, Money Supply and gross domestic product) are in general not directly observable and so one has to select the strategies only on the basis of past information of the security prices which are influenced by economic factors.

No satisfactory theory would argue that the relation between financial markets and the macroeconomics is entirely in one direction. However, stock prices are usually considered as responding to external forces. By the diversification argument that is implicit in capital market theory, only general economic state variables like inflation, Money Supply and GDP will influence the pricing of large stock market aggregates.

Research Design and Rationale

Multiple linear regression models are often specified with an innovations process that is known to be either heteroskedastic or autocorrelated (nonspherical). If other regularity conditions of the Classical Linear Model (CLM) continue to hold, OLS estimates of the regression coefficients remain unbiased, consistent, and, if the innovations are normally distributed, asymptotically normal. However, the estimates are no longer efficient, relative to other estimators, and t and F tests are no longer valid, even asymptotically, because the standard formulas for estimator variance become biased. As a result, the significance of the OLS coefficient estimates is distorted.

The usual prescription for such cases is to re-specify the model, choosing alternate predictors to minimize nonspherical characteristics in the residuals. However, this is not always practical. Predictors are often selected on the basis of theory, policy, or available data, and alternatives may be limited. Lagged predictors, used to account for autocorrelations, introduce additional problems. For this reason the study explore explores two approaches that acknowledge the presence of nonsphericality.

The first approach is to use heteroskedasticity-and-autocorrelation-consistent (HAC) estimates of OLS standard errors. OLS coefficient estimates are unchanged, but tests of their significance become more reliable. The second approach modifies the OLS coefficient estimates, by explicitly incorporating information about an innovation covariance matrix of more general form than $\sigma^2 I$. This is known as Generalized Least Squares (GLS), and for a known innovations covariance matrix, of any form. Unfortunately, the form of the innovations covariance matrix is rarely known in practice. Feasible Generalized Least Squares (FGLS) procedure which estimates the innovations covariance matrix using specified models, before applying GLS to obtain regression coefficients and their standard errors.

Based on the recommendations of Xiao and Phillips(2002) and Westerlund (2005), the study estimates the panel cointegration regression using DOLS. DOLS estimator has been made to be asymptotically unbiased, so that error term can be used in the residuals cointegration without the problems of nuisance parameters. This makes DOLS to be more efficient and unbiased estimator as compared with OLS (Xiao and Phillips, 2002). To correct for heteroskedasticity and serial correlation of the errors the study uses Newey-West technique.

Empirical Models

Education

The relevant empirical proxy for ability of individuals in a country is secondary school enrolment. The use of this variable deserve cautious treatment since, Education is endogenous to stock market development. This is because there may be some omitted variables that correlate with both knowledge and stock market development. It also believed that the relationship may suffer from simultaneity (or reverse causality). Secondly, education is a policy output variable and therefore further caution is called for before thinking of it as an explanatory variable determining another output.

Indeed, as Rodrik (2005) argued, if it fail to distinguish policy effort from policy outcomes when measuring potential growth determinants the study is unlikely to learn much from our estimation efforts. Campos and Horvath (2006), in drawing the distinction between policy inputs and outputs, give further support to this argument, while Loyaza and De Soto (2002) is also consistent with this line of reasoning. In this spirit, the study argues that Education is associated with the stock market variables and macroeconomic stability variables and that the direction of causation is from the latter to the former. By this the study cannot consider Education as exogenous policy tool (Campos and Horvath 2006; Falcetti et al 2006).

Our study adopt Cadeleron-Rossell (1990) behavioural structural model to estimate the effect of secondary school education on stock market performance. Empirical model one will include secondary school education. In this thesis the study create a probabilistic model by starting with a deterministic model that approximates the relationship the study wants to model. That is the relationship between independent variables (GDP, Education, and the interaction of GDP and education) and dependent variable (stock market capitalization).

$$\mathrm{SMC}_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 GDP_{it} + \mu_{it} \qquad (28)$$

Where SMC is stock market capitalization relative to GDP, and μ_{it} is the white noise or the error variable accounting for model misspecification, omitted variables etc. The error accounts for all the variables, measurable and immeasurable, that are not part of the model. GDP is the measure of economic growth and they are in thousands of US dollars. The independent variable E measures the ability of citizenry to investment properly in an economy. This variable is measured using secondary school enrolment on yearly bases.

The study also run another model of equation 28 by introducing the interaction effect of GDP and Education on the relationship in equation 28 to determine whether the interaction have significant effect on the relationship.

$$\mathrm{SMC}_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 GDP_{it} + \beta_3 GE_{it} + \mu_{it} \qquad (29)$$

The problem objective addressed by the model is to analyze the relationship between GDP, Education and stock market capitalization. To define the relationship, our study needs to know the value of the coefficients $\beta_0, \beta_1, \beta_2$ *and* β_3 in the case of model 1 of equation 28. However, these coefficients are population parameters, which are almost always unknown.

However, because these parameters represent coefficients of a straight line their estimators are based on drawing a straight line through the sample data. The straight line that the study wish to use to estimate $\beta_0, \beta_1, \beta_2$ *and* β_3 is the "best" straight line. Best in sense that it comes closest to the sample data points is called the least square line. The coefficients are calculated so that the sum of squared deviations is minimized. This best straight line, called the least squares line, is derived from calculus this gives us our model one as shown below;

Model 1

$$\text{SMC}_{it} = b_0 + b_1 E_{it} + b_2 GDP_{it} + b_3(E \times GDP_{it}) + \varepsilon_{it} \qquad (29')$$

$$\mathrm{b}_0, \mathrm{b}_1, b_2, b_3 > 1;$$

Where GE is the interaction of Education and GDP. The interaction effect here is to test whether the effect of GDP on stock market is influenced by education at α=0.05. The aprior signs based on theoretical literature should be $b_0 > 0; b_1 > 0;\ b_2 > 0; b_3 > 0$. Psacharopolous and Layard (1979) postulated a positive relationship between education and performance. An increase in GDP is an indication of increase productive activities of firms and our study expect the values of firms to increase with GDP.

Since the study do not need the assumption of homoscedasticity for OLS to be unbiased, our study uses OLS with heteroskedasticity to run the regression while maintaining the assumption no autocorrelation. The presence of heteroskedasticity, the statistical inference would be biased, and t-statistics and F-statistics are inappropriate. Instead, the study would use robust standard errors and heteroskedasticity-robust Wald statistic for t-statistics and F-statistics respectively.

The study then test for auotocorrelation. The implication of serial correlation (auotocorrelation) on OLS is the same as heteroskedasticity. James Durbin and G.S. Watson proposed testing for correlation in the error terms between adjacent observations. In our data generating process (DGP), the study assumes that the strongest correlation exists between adjacent observations (first order serial correlation (cov (ε_t ε_{t+1})). To test for first-order serial correlation, the study ask whether adjacent ε's are correlated. As usual, the study will use residuals to proxy for ε. The study base the tests of serial correlation AR(1) model on the regression residuals. An autoregressive process of order one, also known as a first-order Markov process: $u_t = \rho u_{t-1} + v_t, |\rho| < 1$ where the v_t are uncorrelated random variables with mean zero and a constant variance. To diagnose autocorrelation our study uses the estimated residuals. The resulting slope estimate is a consistent estimator of the first-order autocorrelation coefficient ρ of the u process. Under the null hypothesis, ρ = 0, so that a rejection of this null hypothesis by this Lagrange Multiplier (LM) test indicates that the disturbance process exhibits AR(1) behavior. If the study diagnoses the presence of auotocorrelation the study runs the regress using OLS with serial correlation.

Model 1 difference, looks at the variables in difference and expect the same aprior signs. If the study test the variables at α=0.05 and they are not stationary the study then find the first difference of (28') and (29') and they come;

$$\Delta \mathrm{SMC}_{it} = b_0 + b_1 \Delta E_{it} + b_2 \Delta GDP_{it} + \varepsilon_{it} \qquad (28'')$$

$$\mathrm{b}_0, \mathrm{b}_1, b_2 > 1;$$

$$\Delta SMC_{it} = b_0 + b_1 \Delta E_{it} + b_2 \Delta GDP_{it} + b_3 \Delta (GDP_{it} \times E_{it}) + \varepsilon_{it} \quad (29'')$$

$$b_0, b_1, b_2, b_3 > 1;$$

Although the ordinary least squares (OLS) estimator is consistent in the presence of a serial correlation in the error term, it is also well known that it contains the second-order bias. The study focuses on the dynamic ordinary least squares (DOLS) estimator instead since serial correlation and the endogeneity can also be corrected by using DOLS estimator. The study then also correct for heteroskedasticity and serial correlation using Newey-West estimation technique.

Institutional quality

From the theoretical model which is the modifying West (1996) model, the study have the general econometric model used in the empirical chapter as follows.

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 IQ_{it} + \beta_3 GDP_{it} \times \mathrm{IQ}_{it} + \varepsilon_{it}] \quad (30)$$

Where SMC_{it} is stock market capitalization relative to GDP, β_0, is the intercept, and ε_{it} is the white noise. GDP is the gross domestic product in millions of US dollars. IQ is institutional quality variables made up of control of corruption, voice and accountability, rule of law, regulatory quality political stability, and government effectiveness. $GDP_{it} \times \mathrm{IQ}_{it}$ in the interaction of GDP and institutional quality (IQ).

Our study runs the model below using OLS and FGLS techniques for the variables in levels.

$$SMC_{it} = \beta_0 + \beta_1 IQ_{it} + \beta_2 GDP_{it} + \varepsilon_{it}] \quad (31)$$

To determine the effect of the various elements of institutional quality (IQ) on stock market development the study runs the various elements one at a time as shown in equation 32 to 37 below. Our study did not run all the elements together because of the possibility of multicollinearity problem. The study also test for presences of heteroskedasticity at α (0.05) that is the assumption that the errors or disturbances have the same variance across all observation points out that our study uses robust standard errors. To correct for heteroskedasticity the study used the robust standard error in the estimation of the parameters assuming no serial correlation.

$$SMC_{it} = \beta_0 + \beta_1 CC_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times CC_{it}) + \varepsilon_{it} \quad (32) \text{ model 2 CC}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$SMC_{it} = \beta_0 + \beta_1 VA_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times VA_{it}) + \varepsilon_{it} \quad (33) \text{model 2 VA}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$SMC_{it} = \beta_0 + \beta_1 RL_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times RL_{it}) + \varepsilon_{it} \quad (34) \text{model 2 RL}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$SMC_{it} = \beta_0 + \beta_1 RQ_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times RQ_{it}) + \varepsilon_{it} \quad (35) \text{model 2 RQ}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$SMC_{it} = \beta_0 + \beta_1 PS_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times PS_{it}) + \varepsilon_{it} \quad (36) \text{ model 2 PS}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$SMC_{it} = \beta_0 + \beta_1 GE_{it} + \beta_2 GDP_{it} + \beta_3 (GDP_{it} \times GE_{it}) + \varepsilon_{it} \quad (37) \text{model 2 GE}$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

The study test for the panel unit root test of the variables and if they fail to be stationary at α of 0.05 the study finds the first difference of the variables and that gives the models below;

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta CC_{it} + \beta_2 \Delta GDP_{it} + \beta_3 (\Delta GDP_{it} \times CC_{it}) + \varepsilon_{it} \quad (32')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta VA_{it} + \varphi_1 \Delta GDP_{it} + \varphi_2(\Delta GDP_{it} \times VA_{it}) + \varepsilon_{it} \quad (33')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta RL_{it} + \beta_2 \Delta GDP_{it} + \beta_3(\Delta GDP_{it} \times RL_{it}) + \varepsilon_{it} \quad (34')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta RQ_{it} + \beta_2 \Delta GDP_{it} + \beta_3(\Delta GDP_{it} \times RQ_{it}) + \varepsilon_{it} \quad (35')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta PS_{it} + \beta_2 \Delta GDP_{it} + \beta_3(\Delta GDP_{it} \times PS_{it}) + \varepsilon_{it} \quad (36')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

$$\Delta SMC_{it} = \beta_0 + \beta_1 \Delta GE_{it} + \beta_2 \Delta GDP_{it} + \beta_3(\Delta GDP_{it} \times GE_{it}) + \varepsilon_{it} \quad (37')$$

$$\beta_0, \beta_1, \beta_2, \beta_3 > 1;$$

Where CC is control of corruption; GCC is interaction variable of GDP and control of corruption; VA is Voice and accountability; GVA is interaction variable of GDP and Voice and accountability; RL is Rule of law; GRL is interaction variable of GDP and Rule of law; RQ is Regulatory quality; GRQ is interaction variable of GDP and Regulatory quality; PS is Political stability; GPS is interaction variable of GDP and Political stability; GE is Government effectiveness; and GE is interaction variable of GDP and Government effectiveness. Our study expects positive relationship between IQ and or elements of IQ and MSC. IQ boosts confidence of investors and potential investors in the stock market hence the positive relation is expected from the elements of IQ and SMC.

For each model also the study introduces the interaction effect of GDP and IQ elements. The interaction means that the effect of IQ on stock market capitalization is influenced by the value of GDP. The interaction variables are control of corruption and GDP (GDP ×CC); voice and accountability and GDP (GDP ×VA); rule of law and GDP (GDP ×RL); regulatory quality and GDP

(GDP ×RQ); political stability and GDP (GDP ×PS); and government effectiveness and GDP (GDP ×GE). The techniques used to estimate the coefficients of the linear regression model are the DOLS and Newey West. The study runs these models using DOLS technique since serial correlation and the endogeneity can also be corrected. The study then also correct for heteroskedasticity and serial correlation using Newey-West estimation technique.

Macroeconomic variables and stock market development

Flick (2009) notes that Descriptive research design has become widely accepted in the field of finance and economics since it is proving to be very useful in policy evaluations. The study followed a descriptive research design to describe the performance of the stock market in emerging economies. Descriptive research design is a statistical method that quantitatively synthesizes the empirical evidence of a specific field of research. According to Groves (2004) descriptive technique gives accurate information of persons, events or situations. The study sought to investigate the determinants of stock market performance in 41 emerging economies.

For the purpose of this empirical study, the unit of analysis is the 41 emerging economies stock market. In this chapter, the study draws upon theory and existing empirical work as a motivation to select a number of macroeconomic variables that the study might expect to be strongly related to the real stock price. The real stock price depends upon the expected stream of dividend payments and the market discount rate. Hence, any macroeconomic variable that may be thought to influence expected future dividends and/or the discount rate could have a strong influence on aggregate stock prices. The macro-economic variables selected as explained under theoretical model of this chapter are; Money Supply (MS) and Consumer Price Index (CPI). The objective here is to test the effect of economic growth measured by GDP, and macroeconomic variables (MS, and CPI) on stock market capitalization of emerging economies. In this thesis, the study will draw upon theory and existing empirical work as a motivation to select a number of macroeconomic variables that the study might expect to be strongly related to the real stock price.

In this study, the study adopted and modified the model used by Sangmi and Mubasher (2013). They used time series data on macroeconomic variables and stock indices collected from the annual reports of the Reserve Bank of India for the period April 2008 to June 2012. They expressed Stock Market Index (SMI) as a function of selected macroeconomic variables. The model used by Sangmi and Mubasher (2013) is modified for this thesis. In this empirical chapter least squares regression and FGLS are again considered due to the numerous advantages that they have over other estimation techniques when the variables are in levels.

From equation 38 the analytical model for the macroeconomic determinants of stock market performance is depicted by the modified model of Sangmi and Mubasher (2013) which is model 3.

$$\mathrm{SMC}_{it} = \beta_0 + \beta_1 \mathrm{GDP}_{it} + \beta_2 \mathrm{MS}_{it} + \beta_3 CPI_{it} + \varepsilon_{it} \quad (39)$$

Where SMC_{it} is the stock market capitalization growth rate

$\mathrm{GDP}_{i,t}$ is Gross Domestic Product. It is a proxy for economic development. It is parity rate.

$\mathrm{MS}_{i,t}$ is the Money Supply. It is a proxy for banking sector development. It is measured in millions of US dollars.

CPI_{it} is a proxy for macroeconomic stability. It is an index of parity rate.

Our study interact GDP with all the other macroeconomic variables one at time to determine the actual effect of these variables on stock market performance. The study runs the models below and test the significance levels at α=0.05 using different Robust OLS and FGLS respectively.

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 MS_{it} + \beta_3 CPI_{it} + \varepsilon_{it} \qquad (40)$$

$$\beta_0, \beta_1, \beta_2 > 1; \quad \beta_3 < 1$$

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 MS_{it} + \beta_1 (GDP_{it} \times MS)_{it} + \varepsilon_{it} \qquad (41)$$

$$\beta_0, \beta_1, \beta_2 > 1$$

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_3 CPI_{it} + \beta_1 (GDP_{it} \times CPI_{it}) + \varepsilon_{it} \quad (42)$$

$$\beta_0, \beta_1 > 1; \quad \beta_3, < 1$$

Where (GDP×MS) is the interaction of GDP and MS, (GDP×CPI) is the interaction of GDP and CPI.

Our study estimates the parameters using OLS technique. The least squares method produces the best straight line. However, there may in fact be no relationship or perhaps a nonlinear relationship between GDP, CPI, MS and stock market capitalization hence a straight line is likely to be impractical. The study assesses how well the linear model fits the data. A model results in predicted values close to the observed data values. The fit of a proposed regression model should therefore be better than the fit of the mean model. The study assume that the errors or disturbances have the same variance across all observation points. When this is not the case, the errors are said to be heteroskedastic and our study corrects the model by using robust standard error to determine the significance of the parameters of interest.

The test of significance (α=0.05) for this model sought to establish the determinants of stock market performance in emerging economies. Our study uses inferential statistics such as the Pearson Product Moment correlation coefficient R^2 and the coefficient of determination R of the data set as well as p-value and F-test statistics.

The general use of differencing has been found to reduce the possibility of spurious regression results [Philip (1986)]. Studies by Adams (1992); Anyanwu and Udegbunam (1996) conclude that first-differencing achieves stationarity of variables and thus reduces the possibility of spurious results. Based on the suggestions of the above studies, and to roughly gauge the robustness and consistency of our estimation results, the regression Equation 39 is also estimated in first difference form. Differencing Equation 39 yields the following equations below, which give us model 3. The stationarity of the variables are tested at α=0.05 significance level. The study estimate the variables in first difference using both Dynamic OLS, and Newey-West techniques respectively.

$$\Delta \mathrm{SMC}_{it} = \beta_0 + \beta_1 \Delta \mathrm{GDP}_{it} + \beta_2 \Delta \mathrm{MS}_{it} + \beta_3 \Delta CPI_{it} + \varepsilon_{it} \quad (40')$$

$$\beta_0, \beta_1, \beta_2 > 1; \quad \beta_3 < 1$$

$$\Delta \mathrm{SMC}_{it} = \beta_0 + \beta_1 \Delta \mathrm{GDP}_{it} + \beta_2 \Delta \mathrm{MS}_{it} + +\beta_1 (\Delta \mathrm{GDP}_{it} \times \Delta \mathrm{MS}_{it}) + \varepsilon_{it} \quad (41')$$

$$\beta_0, \beta_1, \beta_2 > 1$$

$$\Delta \mathrm{SMC}_{it} = \beta_0 + \beta_1 \Delta \mathrm{GDP}_{it} + \beta_3 \Delta CPI_{it} + \beta_1 (\Delta \mathrm{GDP}_{it} \times \Delta CPI_{it}) + \varepsilon_{it} \quad (42')$$

$$\beta_0, \beta_1, > 1; \quad \beta_3 < 1$$

$$\Delta \mathrm{SMC}_{it} = \beta_0 + \beta_1 \Delta \mathrm{GDP}_{it} + \beta_1 (\Delta \mathrm{GDP}_{it} \times \Delta \mathrm{EXCH}_{it}) + \varepsilon_{it} \quad (43')$$

$$\beta_0, \beta_1, > 1;$$

The techniques used to estimate the coefficients of the linear regression model are the DOLS and Newey West. The study runs these models using DOLS technique since serial correlation and the endogeneity can also be corrected. The study then also correct for heteroskedasticity and serial correlation using Newey-West estimation technique.

The dependent variable is the Stock Market performance. This measure equals the stock market capitalization divided by GDP. The assumption behind this measure is that overall market size is positively correlated with the ability to mobilize capital and diversify risk on an economy-wide basis. This is consistent with Kemboi et al. (2012), Yartey (2008) and Levine and Zervos (1998).

Based on theory underpinnings discussed in the literature reviewed above, the study hypothesizes a positive or negative relation between MS and SMC. The effect of Money Supply on stock prices can be positive or negative. Since the rate of inflation is positively related to money growth rate (Fama, 1981), an increase in the Money Supply may lead to an increase in the discount rate and lower stock prices. However, this negative effect may be countered by the economic stimulus provided by money growth, which would likely increase cash flows and stock prices (Mukherjee and Naka, 1995).

Following Geske and Roll (1983), Chen et al (1986), Wongbangpo and Sharma (2002), the study hypothesizes a negative relation between stock prices and Consumer Price Index (CPI). The levels of real economic activity (proxied by CPI) will likely influence stock prices through its impact on corporate profitability in the same direction: an increase in real economic activity (fall in the Consumer Price Index) may increase expected future cash and, hence, raise stock prices, while the opposite effect would be valid in a recession. Consumer Price Index is used as a proxy for inflation rate. It is chosen because of its broad base measure to calculate average change in prices of goods and services during a specific period. Inflation is ultimately translated into nominal interest rate and an increase in nominal interest rate increases discount rate which results in reduction of present value of cash flows. An increase in inflation is expected to negatively affect the equity prices.

Our study uses Consumer Price Index to measure macroeconomic Stability. Macroeconomic stability may be an important factor for the development of the stock market. The study expects that the higher the macroeconomic stability the more incentive firms and investors have to participate in the stock market. The study expects the stock market in countries with stable macroeconomic environment to be more developed. Consistent with previous studies inflation has been used as a measure of macroeconomic stability. Although there is no agreement on the relationship between macroeconomic stability and stock market development, our study argues that higher levels of macroeconomic stability encourage investors to participate in the stock market largely because the investment environment is predictable. Furthermore, macroeconomic stability influence firms profitability, and so the prices of securities in the stock market is likely to increase. Investors whose investments are experiencing a capital gain are more likely to channel their savings to the stock market by increasing their investments, and so this will enhance stock market development. The study proxy this variable with Consumer Price Index.

The selection of these variables was based upon the Present Value Model (PVM) theory, and literature discussed in the Chapter 3. In the following, the study will briefly validate the inclusion of each macroeconomic variable utilized in the analysis. This study investigates effect of macroeconomic variables on stock market performance in emerging economies for the period 1996 – 2011.

Estimation Technique

The technique used to estimate the coefficients of the linear regression model is the least squares method. A critical part of this model is the error variable ε. Required conditions for the error variable are; the probability distribution should normal, the mean of the distribution is zero (0), the standard deviation of the error variable (ε) is σ_ε, which is a constant regardless of the value of independent variable, and then the value of ε associated with any particular value of dependent variable (SMC) is independent of ε associated with any other value of SMC.

The least squares method produces the best straight line. However, there may in fact be no relationship or perhaps a nonlinear relationship between GDP, Education and stock market capitalization hence a straight line is likely to be impractical. Consequently, it is important for us to assess how well the linear model fits the data. The study test significance of the variables assuming α=0.05.

A well-fitting regression model results in predicted values close to the observed data values. The mean model, which uses the mean for every predicted value, generally would be used if there were no informative predictor variables. The fit of a proposed regression model should therefore be better than the fit of the mean model.

Our study uses three statistics to evaluate model fit: R-squared, the overall F-test, and the Root Mean Square Error (RMSE). All three are based on two sums of squares: Sum of Squares Total (SST) and Sum of Squares Error

(SSE). SST measures how far the data are from the mean and SSE measures how far the data are from the model's predicted values. Different combinations of these two values provide different information about how the regression model compares to the mean model.

Although the ordinary least squares (OLS) estimator is consistent in the presence of a serial correlation in the error term and it is well known that the OLS estimator contains the so-called second-order bias. The study focuses on the dynamic ordinary least squares (DOLS) estimator instead of Fully Modified OLS estimators (FMOLS).

Let us consider the following fixed effect panel regression:

$$y_{it} = \alpha_i + x_{it}\beta + u_i, \quad i = 1, \dots. N, \qquad t = 1, \dots T$$

where y_{it} is a matrix (1,1), β is a vector of slopes (k, 1) dimension, α_i is individual fixed effect, u_i are the stationary disturbance terms. It is assumed that x_{it} (k, 1) vector are integrated processes of order one for all i, where:

$$x_{it} = x_{it-1} + \varepsilon_{it}$$

Under these specifications, describes a system of cointegrated regressions, i.e. y_{it} is cointegrated with x_{it}. By examining the limiting distribution of the DOLS estimators in co-integrated regressions, Kao and Chiang (2000) show that they are asymptotically normal. The DOLS estimator is constructed by making corrections for endogeneity and serial correlation to the OLS estimator. The DOLS is an extension of Stock and Watson's (1993) estimator. In order to obtain an unbiased estimator of the long-run parameters, DOLS estimator uses parametric adjustment to the errors by including the past and the future values of the differenced I(1) regressors. The dynamic OLS (DOLS) estimator is obtained from the following equation:

$$y_{it} = \alpha_i + x_{it}\beta + \sum_{j=-q_2}^{j=q_2} c_{ij}\,\Delta x_{i,t+j} + v_{it}$$

where c_{ij} is the coefficient of a lead or lag of first differenced explanatory variables. The estimated coefficient of DOLS is given by:

$$\hat{\beta}_{DOLS} = \sum_{i=1}^{N}\left(\sum_{t=1}^{T} z_{it}\, z_{it}'\right)^{-1}\left(\sum_{t=1}^{T} z_{it}\,\hat{y}_{it}^{+}\right)$$

Where $z_{it} = \left[x_{it} - \bar{x}_i, \Delta x_{i,t-q,\ldots}\Delta x_{i,t+q}\right]$ is $2(q+1)\times 1$ vector of regressors.

The study also focuses on Newey-West Estimation technique to correct for heteroskedasticity and serial correlation of the error term. Newey-West calculates the estimates $\hat{\beta}_{OLS} = (X'X)^{-1}X'y$

$$\widehat{var}(\hat{\beta}_{OLS}) = (X'X)^{-1}X'\hat{\Omega}X(X'X)^{-1}$$

That is, the coefficient estimates are simply those of OLS linear regression. For lag(0) (no autocorrelation), the variance estimates are calculated using the White formulation:

$$X'\hat{\Omega}X = X'\hat{\Omega}_0X = \frac{n}{n-k}\sum \hat{e}_i^2 X_i' X_i$$

Here $\hat{e}_i = y_i - X_i\hat{\beta}_{OLS}$, where X_i is the ith row of the X matrix, n is the number of observations, and k is the number of predictors in the model, including the constant if there is one. The above formula is the same as that used by regress, vce(robust) with the regression-like formula (thedefault) for the multiplier q_c. For lag(m), m > 0, the variance estimates are calculated using the Newey–West (1987) formulation

$$X'\hat{\Omega}X = X'\hat{\Omega}_0X + \frac{n}{n-k}\sum_{l=1}^{m}(1-\frac{l}{m+1})\sum_{t=l+1}^{n}\hat{e}_t\,\hat{e}_{t-1}(X_t'\,X_{t-1}' + X_{t-1}'X_t)$$

where X_t is the row of the X matrix observed at time t.

The F-test

The F-test evaluates the null hypothesis that all regression coefficients are equal to zero versus the alternative that at least one does not. It tests utility of the model. An equivalent null hypothesis is that R-squared equals zero. A significant F-test indicates that the observed R-squared is reliable, and is not a spurious result of oddities in the data set. Thus, the F-test determines whether the proposed relationship between the response variable and the set of predictors is statistically reliable, and can be useful when the research objective is either prediction or explanation.

The ratio of the two mean squares is F distribution as long as the underlying population is normal. A large value of F indicates that most of the variation in y is explained by the regression equation and that the model is valid. A small value of F indicates that most of the variation in SMC is unexplained. The rejection region is $F > F_{\alpha,k,n-k-1}$

Serial correlation and Heteroskedasticity

The Durbin-Watson test is a widely used method of testing for autocorrelation. This statistic can be used to test for first-order autocorrelation. Our study uses it to test that the residuals from a linear regression or multiple regression are independent. Because most regression problems involving time series data exhibit positive autocorrelation, the hypotheses usually considered in the Durbin-Watson test are

$$H_0 : \rho = 0 \qquad H_1 : \rho > 0$$

$$X'\hat{\Omega}X = X'\hat{\Omega}_0 X + \frac{n}{n-k}\sum_{l=1}^{m}\left(1 - \frac{l}{m+1}\right)\sum_{t=l+1}^{n} \hat{e}_t \hat{e}_{t-1}(X_t' X_{t-1}' + X_{t-1}' X_t)$$

where X_t is the row of the X matrix observed at time t.

The F-test

The F-test evaluates the null hypothesis that all regression coefficients are equal to zero versus the alternative that at least one does not. It tests utility of the model. An equivalent null hypothesis is that R-squared equals zero. A significant F-test indicates that the observed R-squared is reliable, and is not a spurious result of oddities in the data set. Thus, the F-test determines whether the proposed relationship between the response variable and the set of predictors is statistically reliable, and can be useful when the research objective is either prediction or explanation.

The ratio of the two mean squares is F distribution as long as the underlying population is normal. A large value of F indicates that most of the variation in y is explained by the regression equation and that the model is valid. A small value of F indicates that most of the variation in SMC is unexplained. The rejection region is $F > F_{\alpha,k,n-k-1}$

Serial correlation and Heteroskedasticity

The Durbin-Watson test is a widely used method of testing for autocorrelation. This statistic can be used to test for first-order autocorrelation. Our study uses it to test that the residuals from a linear regression or multiple regression are independent. Because most regression problems involving time series data exhibit positive autocorrelation, the hypotheses usually considered in the Durbin-Watson test are

$$H_0 : \rho = 0 \qquad H_1 : \rho > 0$$

The test statistic is $d = \frac{\sum_{i=2}^{n}(e_i - e_{i-1})^2}{\sum_{i=1}^{n} e_i^2}$ where $e_i = y_i - \hat{y}_i$ and y_i and $\hat{y}_i$ are, respectively, the observed and predicted values of the response variable for individual i. d becomes smaller as the serial correlations increase. Upper and lower critical values, d_U and d_L have been tabulated for different values of k (the number of explanatory variables) and n. If $d < d_L$ reject $H_0 : \rho = 0$ If $d > d_U$ do not reject $H_0 : \rho = 0$ If $d_L < d < d_U$ test is inconclusive.

Durbin-Waston test is based on the assumption that the errors in the regression model are generated by a first-order autoregressive process observed at equally spaced time periods, that is, $\varepsilon_t = \rho\varepsilon_{t-1} + a_t$ where ε_t is the error term in the model at time period t, a_t is an NID(0, σ_a^2) random variable, and $\rho(|\rho| < 1)$ is the autocorrelation parameter. Thus, a simple linear regression model with first-order autoregressive errors would be

$$y_t = \beta_0 + \beta_1 x_t + \varepsilon_t$$

$$\varepsilon_t = \rho\varepsilon_{t-1} + a_t$$

where y_t and x_t are the observations on the response and regressor variables at time period t. Situations where negative autocorrelation occurs are not often encountered. However, if a test for negative autocorrelation is desired, one can use the statistic 4−d. Then the decision rules for H_0: $\rho = 0$ versus H_1: $\rho < 0$ are the same as those used in testing for positive autocorrelation. It is also possible to conduct a two-side test (H_0: $\rho = 0$ versus H_1: $\rho \neq 0$) by using both one-side tests simultaneously. If this is done, the two-side procedure has Type I error 2α, where α is the Type I error used for each one-side test.

Heteroskedasticity causes standard errors to be biased. OLS assumes that errors are both independent and identically distributed; robust standard errors relax either or both of those assumptions. Hence, when heteroskedasticity is present, robust standard errors tend to be more trustworthy. To rationalize the test for heteroskedasticity the study notes that the homoskedasticity assumption in OLS implies

$$\mathrm{var}(\epsilon \mid x_1; x_2, \ldots . x_k) = \sigma^2$$

In that case, if the study wants to test for heteroskedasticity, our maintained assumption is that the errors are actually homoskedastic, and the study wish to examine if that is true. That is the null hypothesis is just the above,

$$H_0: \mathrm{var}(\epsilon \mid x_1; x_2, \ldots . x_k) = \sigma^2$$

Next, note that in examining heteroskedasticity, the expected value of the errors being zero is still maintained. Which means that

$$\mathrm{var}(\epsilon \mid x_1; x_2, \ldots . x_k) = E(\epsilon^2 \mid x_1; x_2, \ldots . x_k)$$

So that our study can rewrite the hypothesis being test as $H_0: E(\epsilon^2 \mid x_1; x_2, \ldots . x_k)$

So that if the study assumes a simple linear relationship between ϵ with respect to the dependent variables, the study could then test the hypothesis. To see this, consider a general k variable regression where the dependent variable is ϵ^2. Let e be the error term in the linear relationship, and assume that it is normal distributed with mean 0 given the independent variables. That is,

$$\epsilon^2 = \delta_0 + \delta_1 x_1 + \delta_2 x_2 + . e$$

If homoskedasticity holds, then the model would have $\delta_1 = \delta_2 = \cdots = \delta_k$. Therefore if heteroskedasticity does not exists, the null hypothesis of homoskedasticity, can be written as,

$$H_0 = \delta_1 = \delta_2 = \cdots = \delta_k.$$

This implies that the model could test the hypothesis using the F statistic that is provided in standard statistical software (even if you write your own program, the calculation of the F statistic is not difficult given that the model have already found the formula earlier in our discussion of OLS).

The model uses the residuals from the original OLS regression of y against $x_1, x_2, \ldots . x_k$, call it $\hat{e}^2$. That is the study perform the following regression, and calculate the F statistic there after.

$$\hat{e}^2 = \delta_0 + \delta_1 x_1 + \delta_2 x_2 + \cdots . e$$

The F statistic is dependent on the goodness of fi measure from the above regression. Let that be $R^2_{\hat{e}^2}$, then the statistic is, $F = \frac{\frac{R^2_{\hat{e}^2}}{k}}{\frac{1-R^2_{\hat{e}^2}}{n-(k+1)}}$. And the statistic is approximately distributed as a $F_{k,n-(k+1)}$ under the null hypothesis.

Robust Standard Error

The various "robust" techniques for estimating standard errors under model misspecification are extremely widely used. Robust standard errors have a crucial role in statistical theory in a world where models are almost never exactly right. They can be used in practice to fix a specific part of model estimation, when special circumstances hold.

It is well known that ordinary least squares estimation in the linear regression model is not robust to outliers. The robust statistics literature takes the view that a vast majority of the data are generated by the above described model, while a smaller part of the data may not follow the model. In econometric literature less attention is given to robust estimators of regression, but the concept of robust standard error is well established. Here the estimator being used is often the ordinary least squares estimator, but its standard errors are estimated without relying on assumption $u_t \overset{i.i.d}{\sim} F_\sigma$. As such these robust standard errors remain valid when the error are not i.i.d., but suffer from heteroskedasticity or autocorrelation. A robust standard error consistently estimates the true standard error even for non i.i.d. error terms. The most popular robust standard error is the White or Eicker-White standard error, which protect against heteroskedasticity, and the Newey-West standard errors, which are heteroskedasticity and autocorrelation consistent (HAC) estimates of the standard error. An important property of robust standard errors is that the form of the heteroskedasticity and / or autocorrelation does not need to be specified.

Using standard notation, the linear regression model can be written as

$$y = X\beta + \varepsilon$$

where E (ε) = 0 and $E\,(\varepsilon\varepsilon') = \Phi$, a positive definite matrix. Under this specification, the OLS estimator $\hat{\beta} = (X'X)^{-1}X'y$ is best linear unbiased with:

$$var(\hat{\beta}) = (X'X)^{-1}X'\Phi X(X'X)^{-1} \qquad (1)$$

If the errors are homoscedastic that is $\Phi = \sigma^2 \mathrm{I}$, Equation 1 simplifies to:

$$var(\hat{\beta}) = \sigma^2(X'X)^{-1}$$

Defining the residuals $e_i = y_i - x_i\hat{\beta}$, where x_i is the ith row of X, the model can estimate the OLS covariance matrix of estimates as:

$$OLSCM = \frac{\sum e_i^2}{N-K}(X'X)^{-1} \qquad (3)$$

where N is the sample size and K is the number of elements in β. The OLSCM is appropriate for hypothesis testing and computing confidence intervals when the standard assumptions of the regression model, including homoscedasticity, hold. When there is heteroskedasticity, tests based on the OLSCM are likely to be misleading since Equation 2 will not generally equal Equation 1. If the errors are heteroskedastic and Φ is known, Equation 1 can be used to correct for heteroskedasticity. More often, the form of heteroskedasticity is unknown and a heteroskedasticity consistent covariance matrix (hereafter, HCCM) should be used. The basic idea behind a HCCM estimator is to use e2 i to estimate φ_{ii}. This can be thought of as estimating the variance of ε_i with a single observation: $\hat{\emptyset}_{ii} = \frac{(e_i - 0)^2}{1} = e_i^2$. Then, let $\hat{\Phi} = \mathrm{diag}[e_i^2]$, which results in: $HC0 = (X'X)^{-1}X'\Phi X(X'X)^{-1} = (X'X)^{-1}X'\mathrm{diag}[e_i^2]X(X'X)^{-1}$ (4)

HC0 is the most commonly used form of the HCCM and is referred to variously as the White, Eicker, or Huber estimator. As shown by White (1980) and others, HC0 is a consistent estimator of $\mathrm{Var}(\hat{\beta})$ in the presence of heteroskedasticity of an unknown form.

RMSE

The RMSE is the square root of the variance of the residuals. It indicates the absolute fit of the model to the data–how close the observed data points are to the model's predicted values. Whereas R-squared is a relative measure of fit, RMSE is an absolute measure of fit. As the square root of a variance, RMSE can be interpreted as the standard deviation of the unexplained variance, and has the useful property of being in the same units as the response variable. Lower values of RMSE indicate better fit. RMSE is a good measure of how accurately the model predicts the response, and is the most important criterion for fit if the main purpose of the model is prediction.

The best measure of model fit depends on the researcher's objectives, and more than one are often useful. The statistics discussed above are applicable to regression models that use OLS estimation. Many types of regression models, however, such as mixed models, generalized linear models, and event history models, use maximum likelihood estimation. These statistics are not available for such models.

Panel Unit Root Tests

To determine whether to use the variables in level or difference the study determines the order of integration of the variables. Using time series with strong persistence of the type displayed by a unit root process in a regression equation can lead to very misleading results if the central limit theorem (CLM) assumptions are violated. Weakly dependent processes are said to be integrated of order zero (0), or I(0). This means that nothing needs to be done to such series before using them in regression analysis. Unit root processes, such as a random walk are said to be integrated if order one or I(1). This means that the first difference of the process is weakly dependent (and often stationary). A time series that is I(1) is often said to be a difference-stationary process. Thus, when the model suspect processes are integrated of order one, often first difference is computed in order to use them in regression analysis. If a time series has a unit root, a widespread and convenient way to remove nonstationarity is by taking first differences of the relevant variable. A non-stationary series which by differencing d times transfers to a stationary one, is called integrated of order d and denoted as I(d) (Charemza and Deadman, 1997). In fact, when a series Y_{it} is integrated of order 1 it means that it is not itself stationary, but that its first differences are stationary.

For the LLC and IPS approaches, the model shall start by considering the autoregressions used to obtain the ADF test for each time series in the panel. Let there be N such series. Then,

$$\Delta q_{it} = \beta'_{ir} d + \alpha_i q_{i,t-1} + \sum_{j=1}^{p_i} \gamma_{ij} \Delta q_{i,t-j} + \varepsilon_{i,t}, \quad i = 1, 2, \ldots\ldots N; r = 0, 1, 2 \quad (1)$$

where $d_{t0} = 0$ or $d_{t1} = 1$ or $d_{t2} = (1, t)'$. Note that the model allows for different configurations of the deterministic term and different lag lengths for each series. The choice of each p_i may be done by using a general-to-specific procedure based on either information criteria, such as AIC or the Schwartz criterion, or on sequentially testing the last coefficient of the $\Delta q_{i,t-j}$.

In the LLC approach, it is assumed that, as opposed to the formulation in, all the α_i have a common value,α, so that the null hypothesis to be tested is that;

H_0: the series contains a unit root (panels contain unit roots)

H_1: the series is stationary (panels are stationary)

Thus, an estimator of α is obtained by controlling for the heteroskedasticity across the time series that make up the panel. The unit root test statistic is simply the t-ratio of α, adjusted in such a way that it is asymptotically normal under the null hypothesis.

The starting point of the IPS approach is also the ADF regressions given in (1). But, the null and alternative hypotheses are different from that of the LLC approach, where the rejection of the null hypothesis implies that all the series are stationary. The model now have

H_0: $\alpha_1 = \alpha_2 = \ldots = \alpha_N = 0$ vs.

H_1: Some but not necessarily all $\alpha_i < 0$

The test statistic itself is rather simple to compute. Again, after deciding upon d_{tr} and the p_i, the study obtain the t-ratios for the α_i, t_{α_i}, and calculate their arithmetic average, $\bar{t}_{NT} = \sum_{i=1}^{N} t_{\alpha_i} / N$. IPS show that $\bar{t}_{NT}$ may be adjusted to yield an asymptotic N(0, 1) statistic under the null hypothesis;

$$\bar{t}^{\bullet}_{NT} = \frac{N^{1/2}\left(\bar{t}_{NT} - N^{-1}\sum_{i=1}^{N} E(t_{\alpha_i})\right)}{\left[N^{-1}\sum_{i=1}^{N} Var(t_{\alpha_i})\right]^{1/2}}$$

The $E(t_{\alpha_i})$ and $var(t_{\alpha_i})$ have been obtained by simulation.

Finally, in the case of the Hadri approach, the null hypothesis is the stationarity of the series instead of nonstationarity. The framework is the one dealt with in Kwiatowski et al. (KPSS) (1992) for a single series. The models may now be expressed as,

$$q_{it} = \beta_{irt}' d_{rt} + \varepsilon_{it}, \qquad i = 1, \ldots . N; \quad r = 1, 2$$

where $\beta_{irt} = \beta_{i1t}$ when r = 1 and $\beta_{irt} = (\beta_{i1t}, \beta_i)'$ when r = 2. The study assumes that the intercept, β_{i1t}, is generated by a random walk, $\beta_{i1t} = \beta_{i1t-1} + u_{it}$, where $E(u_{it}) = 0$ and $E(u_{it}^2) = \sigma_u^2 \geq 0$. In other words, the study assumes that the variances of the u_{it} are the same for every series. Thus, the hypothesis to be

tested becomes, $H_0\colon \sigma_u^2 = 0$ stationarity in all units

vs. $H_1\ \sigma_u^2 > 0$ unit root in all units

However, the model may assume that $E(\varepsilon_{it}) = 0$ and $E(\varepsilon_{it}^2) = \sigma_{\varepsilon_i}^2 > 0$; i.e., that the variances of the ε_{it} may not be the same for every series. The study may also account for the fact that the ε_{it} may be autocorrelated by considering the long-run variances of the ε_{it} and estimate them as

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{T-1}\sum_{t=2}^{T} \hat{\varepsilon}_{it}^2 + 2\sum_{j=1}^{\bar{k}} w_{\bar{k}j}\left(\frac{1}{T-1}\sum_{t=j+2}^{T} \hat{\varepsilon}_{it}\,\hat{\varepsilon}_{i,t-j}\right)$$

where the $w_{\bar{k}j}$ are weights used to ensure that the $\hat{\sigma}_{q_i}^2$ are always positive. In our applications, the study uses the Bartlett weights, which may be expressed as $w_{\bar{k}j} = 1 - \left(\frac{j}{(\bar{k}+1)}\right)$. The resultant statistic to test H_0 would, then, simply be the average of the individual KPSS statistics for each series. Hadri shows that this statistic, appropriately standardized, will be asymptotically N(0,1) under the null hypothesis.

The problem of dependence between the series that make-up the panel has several implications: (i) As O'Connell (1998) showed, panel unit root tests will over reject the null hypothesis of a unit root; there will be an upward bias in the size of the tests, giving the impression of high power. Such distortions in size will come about, particularly, if the dependence is due to cross-unit cointegration (Banerjee, Marcellino and Osbat, 2001). (ii) If the unit root null were not rejected, this would imply that there exists N independent unit roots. But, if these series have common stochastic trends, the number of unit roots would be less than N (Bai and Ng, 2001b). The procedures the study used are designed to remove this dependence so that most, if not all, of these implications no longer hold. The solution to deal with the problem of dependence are the LLC, IPS and Hadri. They assume that, in addition to a series specific intercept and/or trend term as given in (1), there is a time specific intercept that may be estimated by taking the average across the series at each point in time. In other words, this dependence is accounted for by calculating $\bar{q}_t = \sum_{i=1}^{N} q_{it}$, $t = 1, \ldots T$ and subtracting it from each cross-sectional observation at point t; namely, for each t, using $q_{it} - \bar{q}_t$ instead of q_{it} in the calculations given above. This correction will not remove the correlation between the series, but, as Luintel (2001) demonstrates, it may reduce it considerably.

Cointegration Test

Having confirmed the panel integration order or panel stationarity level of our variable series, the next step is to test for the presence of cointegration among the variables in the panel. The panels are tested using residual based test of Pedroni (1999) and error correction test of Westerlund (2007) which is more based on structural dynamics of panels rather than their residuals. The common point of the two tests is that they produce single cointegration relation in panel setting. (see Pedroni, 2004; Chiawa and Asare 2009).

Consider the following regression equation

$y_{it} = \alpha_i + \delta_i t + \beta_{1i}x_{1i,t} + \cdots + \beta_{ki}x_{ki,t} + e_{it}$ where i=1, ,,, N; t=1,,,,,T,

y_{it} and $x_{i,t}$=($x_{1i,t}$, , , , $x_{ki,t}$) are assumed to be integrated of order one. The parameters α_i and δ_i are the individual and time effects, which are set to zero if they do not exist in the data. Under the null hypothesis of no cointegration, the residual e_{it} will be I(l). The approach here is to obtain the residuals by running the auxiliary regression. Pedroni (1999) proposed seven residual based tests for panel cointegration and derived the asymptotic distributions for the tests. He explored the small sample performances of the seven different statistics to test panel data cointegration. Four of the seven statistics are based on pooling the data and are referred to as "Within dimension" (Panel) tests, and the last three are "Between dimensions" (group) tests. These tests are based on the assumption of heterogeneous cointegration relationships between individual members and are defined as Within Statistics.

Westerlund (2007) developed four new panel cointegration tests that are based on structural rather than residual dynamics and, therefore, do not impose any common-factor restriction. The idea is to test the null hypothesis of no cointegration by inferring whether the error-correction term in a conditional panel error-correction model is equal to zero. The new tests are all normally distributed and are general enough to accommodate unit-specific short-run dynamics, unit-specific trend and slope parameters, and cross-sectional dependence. Two tests are designed to test the alternative hypothesis that the panel is co integrated as a whole, while the other two test the alternative that at least one unit is co integrated. It takes care of problem of structural breaks in the panels. The error-correction tests assume the following data-generating process:

$\Delta y_{it} = \delta_i d_t + \alpha_i (y_{i,t-1} - \beta_i x_{i,t-1}) + \sum_{j=1}^{P_i} \alpha_i \Delta y_{i,t-j} + \sum_{j=q_i}^{P_i} \gamma_{ij} \Delta x_{i,t-j} + e_{it}$ where t=I,,,, T and i=1,,, N index the time-series and cross-sectional units respectively, while d_t contains the deterministic components, for which there are three cases. In the first case, $d_t = 0$ so no deterministic terms; in the second case, $d_t = 1$ and Δy_{it} is generated with a constant; and in the third case, $d_t = (1, t)$ so that Δy_{it} is generated with both a constant and a trend.

$x_{i,t}$ is K dimensional vector with the assumption that $\Delta x_{i,t}$ is independent of e_{it}, and that errors are independent across both i and t. The parameter α_i determines the speed at which the system corrects back to the equilibrium relationship $y_{i,t-1} - \beta_i x_{i,t-1}$ after a sudden shock. If $\alpha_i < 0$, then there is error correction, which implies that $y_{i,t}$ and $x_{i,t}$ are co integrated; if $\alpha_i = 0$ then there is no error correction and, thus, no cointegration. Thus the study can state the null hypothesis of no cointegration as H_0: $\alpha_i = 0$ for all i. The alternative hypothesis depends on what is being assumed about the homogeneity of α_i. Two of the tests, called group-mean tests, do not require the $\alpha_i s$ to be equal, which means that H_0 is tested against $H_1^g: \alpha_i < 0$ for at least one i. The second pair of tests, called panel tests, assume that α_i are equal for all i and are, therefore, designed to test H_0 versus $H_1^p: \alpha_i = \alpha < 0$:for all i.

Multicollinearity

Multicollinearity is a condition that exists when the independent variables are correlated with one another. This problem associated with multiple regression. It distorts the t-tests of the coefficients, making it difficult to determine whether any of independent variables are linearly related to the dependent variable. It also makes interpreting the coefficients problematic. Multicollinearity is a matter of degree. There is no irrefutable test that it is or is not a problem. But, there are several warning signals:

- None of the t-ratios for the individual coefficients is statistically significant, yet the overall F statistic is. You could get a mix of significant and insignificant results, disguising the fact that some coefficients are insignificant because of multicollinearity.
- Our model checks to see how stable coefficients are when different samples are used.
- Or, try a slightly different specification of a model using the same data. See if seemingly "innocuous" changes (adding a variable, dropping a variable, using a different operationalization of a variable) produce big shifts.

In this research the study used variance inflation factors (VIF) because of the limitations of the methods also in literature many regression analysts often rely on VIF. As the name suggests, VIF quantifies how much the variance is inflated. The variance inflation factor for the estimated coefficient for instance b_k is just the factor by which the variance is inflated.

Let's consider a model with correlated predictors:

$$y_i = \beta_0 + \beta_1 X_{i1} + \cdots + \beta_k X_{ik} + \cdots + \beta_{p-1} X_{i,p-1} + \epsilon_i$$

Now, again, if some of the predictors are correlated with the predictor X_k, then the variance of b_k is inflated. It can be shown that the variance of b_k is:

$$Var(b_k) = \frac{\sigma^2}{\sum(X_{i,k} - \bar{X}_k)^2} \times \frac{1}{1 - R_k^2}$$

where R_k^2 is the R^2-value obtained by regressing the k^{th} predictor on the remaining predictors. The greater the linear dependence among the predictor X_k and the other predictors, the larger the R_k^2 value. And, as the above formula suggests, the larger the R_k^2 value, the larger the variance of b_k. The ratio of the two variances determines how large the variance is.

That gives:

$$\frac{Var(b_k)}{Var(b_k)_{min}} = \frac{\left(\frac{\sigma^2}{\sum(X_{i,k} - \bar{X}_k)^2} \times \frac{1}{1 - R_k^2}\right)}{\frac{\sigma^2}{\sum(X_{i,k} - \bar{X}_k)^2}} = \frac{1}{1 - R_k^2}$$

The above quantity is what is deemed the variance inflation factor for the k^{th} predictor. That is: $VIF_k = 1/1 - R_k^2$. Where R_k^2 is the R^2-value obtained by regressing the k^{th} predictor on the remaining predictors. Note that a variance inflation factor exists for each of the k predictors in a multiple regression model. A VIF of 1 means that there is no correlation among the k^{th} predictor and the remaining predictor variables, and hence the variance of b_k is not inflated at all. The general rule of thumb is that VIFs exceeding 4 warrant further investigation, while VIFs exceeding 10 are signs of serious multicollinearity requiring correction.

Conclusion

Three empirical models were used in this thesis. The first one is to model knowledge of the citizenry as a determinant of stock market development in emerging economies. The second empirical chapter examines the effect of institutional quality to stock market development whiles the last empirical chapter investigates the effect of macroeconomic variables on stock performance.

CHAPTER FIVE: EDUCATION AND STOCK MARKET DEVELOPMENT

Introduction

This chapter examines the effect macroeconomic variables on stock market capitalization. The emphasis is on the effect of education on stock market capitalization. The thesis examined a list of 41 emerging countries as shown in the first column of appendix one for period 1990 - 2011.

Descriptive Analysis of Data

The minimum and maximum values for GDP for the 41 countries covering the period under study is 6.12 and 26.13 million US dollars respectively. The minimum value for SMC is 33.1 and a maximum value 1089.2. The mean values of SMC and GDP are 391.27 and 18.64 with standard deviation of 294.24 and 12.46 respectively. The mean Education for the period under study is 68.23 with a standard deviation of 19.004. The minimum and maximum Secondary school enrolment as percentage of workforce is 23.415 and 114.134 respectively as shown in Table 1 below. The standard deviation for each variable indicated that the variables are widely spread around their respective mean. The results reveal that ability of individual to invest varied more than GDP.

Generally skewness measures the symmetry of the distribution and explains whether the mean is at the center of the distribution with a skewness value 0 if considered normal. Therefore negative value indicates a skew to the left (left tail is longer that the right tail) and a positive values indicates a skew to the right (right tail is longer than the left one. The descriptive statistics from Table 1 revealed that the variables were all asymmetrical. In this thesis, the study found all variables to be positively skewed, meaning that their right tails are longer than their left ones.

The study conducted statistical analysis to ascertain the characteristics of the location and variability of the various sources of the secondary data and to determine the extent to which the data was peaked. The study used the Kurtosis as a statistical measure to ascertain the extent to which the data was peaked or flat in relation to the normality of the distribution. A normal distribution has a value of 3. A kurtosis >3 indicates a sharp peak with heavy tails closer to the mean (leptokurtic). A kurtosis < 3 indicates the opposite a flat top (platykurtic). Looking at the results shown in Table 1, the distributions of variables were platykurtic and the p-value of the Jarque-Bera test statistic for all variables were lesser that the 0.05 critical values. The statistical implication of the Jarque Bera test statistic is that the null hypothesis was rejected and the alternative hypothesis was accepted since the residuals were normally distributed.

Table 1 - ***Descriptive statistic of explanatory variables***

	Obs	Mean	Std	Min	Max	Skewness	kurtosis	prob
SMC	615	391.27	294.24	33.1	1089.2	0.578	2.283	0.001
GDP (millions of $)	615	18.64	12.46	6.12	26.13	0.654	2.394	0.000
Education	615	68.23	19.04	16.15	87.89	3.275	27.654	0.000
Education×GDP	615	78.68	27.33	19.37	97.68	3.157	2.947	0.000

Source: Field survey, Winful (2016)

The descriptive statistics from Table 1 showed that the values were not normally distributed about their mean and variance. The study found no randomness in data. This indicated that aggregate stock prices on the emerging markets and Education (E) - ability of individuals to invest - and GDP are all very sensitive to periodic changes and speculation. To interpret, our study found that investors could earn considerably higher normal rate of profit from stock markets from emerging markets and this revelation demonstrated the degree of efficiency of stock market.

Results and Discussion

To perform a pretest to ensure there is a stationary cointegration relationship among variables, it was assumed that ability of an individual to invest (E) and GDP data to be nonstationary. Therefore to proceed with the OLS estimations, our study investigated the time series properties of the variables by utilizing unit root test and to test for the existence of a stochastic trend in the adapted regression model. This is equivalent to the testing of the null hypothesis and this can be established by testing for the unit root test. The motivation for this approach is the research expositions such as Fosu, Bondzie and Okyere (2014), when they applied the ADF test and the unit-root testing on the ADF test. In consistent with these expositions, the study determine the stationarity of variables using the following tests; LLC, Breitung, IPS and Hadri. The stationarity test ensured that the statistical properties of the selected variables did not change overtime. Additionally, the stationarity estimation on nonstationary variables had the tendency to give a misleading parameter estimate of the relationship between independent variables and stock market returns, and therefore the test was necessitated by this condition.

Stationarity is important for estimation: applying least squares regressions on nonstationary variables can give misleading parameter estimates of the relationships between variables. Finally, the study checked for stationarity to enable me make an accurate prediction in forecasting the effect of the explanatory variables on the stock market performance. Because stationarity test are sensitive to lag length of the series, a maximum lag order of

2 is selected based on the Schwarz information criterion as shown in Table 2 below.

Table 2 - ***Lag Selection Test (SMC, GDP and Education)***

Lag	logL	AIC	SC	HQ
0	-5461.717	65.834	65.93	65.873
1	-4262.678	51.158	51.735	51.393
2	-4138.535	49.919	50.976*	50.348
3	-4086.301	49.579	51.116	50.203*
4	-4069.005	49.675	51.693	50.495
5	-4042.853	49.661	52.159	50.675

* indicates lag order selected by the criterion
Source: Field survey, Winful (2016)

The statistics are asymptotically distributed as standard normal with a left hand side rejection area, except on the Hadri test, which is right side. A * indicates the rejection of the null hypothesis of nonstationarity (LLC, Breitung IPS) or stationarity (Hadri) at least at 5% level of significance. The result of the stationarity test is as shown in Table 3 below. Comparing test statistic value with that of test critical value at 5% significance and considering p-value the study found that all three variables had unit roots. This is because the absolute values of the tests statistic for each of these variables were lesser than the absolute variables of the test critical values at 5%. In addition, the p-values corresponding to each of the test statistics for all variables were greater than 5% (55.11%, 18.37% and 98.63%), respectively. The study fails to reject the null hypothesis of no unit roots in the data series. All the variables having unit roots were transformed into first difference to bring stationarity in these data, thereafter; the modified data used in the multivariate regression model in this empirical chapter.

Table 3 - ***Panel Unit Root Tests (A)***

Variable	LLC Test		IPS Test		Hadri Test	
	NT	T	NT	T	NT	T
SMC	0.031	0.178	0.328	0.327	0.000	0.0304
	(4.53)	(6.51)	(0.426)	(0.457)	(12.177	(1.584)
ΔSMC	0.0000	0.0115	0.0000	0.0000	0.276	0.1754
	(4.866)	(2.431)	(5.481)	(4.047)	(0.577)	(0.781)
GDP	0.047	0.048	0.341	0.304	0.000	0.000
	(1.571)	(1.141)	(0.754)	(0.755)	(14.52)	(7.915)
ΔGDP	0.0114	0.000	0.000	0.000	0.235	0.584
	(2.141)	(3.552)	(5.829)	(5.534)	(0.677)	(-0.597)
Education	0.0000	0.0001	0.0000	0.0003	0.106	0.088
	(3.471)	(3.147)	(3.407)	(2.918)	(1.054)	(1.113)
Δ Education	0.0142	0.1092	0.0012	0.0123	0.177	0.166
	(1.241)	(1.188)	(2.407)	(2.318)	(1.24)	(1.003)
Education×GDP	0.0771	0.0472	0.0889	0.0123	0.185	0.137
	(1.241)	(1.188)	(1.407)	(2.318)	(1.23)	(1.003)
Δ Education×ΔGDP	0.0142	0.1092	0.0012	0.0123	0.177	0.166
	(1.241)	(1.188)	(2.407)	(2.318)	(1.24)	(1.003)

All the variables are tested at 5% level of significance and the p –values displayed with their corresponding t- statistic in parenthesis.
Source: Field survey, Winful (2016)

In order to ascertain whether or not the variables were integrated or not, our study carried out the test at first difference. The results shown in above indicated that all the variables were stationary at first difference, meaning that they all had one unit root and represented a stable (1) series. The study found that the p-values of all variables are less than 5%, the absolute values of the test statistics for all variables were also found to be greater than their corresponding test critical values at 5%. This implied that the null hypothesis of all the variables each having unit roots at first difference could not be accepted at 5% significance level. Hence, our study concludes that at first difference all variables, represented a stationary series integrated of first order, I (1).

In this empirical chapter, the study examines Education (E) - ability of individuals to invest - and GDP on stock market performance. Since Education and GDP are not static, the tendency for multicollinearity to pose some problems with respect to the independent variables strengths. Multicollinearity exists when the predictive variables, in this case the chosen independent variables are correlated. Generally, the rule is that in a correlation matrix, a range of -0.70 and a + 0.70 is acceptable (Kuwornu, 2012). In order to check multicollinearity among independent variables, a suggested rule of thumb is that if the pairwise correlation between two regressors is very high in excess of 0.7, multicollinearity may pose serious problem. The study conducted a test for multicollinearity based on Pearson's correlation analysis. The test was conducted on the sample data based on one of the basic assumptions underlying OLS estimation that regressors should not be mutually correlated. If more than one of them is correlated with others, multicollinearity is said to exist. The logic behind this assumption of no multicollinearity and the need to carry out the test is that, if two or more independent variables are linearly dependent on each other, one of them should be included instead of both, otherwise, it will increase standard error thereby making my results biased.

Since the correlation numbers are lower than 0.7 as shown in Table 4 below, the results clearly showed that none of the independent variables were highly correlated hence the study could assume that there is no existence of serious multicollinearity amongst independent variables.

Table 4 - ***Pearson correlation matrix***

	SMC	E	GDP	E×GDP
SMC	1			
Education	0.242*	1		
GDP	0.638**	0.517*	1	
Education×GDP	0.681*	0.547**	0.412	1

*, **, *** Correlation is significant at 1%, 5% and 10% level respectively (2-tailed).
Source: Field survey, Winful (2016)

The study performed further test to measure the impact of collonearity among the independent variables through the application of the Variance Inflation Factor (VIF). The set rule for this thesis is that, the (VIF) =1/Tolerance and the VIF >=1. The VIF test was performed in order to measure the extent to which the regressors were related to other regressors and to find out how the relationship affected the stability and variance of the regression estimates.

The tolerance factors for the two independent variables Education (E) and GDP are high (0.726 and 0.861, respectively) with the associated VIF values of 5.81and 6.52 respectively, which are low compared to the "rule of thumb" VIF value of 10. This indicates that even though multicollinearity is present it is insignificant in affecting the stability and the variance of the regression estimates with average VIF factor of 6.16.

The first column of Table 5 is the regression where the study determines the relationship between explanatory variables (ability of individual to invest in an economy, GDP and interaction of ability of individual to invest and GDP) with the dependent variable (stock market capitalization) using the variables in levels. The study also test the validity of the regression model 1 by testing whether all parameters are equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of F indicates that most of the variation in stock market capitalization is explained by Education and GDP. A small value of F indicates that most of the variations in stock market capitalization are unexplained by GDP, E and their interaction. To determine rejection region of α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with F-test of probability of zero means that the model fit the data set and that E and GDP are linearly related to stock market capitalization. The relationship between E and SMC is expressed by 1.306 with a standard error of 0.358 which yields a t-statistic of 3.65. The relationship between GDP and SMC is also described by a coefficient of 1.24 with a standard error of 0.134. For both variables there is enough even to conclude that there is significant linear relationship between them and SMC. The signs are all as expected. The interaction between E and GDP is also significant in explaining SMC variability. That is there is significant evidence to conclude that GDP complement E in explaining variability in SMC.

Table 5 - *Coefficient of Education on Stock Market Performance (Levels)*

Variable	OLS	OLS (Rob)	FGLS
Education	1.306***	1.306**	0.096***
	(0.358)	(0.454)	(0.008)
GDP	1.240***	1.240*	0.582**
	(0.134)	(0.488)	(0.222)
Education×GDP	0.079**	0.079**	0.042***
	(0.028)	(0.030)	(0.012)
Constant	11.140***	11.140***	-16.253***
	(2.897)	(3.751)	(2.745)
Obs	615	615	615
Number of groups			41
Adj R-square	0.415	0.415	
Prob F	0.000		
AR(1)			0.8644
Wald chi2			871.14
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

An R-square of 0.415 implies that the model is able to explain 41.5% of the variations in SMC. F-value of 48.46 with a probability 0.000 implies the data set fits the model. Breusch-Pagan test of a large chi-square 44.97 implies that heteroskedasticity is present.

The second column of Table 5 shows the OLS result corrected for heteroskedasticity. In the regression model, the reported t-statistics are based on White (1980)'s heteroskedasticity-consistent standard errors and covariance.

Such robust standard errors can deal with a collection of minor concerns about failure to meet assumptions, such as minor problems about normality, heteroscedasticity, or some observations that exhibit large residuals, leverage or influence. For such minor problems, the robust option may effectively deal with these concerns.

Column two of Table 5 gives the robust option. The point estimates of the coefficients are exactly the same as in ordinary OLS, but the standard errors take into account issues concerning heterogeneity and lack of normality. In this particular example, using robust standard errors did not change any of the conclusions from column one Table 5.

Since the model fits the data as well, and that the required conditions are satisfied, the study interpret the individual coefficients in model 1. Our study needed to use inferential methods to draw conclusions about the population. The intercept is $b_0 = 11.14$ is the average stock market capitalization when GDP and E are zero. This value is misleading to interpret since the value zero is outside the range of values of independent variables.

The relationship between stock market capitalization and E is described by $b_1 = 1.306$. From this number, the study presents that each additional increase in the E in an emerging market, stock market capitalization increases on average by 1.306, assuming that the other independent variable in this model (GDP) is held constant. To test whether there is sufficient evidence to infer that in the linear regression model, E and stock market performance are linearly related the study test the hypothesis that $\beta_i = 0$ against an alternative $\beta_i > 0$. The value of the test statistic of 7.28 with an associated p-value of zero (0) shows that there is overwhelming evidence to infer that the E in emerging market and stock market performance are linearly related. The sign is as expected.

The coefficient $b_2=1.24$ specifies that for each additional GDP growth or increase, the average stock market capitalization increases by 1.24%, assuming the constancy of E. The nature of relationship between stock market performance and E and between stock market performance and GDP was expected. The value of the test statistic $t=2.62$ with p-value of zero (0) shows that there is evidence to conclude that GDP and stock market performance of emerging economies are linearly related at 5% significance level. GDP is important to the stock market in that it serves as a measure of the health of the economy. As a rational stock market investor, a rise in the level of GDP (a positive growth rate) from one period to the next would suggest that firms on the whole are performing positively. This aggregate performance of firms allows for more reinvesting which should ultimately lead to higher future earnings and stock prices. An increase in GDP from one period to the next should also increase the level of the stock market performance because consumers in general have more purchasing power and would likely devote more income toward stock market investment, ceteris paribus. In this regard, GDP acts as a proxy for the purchasing power of Education (ability of individuals to invest).

The study also run another model of equation 35 by introducing the interaction effect of GDP and E on the relationship in equation 35 to determine whether the interaction have significant effect on the relationship. That is our study suspect that gross domestic product moderate the effect of E on stock market performance that gives us model 2. AIC test confirms that interaction term cannot be dropped.

The model assumes that there is partial effect of the stock market performance with respect to E to depend on the magnitude of GDP. In other words GDP complements E. The idea is that GDP might have effect on E. Our study is interested in the effect of E on stock market performance. If the study simply look at the coefficient of E, the study will incorrectly conclude that E has 1.306 effect on stock market performance. The reason for interacting E and GPD is the theoretical reason that the higher the level of GDP of a country the higher the level of secondary school. The result shows explicitly that there is statistically significant interaction between E and GDP. AIC analysis confirms that the interaction term should be included in the model.

Because $b_3 > 0$, it implies that an improvement in E yields a higher increase in stock market performance for economies with high GDP. Since b_3 is significant, the interpretation of parameter b_1 is not straight forward. To explain the partial effect the study plug in the mean value of GDP to obtain the partial effect. So at the mean value of GDP, the partial effect of E on stock market performance is $b_1 + b_3$ (mean of GDP). That is 1.306+0.079(18.64) = 2.78. This means that one percentage increase in the E increases stock market performance by 2.78 standard deviations from the mean stock market performance. The finding confirms the work of Roc (1996)

To test whether the coefficient of the interaction term (2.78) is statistical different from zero (0), the study rerun the regression, where the study replaces the interaction term (E and GDP) with the difference between GDP and mean GDP multiply by E $((\mathrm{GDP} - \overline{GDP})E)$. This gives a new coefficient on E, the estimated effect a GDP=18.64, along with its standard error. Running this new regression gives the standard error of the coefficient $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 2.75$ as 0.953 which yields a t=2.92). Therefore at the average GDP ($\overline{\text{GDP}}$), the study concludes that E has a statistically significant positive effect on stock market capitalization. The variable of interest E is also positive and significant as expected indicating that higher level of E are associated with stock market development. This outcome indicates that E is good predictors of stock market development in emerging countries. The coefficient of 1.306 of the E is misleading because it does not account for the effect of GDP on E which then affect stock market capitalization.

R square value of 0.415 indicated a moderate correlation between aggregate stock market performance and the two independent variables in model 1. The R square indicated that about 41.5% of fluctuations in stock market performance are accounted for by E and GDP while the 58.5% could be explained by other factors not related to the chosen independent variables. The adjusted R square (0.415) showed that the relationship is an actual one and not merely due to spurious regression problem.

In the presence of autocorrelated errors, as long as the explanatory variables are strictly exogenous, the OLS estimators are unbiased. This is analogous to our results in the case of heteroskedasticity, where the presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. However, following that parallel argument, the study is more concerned with the properties of our interval estimates and hypothesis tests in the presence of autocorrelation. The Durbin –Watson statistic obtained by running the analysis using the data series at level has a value of (d= 0.217394 <

1), providing evidence of high presence of positive serial correlation among residuals, again indicating that successive error terms are, on average, close in value to one another. In effect, Durbin-Watson test indicates the presence of high serial correlations in the regression residuals at level, providing further evidence on the non-stationarity of the data series and affirming the need to make them stationary.

The presence of positive serial correlation implies that our OLS coefficients are still unbiased and consistent but inefficient because there is no lagged dependent variable (SMC) on the RHS as an explanatory variable. Forecasts inefficient, variances of coefficients biased and tests are invalid and R^2 overestimate the fit, indicating a better fit than actually present, and t values imply significance when in essence insignificant coefficients. Breusch-Pagan test of a large chi-square 46.34 implies that heteroskedasticity is present.

To improve upon our results the study runs OLS with serial correlation and heteroskedasticity using GLS estimating technique. Generalized least squares (GLS) allow models with heteroskedasticity and no cross-sectional correlation and the results are shown in column three of Table 5. This technique also confirms that E, GDP and its interaction are significant in explaining the variations in SMC. Wald chi2 p-value of 0.000 implies the model fits the data set.

Comparing column three with column one our study realizes an improvement in the result. The parameters were overestimated under column one due to the presence of serial correlation and heteroskedasticity. One percent increase in secondary school enrolment is associated with 0.096% increase in SMC. The partial effect of E on SMC is 0.88. That is percentage increase given an average GDP, SMC increases by 0.88% instead of 0.096 assuming that GDP is zero for which it is not realistic since the values of GDP for the data series zero cannot be assumed. The parameters are all significant and the signs as expected. A wald chi-square of p-value of 0.000 implies that the data fits the model. The study could also deduce that as the study correct for heteroskedasticity and serial correlation the standard errors of the estimated coefficients reduce in value which shows how efficient and unbiased.

Even though there are statistical evidence to show that E and GDP influence SMC the study cannot draw a firm conclusion based on these results because the regression results displayed were based on level, nonstationary data series and could represent a spurious problem. The stationarity estimation on nonstationary variables had the tendency to give a misleading parameter estimate of the relationship between independent variables and dependent variable. It is also established in literature that stationary and weakly dependent data is able to correct the effect of serial correlation on goodness of fit measures, R-squared and adjusted R-squared. Due to fact that the variables are non stationary, the study found the first difference of the variables. The result from Table 3 above shows that the first difference of the variables is stationary.

The pearson correlation matrix of first difference of the variables improves the problem multicolinearity since the correlation coefficients are relatively lower with respect to the variables in levels.

Table 6 - ***Pearson correlation matrix (difference)***

	ΔSMC	ΔE	ΔGDP	ΔE×ΔGDP
ΔSMC	1			
ΔEducation	0.071**	1		
ΔGDP	0.252**	0.197*	1	
ΔEducation×ΔGDP	0.088*	0.064*	0.092*	1

*, **, *** Correlation is significant at 1%, 5% and 10% level respectively (2-tailed).
Source: Field survey, Winful (2016)

Regression of the first difference of model 1 using dynamic ordinary least squares technique gives the result in Table 7 column one below. The result improves that of column three of Table 7 because of the smaller coefficients and Newey standard errors recorded. This implies the result from Table 5 is overestimated and that the t-values and standard errors are not reliable. From Table 7 column one the explanatory variables are still significant and signs as expected. The wald chi-square test is used to test the probability that the correlation coefficients for all the variables included in the models are zero. The study test the validity of the regression model by testing whether all parameters in each model are all equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. The wald chi-square value of 47.3 with a p-value of 0.000 implies that data set fit the model. The model is able to explain 31.9% of the variations in SMC. Using DOLS the study is able to circumvent the problem of endogeneity between y_{it} and x_{it} and serial correlation between u_{it} and v_{it} (see Kao and Chiang, 2000; and Erikson 2005).

Table 7 - ***Education and Stock Market Performance (Difference)***

Variable	DOLS	Newey-West
ΔE	0.038**	0.013***
	(0.014)	(0.004)
ΔGDP	0.109**	0.109**
	(0.041)	(0.039)
ΔE×ΔGDP	0.009**	0.004***
	(0.003)	(0.001)
Obs	614	614
Number of groups	41	
R-squared	0.319	
Adj R-square	0.314	
F(3, 610)		19.54
Prob		0.000
Wald chi2	47.3	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Comparatively the results have improved significantly looking at the reported standard error and the coefficients of the parameters. All the variables of interest were significant and with their expected signs. Changes in the Education (E), GDP and the interaction of the Education and GDP were all significant in explaining stock market capitalization. That is for every 1% increase in the Education, stock market capitalization of emerging markets increase by 0.04% assuming that other variables are constant. To determine the statistical significance of the coefficient of the partial effect of ΔE on ΔSMC the study needs to rerun the regression where the study replaces the interaction variable with gross domestic product less the average GDP multiple by ΔE. This gives as the new coefficient on ΔE (the coefficient of partial effect), the estimated effect at gross domestic product of 18.64, along with a standard error. Running this new regression gives the standard error of $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 0.206$ as 0.0743, which yields t = 2.77. Therefore at the average gross domestic product, the study concludes that ΔE has statistically significance positive effect on stock market performance. That is an enhancement in ΔE leads 0.206 increases in stock market performance of emerging economies. The sign is as expected. This suggests that the enhancement of ΔE for emerging economies is important for stock market performance. This study conforms to the theoretical postulation and the study of Ali (2011) and Yartey (2008).

In the presence of autocorrelated errors, as long as the explanatory variables are strictly exogenous, the OLS estimators are unbiased. This is analogous to our result in the case of heteroskedasticity, where the presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. A DW test of 0.349 the study reject the null hypothesis that the errors are serial uncorrelated. That is the study reject null hypothesis and conclude that the data does have first-order autocorrelation. Breusch-Pagan test with a large chi-square 46.15 implies that heteroskedasticity is present. Wald chi2 of probability of 0.000 implies the data set fits the model well.

To account for serial correlation and heteroskedasticity in the model the study computes Newey-West estimated standard error as depicted in Table 7 column two above. Accounting for serial correlation and heteroskedasticity there is significant improvement in the result compared with Table 5. One percent increase in ΔE leads to 0.038% increase in ΔSMC. It is again confirmed that Education (E) complement GDP. The coefficient of the partial effect E on SMC of 0.088 with Newey-West standard error of 0.029 yields a t-statistic of 3.02. By implication 1% increase ΔE given average GDP, SMC will increase by 0.088%. Severe multicollinearity is problematic because it can increase the variance of the regression coefficients, making them unstable. A VIF of 1.07 for model 1 shows that the coefficients are relatively stable. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A small chi-square 0.257 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. Durbin-Waston test is based on the assumption that the errors in the regression model are generated by a first-order autoregressive process. A DW test of 1.93 implies the absence of autocorrelation in the error term at 5% significance level. It is also clear that as the study correct heteroskedasticity and serial correlation using different estimation techniques, the calculated standard errors reduce in value which makes the results more reliable. That is the study is able to account for different characteristics of the emerging economies sampled for this thesis.

Conclusion

The model suggests that ability of individual to invest per labor force and economic growth can make a statistically significant and economically meaningful contribution to stock market development. This study conforms to the theoretical postulation and the study of Ali (2011) and Yartey (2008). It is clear from these results that countries with high levels of education stand to benefit more in terms of stock market development. Poor understanding of issues on the part of the public discourages potential investors from participation in stock markets. Our work also confirms the findings of Roc (1996) where they argue that the propensity to invest in shares rises with the level of education. Higher level of education increases confidence in stock market activities.

The results suggest that policy makers should not expect significant stock market development if the country's educational structure is poor. These results are generally in agreement with the theoretical and empirical literature. Our findings have important policy implications for emerging countries. Firstly, education plays a crucial role in stock market development. Policymakers in emerging economies may initiate policies to foster growth in the number of secondary school enrolment in emerging economies.

Overall, there is widespread and robust evidence that education plays a key role in enhancing stock market performance. Therefore, improving education – and quantitative and qualitative terms – has to be at the heart of policy measures aimed at raising the stock market performance in a sustainable manner.

CHAPTER SIX: INSTITUTIONAL QUALITY AND STOCK MARKET DEVELOPMENT

Introduction

This study investigates how institutional quality affects the performance of stock markets of emerging countries. A brief discussion of descriptive analysis of the elements of institutional quality is presented and their correlation to stock market performance and then the discussion of results.

Descriptive Analysis of Data

For the descriptive analysis of the macroeconomic variables see page 129 of chapter five. Because of lack of data for institutional quality for periods before 1996, the study limit this empirical chapter to cover 1996 to 2011. Institutional quality data is sourced from world Governance Indices (WGI) and Kaufmann et al (2003), who compiled indicators based on several hundred individual variables measuring perceptions of institutional quality, drawn from 25 separate data sources constructed by 18 different organizations. These include international organizations (such as the World Markets Research Centre and the World Bank), political and business risk-rating agencies, think-tanks, and non-governmental organizations. To ensure that the distribution of institutional quality in each country is normal, conditional on the data for that country Kaufmann et al (2003) use factor analysis. For instance, a useful interpretation of the reported estimates and standard deviations for each country is to note that there is a 90% probability that the true level of institutional quality for a country is in an interval of plus or minus 1.64 times the reported standard deviation centred on the point estimate itself. The estimates of institutional quality have an expected value of zero, and a standard deviation (across countries) of one. Resulting from the standardization method, the distribution of unobserved institutional quality is the same in every period, which imposes the restriction that the mean or world average of institutional quality is the same in each period. As a result, the indicators are not informative about global trends in institutional quality, although they are informative about changes in countries' relative positions over time. This motivates the use of panel.

Under the theoretical model, the value of institutions to shareholders results from their regulation of transaction and agency costs. The institutional quality indicators are a reflection of the ability of institutions to effectively support the minimization of these costs, ultimately borne by shareholders. The indicators compose measures of the proper regulation of markets and the degree of systemic corruption.

Table 8 below provides descriptive statistics for the institutional quality indicators for the years 1996 to 2011. The mean of the institutional quality indicators should, by definition, be zero due to the standardization process in their construction. However, the sample of countries selected based on availability of stock market data results in a positive mean for each of the institutional quality indicators. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer governance scores. Differences across countries in the margins of error associated with governance estimates are due to two factors: (i) cross-country differences in the number of sources in which a country appears, and (ii) differences in the precision of the sources in which each country appears. Of 41 emerging economies studied, countries like Uruguay, Slovenia, South Africa, Slovenia, Romania, Slovakia Rep, Poland, Panama, Malaysia, Jordan, Hungary, Czech Republic, Costa Rica, Chile, Bulgaria, Brazil and Botswana on the average are classified as countries with good institutional quality. On the other hand twenty five (25) of countries were cited as countries with poor institutional quality because on the average institutional quality were negative for these countries. Differences across countries in the margins of error associated with institutional quality estimates are due to two factors: (i) cross-country differences in the number of sources in which a country appears, and (ii) differences in the precision of the sources in which each country appears.

Table 8 - *Descriptive statistic of explanatory variables*

	Obs	Mean	Std	Min	max	Skewness	kurtosis	prob
SMC	615	391.27	294.24	33.1	1089.2	0.578	2.283	0.001
GDP	615	18.64	12.46	6.12	26.13	0.654	2.394	0.000
CC	615	-0.184	0.644	-1.488	1.553	0.741	2.331	0.003
VA	615	0.0186	0.727	-1.857	1.318	0.569	2.394	0.001
RL	615	-0.153	0.676	-1.841	1.358	0.664	2.161	0.000
RQ	615	0.070	0.685	-2.210	1.645	0.791	2.443	0.000
PA	615	-0.357	0.873	-2.412	1.206	0.599	2.501	0.002
GE	615	0.007	0.594	-1.516	1.278	0.604	2.614	0.001
IQ	615	-0.1	0.623	-1.579	1.248	0.591	2.322	0.000

Source: Field survey, Winful (2016)

Of all the elements of institutional quality voice and accountability, regulatory quality and then government effectiveness had positive mean values for the period under consideration. In other words for the countries sampled for this thesis, institutional quality in relation to these areas were strong on the average. The element of institutional quality with the highest standard deviation is political stability. There exists high correlation for each of the governance indicators for the entire period as a whole, and similarly for each individual period. The CC indicator and the RL indicator have the highest correlation amongst indicators for all periods.

On institutional quality, Government Effectiveness has the highest positive average score, followed by Regulatory Quality, Rule of Law, Voice and Accountability, and Control of Corruption. Given that higher score corresponds to better outcomes, the negative average score of Political Stability and Absence of Violence points toward the increasing likelihood of politically-motivated instability in a country. In addition, Political Stability and Absence of Violence score has the highest standard deviation, indicating that political stability varies substantially across countries.

Correlation of institutional quality variables

The six governance indicators have very high positive correlations with each other, indicating potential problem of multicollinearity if all of the governance indicators are included in one regression model. This is shown in Table 9 below. Correlation of the first difference of the macroeconomic variables and the institutional quality variables improves the potential problem of multicollinearity shown in the appendix 4. It could deduce from that appendix that as macroeconomic variables are made stationary, their correlation with institutional quality variables is reduced significantly.

Table 9 - *Correlation coefficient of institutional quality variables (levels)*

	SMC	GDP	CC	VA	RL	RQ	PS	GE	IQ	CC× GDP	VA× GDP	RL× GDP	RQ × GDP	PS× GDP	GE× GDP
SMC	1														
GDP	0.48**	1													
CC	0.51*	0.65	1												
VA	0.08*	0.62	0.72**	1											
RL	0.12*	0.56	0.67**	0.75**	1										
RQ	0.23**	0.65	0.85**	0.89**	0.82**	1									
PS	0.17*	0.45	0.83**	0.93	0.79**	0.89	1								
GE	0.28*	0.61	0.84**	0.88**	0.84**	0.81**	0.87**	1							
1Q	0.61	0.51*	0.51*	0.51*	0.51*	0.57*	0.51*	0.51*	1						
CC×GDP	0.51*	0.11*	0.51*	0.77*	0.51*	0.56*	0.51*	0.08*	0.23**	1					
VA×GDP	0.08*	0.45*	0.78*	0.36*	0.64*	0.79*	0.91	0.44*	0.72**	0.59**	1				
RL×GDP	0.12*	0.12	0.52*	0.12*	0.12*	0.12	0.12*	0.23**	0.23**	0.23**	0.63**	1			
RQ×GDP	0.23**	0.23**	0.63	0.23**	0.23**	0.44*	0.23*	0.17*	0.51*	0.51*	0.51*	0.66*	1		
PS×GDP	0.33*	0.17*	0.47*	0.33*	0.77*	0.71*	0.54*	0.82*	0.78*	0.94	0.65*	0.76*	0.80*	1	
GE×GDP	0.28*	0.23*	0.59*	0.51*	0.64*	0.63*	0.77*	0.69*	0.91	0.59*	0.58	0.81	0.84*	0.69*	1

The dependent variable is SMC; ** and * denote statistical significance at the 0.01 and 0.05 levels respectively.
Source: Field survey, Winful (2016)

Results and Discussion

For the heterogeneity across the countries and heterogeneous serial correlation structure of error term, the study employ four different panel unit root tests namely LLC test, Breitung test, IPS test and Hadri test. Table 10 below depicts the result of panel unit root tests for each variable in the panel at level and at first difference.

Table 10 - ***Panel Unit Root Test (B)***

Variable	LLC Test		IPS Test		Hadri Test	
	NT	T	NT	T	NT	T
SMC	0.031	0.178	0.328	0.327	0.000	0.0304
	(4.53)	(6.51)	(0.426)	(0.457)	(12.177	(1.584)
ΔSMC	0.0000	0.0115	0.0000	0.0000	0.276	0.1754
	(4.866)	(2.431)	(5.481)	(4.047)	(0.577)	(0.781)
GDP	0.047	0.048	0.341	0.304	0.000	0.000
	(1.571)	(1.141)	(0.754)	(0.755)	(14.52)	(7.915)
ΔGDP	0.0114	0.000	0.000	0.000	0.235	0.584
	(2.141)	(3.552)	(5.829)	(5.534)	(0.672)	(0.597)
IQ	0.008	0.001	0.002	0.007	0.238	0.087
	(3.714)	(4.271)	(3.433)	(2.814)	(1.554)	(1.164)
ΔIQ	0.001	0.005	0.001	0.017	0.241	0.121
	(2.779)	(3.407)	(3.347)	(2.971)	(1.614)	(1.058)
CC	0.005	0.001	0.002	0.007	0.238	0.087
	(3.234)	(4.271)	(3.433)	(2.664)	(1.534)	(1.164)
ΔCC	0.000	0.075	0.001	0.003	0.123	0.217
	(2.691)	(3.427)	(3.347)	(3.202)	(1.614)	(1.058)
VA	0.008	0.001	0.002	0.007	0.238	0.087
	(3.714)	(4.097)	(3.433)	(3.881)	(1.574)	(1.164)
ΔVA	0.000	0.001	0.002	0.007	0.238	0.087
	(3.733)	(4.331)	(3.189)	(2.814)	(1.474)	(1.164)
RL	0.002	0.001	0.002	0.007	0.238	0.087
	(3.714)	(3.578)	(3.433)	(2.814)	(1.324)	(1.164)
ΔRL	0.000	0.001	0.002	0.007	0.238	0.087
	(3.709)	(4.282)	(3.444)	(2.77)	(1.221)	(1.164)
RQ	0.001	0.004	0.001	0.000	0.211	0.109
	(3.647)	(3.474)	(3.741)	(4.331)	(1.114)	(1.051)
ΔRQ	0.013	0.001	0.001	0.037	0.151	0.089
	(3.152)	(4.066)	(3.114)	(1.13)	(1.314)	(2.121)
PS	0.004	0.005	0.001	0.001	0.173	0.087
	(2.874)	(3.377)	(3.807)	(4.171)	(1.227)	(2.058)
ΔPS	0.001	0.000	0.001	0.037	0.133	0.178
	(3.671)	(4.411)	(4.344)	(1.421)	(1.314)	(2.171)
GE	0.000	0.000	0.001	0.004	0.213	0.099
	(5.858)	(4.407)	(3.747)	(3.744)	(1.011)	(1.228)
ΔGE	0.003	0.005	0.001	0.037	0.109	0.114
	(2.974)	(2.855)	(3.847)	(2.801)	(1.314)	(2.018)

p-values and significance level of α (5%)
Source: Field survey, Winful (2016)

The results show that SMC, GDP, IQ and all the elements of IQ contain unit roots at level. However, at first differenced, the panels are said to be stationary, though there may be possibility of nonstationary series in a stationary panel as the panel unit root test will not identify the particular series that is not stationary. The results were confirmed by the other tests of panel unit root.

Control of corruption

The control of corruption indicator is decided by the frequency of corruption, cronyism, government efforts to tackle corruption, and the internal causes of political risk and mentality including xenophobia, nationalism, corruption, nepotism, and willingness to compromise.

To determine and explain the coefficients in levels model 2 where the study establishes the relationship between explanatory variables (GDP, CC and CC×GDP), the study needs to determine how well the model fits the sample data. The least squares method procedures even though produces the best straight line, there may be no relationship or nonlinear relationship between the two variables. If the model's fit is poor there will be no need for further analysis of the coefficients of the model but rather all efforts should be channeled to improve upon the model. the study used three statistics to assess the model's fit. These are standard error of estimates, coefficient of determination, and the F-test of the analysis of variance.

The smallest value that standard error of estimates can assume is zero (0), which occurs when SSE is equal to zero (0). That is, when all the points fall on the regression line. Thus when standard error of estimate is small the fit is excellent, and the linear model is likely to be an effective analytical and forecasting too. If standard error of estimate is large, the model is a poor one.

Our study judges the value by comparing it to the value of dependent variable stock market capitalization. In Table 11 column one, since the root MSE is 0.237 is relatively smaller than stock market capitalization, it does appear that the standard error of estimate is small hence the model is good fit of the data sample. This result is confirmed by coefficient of determination of 0.481. This means the 48.1% of the variations in stock market capitalization is explained by the model. This implies that 51.9% of the variations in SMC is not accounted for by the model as depicted in the result column one of Table 11 below.

To test the validity of the linearity of model 2 in column one of Table 11, the study set all the parameters, be equal to zero. That is whether GDP, CC and the interaction of CC and GDP are linearly related to stock market capitalization. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of F indicates that most of the variation in stock market capitalization is explained by GDP, CC and their interaction. A small value of F indicates that most of the variations in stock market capitalization are unexplained by the explanatory variables in this model. Analyses of variance with F-test (47.33) of probability zero means that the model fit the data set and that gross domestic product and institutional quality are linearly related to stock market capitalization. Average variance inflation factor (VIF) of 4.29 implies the effect of multicollinearity is minimal and the coefficients reasonably stable.

Table 11 - *Control of Corruption and Stock Market Performance (Levels)*

Variable	OLS	OLS Rob	FGLS
GDP	0.877***	0.877***	0.671**
	(0.281)	(0.277)	(0.226)
CC	0.076**	0.076**	0.055**
	(0.025)	(0.022)	(0.014)
CC×GDP	0.009	0.009**	0.006**
	(0.011)	(0.003)	(0.002)
Constant	6.574***	6.574***	3.114**
	(1.572)	(1.592)	(0.860)
Obs	615	615	615
Number groups			41
R-squared	0.481	0.481	
Adj R-square	0.453		
Prob F	0.000	0.000	
AR(1)			0.8797
Wald chi2			788.91
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Model 2 of Table 11 above is the regression where the study determines the relationship between explanatory variables (GDP, CC and CC×GDP) with the dependent variable (SMC) using the variables in levels. Our study also test the validity of the regression model 2 by testing whether all parameters are equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. Column one of Table 11 gives the OLS result. A large value of F indicates that most of the variation in stock market capitalization is explained by GDP, CC and CC×GDP. A small value of F indicates that most of the variations in stock market capitalization are unexplained by GDP, CC and CC×GDP. To determine rejection region of α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with F-test of probability of zero means that the model fit the data set and that GDP, CC and CC×GDP are linearly related to stock market capitalization.

The relationship between CC and SMC is expressed by 0.076 with a standard error of 0.0.025 which yields a t-statistic of 3.04 as shown in Table 11 column one. The relationship between GDP and SMC is also described by a coefficient of 0.877 with a standard error of 0.281. For both variables there is enough even to conclude that there is significant linear relationship between them and SMC. The signs are all as expected. The interaction between CC and GDP turn out not to be significant in explaining variability SMC. That is there is no significant evidence to conclude that GDP complement CC in explaining variability in SMC.

Breusch-Pagan test of a large chi-square indicate that heteroskedasticity is present. In this model, the chi-square value of 34.82 is large, indicating heteroskedasticity is a problem. DW test of 1.13 implies the errors are serially correlated. VIF of 4.8 implies that the estimated coefficients are relatively not stable due to presence of multicollinearity.

From column two of Table 11 the study correct for problem heteroskedasticity. The result shows that the relationship between CC and SMC can be describe by 0.076 with robust standard error of 0.022 which yields t-statistic of 3.45 assuming all other variables control for in the model is zero (0). This implies that CC has positive effect on SMC and there is enough evidence to infer a linear relationship. The relationship between GDP and stock market performance is also described by 0.877 with a standard error of 0.277 which yields t-test of 3.16 all other things being equal. The signs for CC and GDP are as expected. The coefficient of the interaction term now becomes significant and positive when the study corrected heteroskedasticity problem. This implies that GDP complement CC in explaining the variations in SMC.

Since the interaction term is significant the interpretation of the parameter of CC can be tricky. To determine the effect of CC the study calculated the partial effect of CC given the average GDP of 18.64 is described by 0.244 with a robust standard error 0.092 which yields a t-statistic of 2.66. Therefore at the average GDP, the study concluded that CC has statistically significant positive effect on SMC. That is 1% enhancement in CC leads to 0.51% increase in SMC of emerging economies. This supports the work of Mutenheri & Green (2003).

In the presence of autocorrelated errors, as long as the explanatory variables are strictly exogenous, the OLS estimators are unbiased. This is analogous to our results in the case of heteroskedasticity, where the presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. However, following that parallel argument, our study will be concerned with the properties of our interval estimates and hypothesis tests in the presence of autocorrelation.

A DW test of 1.021 implies the presence of positive autocorrelation in the error term at 5% significance level. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause use to reject null hypothesis when it is true. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. The large chi-square of 34.82 indicates that heteroskedasticity is present. The presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. With the F-statistic of 69.24 which yields F-probability of

0.000 our result shows the model fit data. The test for serial correlation and heteroskedasticity reject the null hypothesis for the two tests.

The presence of positive serial correlation implies that our OLS coefficients are still unbiased and consistent but inefficient because there is no lagged dependent variable (SMC) on the RHS as an explanatory variable. Forecasts inefficient, variances of coefficients biased and tests are invalid and R^2 overestimate the fit, indicating a better fit than actually present, and t values imply significance when in essence insignificant coefficients. The study are more concerned with the properties of our interval estimates and hypothesis tests in the presence of serial correlation. OLS is no longer BLUE in the presence of serial correlation, and the OLS standard errors and test statistics are no longer valid, even asymptotically.

Since the study recognize that OLS cannot provide consistent interval estimates in the presence of autocorrelated errors, if the study assume strictly exogenous regressors the study may be able to obtain an appropriate estimator through transformation of the model. If the errors follow the AR(1) process in (1), the study determines that $Var(u_t) = \sigma_e^2 / (1 - \rho^2)$. To improve upon the result the study estimate allowing for the presence of autocorrelation and heteroskedasticity in the model using FGLS. The result as shown in column three of Table 11 confirms that GDP complement the effect of CC on stock market performance. The partial effect of 0.167 is an improvement on the robust OLS result which was over estimated. By correcting for heteroskedasticity and serial correlation of the error term the study improve on the reliability of our result. That is difference in the characteristics of the economies sampled does not bias the result.

Breusch-Pagan test of a large chi-square of 47.33 indicates that heteroskedasticity is present. DW test of 1.07 implies the errors are serially correlated.

The stationarity estimation on nonstationary variables had the tendency to give a misleading parameter estimate of the relationship between independent variables and dependent variable. Even though there are statistical evidence to show that CC and GDP influence SMC the study cannot draw a firm conclusion based on this result because the regression result displayed were based on levels, nonstationary data series and could represent a spurious problem. Due to fact that the variables SMC and CC are nonstationary, the study find the first difference of the variables. The result from Table 10 above shows that the first difference of the variables is stationary. The pearson correlation matrix of first difference of the variables improves the problem of multicolinearity since the correlation coefficients are relatively lower with respect to the variables in levels as shown in appendix 4.

Even though there are statistical evidence to show that CC and GDP influence SMC the study cannot draw a firm conclusion based on these results because the regression results displayed were based on level, nonstationary data series and could represent a spurious problem. It is also established in literature that stationary and weakly dependent data is able to correct the effect of serial correlation on goodness of fit measures, R-squared and adjusted R-squared. Due to fact that the variables are non stationary, the study found the first difference of the variables. The result from Table 10 above shows that the first difference of the variables is stationary. Also to circumvent the problem of endogeneity between y_{it} and x_{it}, and serial correlation between u_{it} and v_{it}, the DOLS estimator becomes necessary as OLS will be biase and inefficient. The result of DOLS estimation is given in Table 12 below.

Table 12 - ***Control of Corruption and Stock Market Performance (Diff)***

Variable	DOLS	Newey-West
ΔGDP	0.661**	0.482**
	(0.194)	0.174
ΔCC	0.006**	0.005**
	(0.002)	0.002
ΔCC×ΔGDP	0.005**	0.003**
	(0.001)	0.001
Obs	614	614
Number groups	41	
R-squared	0.336	
Adj R-square	0.306	
F(3, 610)		19.54
Prob		0.000
Wald chi2	48.3	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

From the Table 12 column one ΔCC is significant in explaining variations in ΔSMC and the sign also as expected. Interaction variable is also significant confirm that ΔGDP complement ΔCC. The partial effect of ΔCC on ΔSMC expressed as 0.099 with a Newey-West standard error of 0.0316 yields a t-statistic of 3.14. That is as ΔCC improves by 1% ΔSMC also increases by 0.099%. These finding confirms the work of Clark (2003) and Ngugi (2003).

The wald chi-square test is used to test the probability that the correlation coefficients for all the variables included in the models are zero. Our study test the validity of the regression model by testing whether all parameters in each model are all equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of wald chi-square of 788.91 indicate that variations in stock market capitalization is explained by the models. At α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with wald chi-square -test of probability zero means that the model fit the data set hence the quality of the regression.

The R-squared of 0.336 implies the model is able to explain 33.6% of the variations in ΔSMC. An average VIF of 2.08 shows how stable the estimated coefficients are. DW 1.06 shows the errors are positively serially correlated and Breusch-Pagan test of chi-square of 33.67 indicates the heteroskedasticity is a problem.

Column two of Table 12 presents Newey-West estimation result. This would indeed be the proper procedure to follow since it is suspected that the variables possessed a unit root in their time series representation. Newey-West standard errors in a time series context are robust to both arbitrary autocorrelation (up to the order of the chosen lag) as well as arbitrary heteroskedasticity.

Regression of the first difference of model 2 with ΔCC gives the result in Table 12 column two above using Newey-West techniques. In all cases the variable of interest ΔCC, is significant given an average ΔGDP. The result improves that of column one above because of the smaller coefficients and standard errors recorded. The relationship between ΔCC and ΔSMC given average ΔGDP is described by 0.061 with a Newey-West standard error of 0.0199 which yields a t-statistic of 3.06. In all cases there were enough evidence to believe that there is significant linear relationship between ΔCC and ΔSMC and ΔGDP and ΔSMC. F-value of 19.54 with F-probability of 0.000 implies that the model fits the sample data. A small chi-square 0.258 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW of 1.84 indicates that the errors are not serially correlated which by implication the regression result is not spurious. A VIF of 1.8 implies the estimated coefficients are relatively stable.

Voice and Accountability

Voice and accountability is the degree of citizen participation in government and in the policy making process. To establish the relationship between explanatory variables (GDP, VA and VA×GDP), the study needs to determine how well the model fits the sample data.

Table 13 - ***Voice & Accountability and Stock Market Performance (Levels)***

Variable	OLS	OLS Rob	FGLS
GDP	0.751	0.751	0.481
	(0.241)	(0.227)	(0.174)
VA	0.064	0.064	0.042
	(0.149)	(0.019)	(0.017)
VA×GDP	0.011	0.011	0.011
	(0.042)	(0.003)	(0.004)
Constant	4.812	4.812	3.341
	(1.021)	(0.924)	(0.977)
Obs	615	615	615
Number groups			41
R-squared	0.415	0.488	
Adj R-square	0.411		
F value	48.15	66.4	
Prob F	0.000	0.0000	
AR(1)			0.8649
Wald chi2			854.13
Prob			0.0001

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Column one of Table 13 is an OLS regression where the study determine the relationship between explanatory variables (GDP, VA VA×GDP) with the dependent variable (SMC) using the variables in levels. Analyses of variance with F-test of probability of zero means that the model fit the data set and that GDP, VA and VA×GDP are linearly related to stock market capitalization.

The relationship between VA and SMC is expressed by 0.064 with a standard error of 0.149 which yields a t-statistic of 0.43. The relationship between GDP and SMC is also described by a coefficient of 0.751 with a standard error of 0.241. The linear relationship between the interaction variable (VA×GDP) is also described by 0.011 with a standard error of 0.042. The signs are as expected but there are not enough evidence to conclude that there is significant linear relationship between VA and SMC and VA×GDP and SMC at 5% significance level. This could be explained by the difference in growth rate of the emerging economies sampled. In the case of GDP there is enough evidence to conclude that there is significant linear relationship between them. The R-square of 0.415implies the model is able to explain 41.5% of the variations in SMC. DW of 0.961 shows the errors are positively serially correlated and Breusch-Pagan test of a large chi-square indicate that heteroskedasticity is present. In this model, the chi-square value of 46.39 is large, indicating heteroskedasticity is a problem.

Column two above of Table 13 the study correct for problem heteroskedasticity using robust standard error. The relationship between VA and SMC is described by 0.064 with a standard error of 0.019 which yields a t-statistic of 3.44. That is there is significant evidence that there is linear relationship between VA and SMC as shown in column two of Table 13 above. There is also evidence that GDP complement the effect of VA on SMC.

Because the parameter of interaction variable is significant, it implies that an improvement in VA yields a higher increase in SMC for economies with high GDP. To explain the partial effect the study plug in the mean value of GDP to obtain the partial effect. So at the mean value of GDP, the partial effect of

VA on stock market performance is b_1+ b_3 (mean of GDP). That is 0.011+0.064(18.64) = 1.2. This means that one percentage increase in the VA increases stock market performance by 1.2 standard deviations from the mean SMC.

To test whether the coefficient of the interaction term (1.2) is statistical different from zero (0), the study rerun the regression, where the study replace the interaction term (VA× GDP) with the difference between GDP and mean GDP multiply by VA ($(GDP - \overline{GDP})VA$). This gives a new coefficient on VA, the estimated effect GDP=18.64, along with its standard error. Running this new regression gives the standard error of the coefficient $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 1.2$ as 0.472 which yields a t=2.92). Therefore at the average GDP, the study concludes that VA has a statistically significant positive effect on SMC. The variable of interest VA is also positive and significant as expected indicating that higher level of VA are associated with SMC. This outcome indicates that VA is good predictors of stock market development in emerging countries. The VA coefficient of 0.064 is misleading because it does not account for the effect of GDP on VA in explaining variations in SMC.

Test for serial correlation in the error terms with DW reject the null hypothesis at 5% significance level. DW value of 1.364 implies the study have positive serial correlation of the error terms which is normal for time series data. Breusch-Pagan test of a large chi-square value of 47.91 indicates that heteroskedasticity is present. An average VIF for the model shows that the coefficients are relatively stable and that the explanatory variables are moderately correlated.

To improve upon the result the study correct for autocorrelation and heteroskedasticity in the model using FGLS the results are shown column three of Table 13. Comparing the results in Table 13 (column three and two) the study could see improvement the estimated coefficients. The reported standard deviation for column three turns to be relatedly smaller than column two. The partial effect of VA on SMC is described by 0.24 with a standard error of 0.072 which yields a t-statistic of 3.43. It is also established that GDP complement the effect of VA on SMC.

The wald chi-square test is used to test the probability that the correlation coefficients for all the variables included in the models are zero. A large value of wald chi-square of 854.13 indicate that variations in stock market capitalization is explained by the models. At α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with wald chi-square test of probability zero means that the model fit the data set hence the quality of the regression. DW of 1.24 shows the errors are positively serially correlated and Breusch-Pagan test of a large chi-square 49.92 indicate that heteroskedasticity is present.

Even though there are statistical evidence to show that VA and GDP influence SMC the study cannot draw a firm conclusion based on this result because the regression result displayed were based on levels, nonstationary data series and could represent a spurious problem. Due to fact that the variables SMC, GDP and VA are non stationary, the study finds the first difference of the variables. The result of panel unit root test from Table 10 above shows, that the first difference of the variables is stationary. The pearson correlation matrix of first difference of the variables improves the problem of multicolinearity since the correlation coefficients are relatively lower with respect to the variables in levels as shown in appendix 4.

Though there is statistical evidence to show that VA and GDP influence SMC the study cannot draw a firm conclusion based on these results because the regression results displayed were based on level, nonstationary data series and could represent a spurious problem. It is also established in literature that stationary and weakly dependent data is able to correct the effect of serial correlation on goodness of fit measures, R-squared and adjusted R-squared. Due to fact that the variables are non stationary, the study found the first difference of the variables. The result from Table 10 above shows that the first difference of the variables is stationary. Also to circumvent the problem of endogeneity between y_{it} and x_{it} and serial correlation between u_{it} and v_{it}, the DOLS estimator becomes necessary as OLS will be biased and inefficient. The result of DOLS estimation is given in Table 14 column one below.

Table 14 - ***Voice & Accountability and Stock Market Performance (diff)***

Variable	DOLS	Newey-West
ΔGDP	0.334	0.481
	(0.106)	0.148
ΔVA	0.005	0.008
	(0.002)	0.003
ΔVA×ΔGDP	0.003	0.001
	(0.003)	0.000
Obs	614	614
Number groups		
R-squared	0.364	
Adj R-square	0.339	
F(3, 610)		23.61
Prob		0.000
Wald chi2	41.8	
Prob	0.0000	

Dependent variable SMC; * p < 0.1, ** p < 0.05, *** p < 0.01
Source: Field survey, Winful (2016)

With this technique the study accounts for endogeneity problem as well autocorrelation in the model. The partial effect of ΔVA on ΔSMC is still significant and it is expressed by 0.061. By implication 1% increased ΔVA leads to 0.061% increase in ΔSMC given average ΔGDP. The coefficients are moderately stable because of VIF of 2.38. The model rejects the null hypothesis of no serial correlation at 5% significance level.

DW 1.12 shows the errors are positively serially correlated and Breusch-Pagan test of chi-square of 53.42 shows the heteroskedasticity is a problem. Accounting for endogeneity and autocorrelation our result looks more efficient and reliable the reported smaller coefficients and standard errors.

Column one of Table 14 above the study corrects for both serial correction and heteroskedasticity problem in the model Newey West estimation technique. Newey-West standard errors in a time series context are robust to both arbitrary autocorrelation as well as arbitrary heteroskedasticity.

The relationship between ΔVA and ΔSMC is described by a coefficient of 0.008 using Newey-West techniques. There is sufficient evidence that there is linear relationship between ΔVA and ΔSMC. Our study also have sufficient evidence to conclude that there is complementary effect between ΔVA and ΔGDP on SMC. The partial effect of ΔVA on SMC given mean of ΔGDP is expressed by 0.023 with a Newey-West standard error of 0.007 which yield a t-statistic of 3.17. By accounting for the effect of both serial correlation and heteroskedasticity the coefficients of the parameters and their standard error have all reduced making them more realistic and efficient and unbiased. F-value of 23.61 with F-probability of 0.000 implies that the model fits the sample data. The result in column two Table 14 using Newey-West techniques yields stable coefficients as confirmed by VIF of 2.01 for the model. Breusch-Pagan test of small chi-square 0.541 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW of 1.93 shows that the errors are now not serially correlated. As serial correlation and heteroskedasticity are corrected in the model, the problem of different characteristic of emerging economies sampled is neutralized in the model.

Rule of Law

Rule of law is an independent, impartial judiciary; the presumption of innocence; the right to a fair and public trial without undue delay; a rational and proportionate approach to punishment; a strong and independent legal profession; strict protection of confidential communications between lawyer and client; equality of all before the law; these are all fundamental principles of the Rule of Law (IBA, 2009).

To determine and explain the coefficients in model 2 with RL where the study establishes the relationship between explanatory variables (GDP, RL and RL×GDP), the study needs to determine how well the model fits the sample data. The study used three statistics to assess the model's fit. These are standard error of estimates, coefficient of determination, and the F-test of the analysis of variance. If standard error of estimate is large, the model is a poor one. the study judges the value by comparing it to the value of dependent variable, SMC. Since in level model 2 with RL the root MSE is 0.114 is relatively smaller than SMC, it does appear that the standard error of estimate is small hence the model is good fit of the data sample. This result is confirmed by coefficient of determination 0.445. This implies that 55.5% of the variations in SMC are not accounted for by the model as depicted in the result Table 15 below. Average variance inflation factor of 3.7 implies the effect of multicollinearity is minimal on the estimated coefficients. The F-value of 48.15 shows that the model fits well the data set.

Table 15 - ***Rule of Law and Stock Market Performance (Levels)***

Variable	OLS	OLS Rob	FGLS
GDP	0.811	0.811	0.818
	(0.309)	(0.302)	(0.227)
RL	-0.048	-0.048	0.041
	(0.027)	(0.013)	(0.011)
RL×GDP	-0.009	-0.009	0.007
	(0.008)	(0.003)	(0.002)
Constant	2.311	2.311	3.314
	(0.452)	(0.768)	(0.833)
Obs	615	615	615
Number groups			41
R-squared	0.445	0.445	
Adj R-square	0.411		
F value	48.15	48.06	
Prob F	0.000	0.001	
AR(1)			0.7915
Wald chi2			973.36
Prob			0.0001

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Model 2 of Table 15 column one above is the regression where the study determines the relationship between explanatory variables (GDP, RL and RL×GDP) with the dependent variable (SMC) using the variables in levels. The study also test the validity of the regression model 2 by testing whether all parameters are equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of F indicates that most of the variation in stock market capitalization is explained by GDP, RL and RL×GDP. A small value of F indicates that most of the variations in stock market capitalization are unexplained by GDP, RL and RL×GDP. To determine rejection region of α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with F-test of probability of zero means that the model fit the data set and that GDP, RL and RL×GDP are linearly related to stock market capitalization.

The relationship between RL and SMC is expressed by -0.048 with a standard error of 0.027 which yields a t-statistic of -1.78. Even though the sign is not as expected there are no enough evidence to statistical conclude that there is significant linear relationship between them. What account for this is the possible difference in growth rate of emerging economies sampled. The relationship between GDP and SMC is also described by a coefficient of 0.811 with a standard error of 0.309 which yields t-statistic of 2.62. Here there is enough evidence to conclude that there is positive linear relationship and the sign of the coefficient is as expected. The interaction between RL and GDP turn out not to be significant in explaining variability SMC. That is there is no significant evidence to conclude that GDP complement RL in explaining variability in SMC. The sign is also not as expected. Test for the presence of heteroskedasticity using Breusch-Pagan test gave a large chi-square of 34.82 indicating that heteroskedasticity is present. DW test 1.87 shows the errors are not statistically positively serially correlated.

Column two of Table 15 below the study corrects for the problem of heteroskedasticity by estimating robust standard. Our variable of interest is RL and the study control for GDP and the interaction of two explanatory variables. The results shows that the relationship between RL and SMC can be describe by -0.048 with standard error of 0.013 which yields t-statistic of -3.81 assuming all other variables control for in the model is zero (0). This implies that RL has negative effect on stock market performance but there is enough evidence to infer a linear relationship. The relationship between GDP and SMC is also significant. The sign for RL is not as expected but GDP had the expected sign. The coefficient of the interaction term is significant and negative, which implies that GDP compete with RL in explaining the variations in SMC.

Since the interaction term is significant the interpretation of the parameter of RL can be tricky. To determine the statistical significance of the coefficient of the partial effect of RL on SMC the study needs to rerun the regression where the study replaces the interaction variable with GDP less the average GDP multiple by RL. Running this new regression gives the standard error for the partial coefficient -0.216 as 0.168, which yields t = -3.04. The study concludes that RL has statistically significant negative effect on stock market performance. That is 1% enhancement in RL leads to 0.22% reduction in SMC of emerging economies. The sign is not as expected. This finding is counter intuitive.

In the presence of autocorrelated errors, as long as the explanatory variables are strictly exogenous, the OLS estimators are unbiased. A DW test of 0.67 implies the presence of positive autocorrelation in the error term. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause us to accept null hypothesis when it is false. The F probability of 0.000 implies the data fits the model. Breusch-Pagan test of a large chi-square 42.54 indicates that heteroskedasticity is present. The presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. The presence of positive serial correlation also implies that our OLS coefficients are unbiased and consistent but inefficient.

To improve upon our result the study corrects for both heteroskedasticity and serial correlation by using FGLS technique, result is shown in column three of Table 15. This technique confirms that RL, GDP and their interaction are significant in explaining the variations in SMC at 5% significance level. Since GDP influences RL the study estimates the partial effect of RL on SMC. The estimated coefficient of 0.172 with a standard deviation 0.05 yields z statistic of 3.41. Our study now have an improved result where RL is significant and also with the expected sign.

A large value of wald chi-square of 973.36 indicate that variations in stock market capitalization is explained by the models. At α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with wald chi-square -test of probability zero means that the model fit the data set hence the quality of the regression. Test for serial correlation of DW 0.997 and heteroskedasticity test using Breusch-Pagan test which has a chi-square of 53.97 indicate that serial correlation and heteroskedasticity are present in the model. The variance inflation factor of 5.18 shows that the result is not relatively stable as it is close to VIF of 5. Comparing column three with column two of Table 15, our study realizes an improvement in the result. The parameters were overestimated under column two above due to the presence of serial correlation and possible heteroskedasticity problem.

Since the regression has been on the variables in levels and the variables GDP and SMC are non stationary, makes the results inefficient. The first difference makes GDP, RL and SMC stationary. To circumvent the problem of endogeneity and serial correlation the DOLS estimator becomes necessary as OLS and FGLS will be biased and inefficient.

The result of DOLS estimation is given in Table 16 below. From column one of Table 16 it can be established that ΔRL is significant in explaining variations in ΔSMC and the sign also as expected. Interaction variable is also significant confirm that ΔGDP complement ΔRL. The partial effect of ΔRL on ΔSMC expressed as 0.062 with a Newey-West standard error of 0.02 yields a t-statistic of 3.04. That is as RL improves by 1% ΔSMC also increases by 0.062%. The R-squared of 0.357 implies the model is able to explain 35.7% of the variations in ΔSMC. Bresuch-Pagan test (chi-squares 31.87) and DW (0.368) reject the null hypothesis for the two tests. Wald chi2 of probability of 0.000 implies the data set fits the model well.

Table 16 - *Rule of Law and Stock Market Performance (Diff)*

Variable	DOLS	Newey-West
ΔGDP	0.441	0.621
	(0.158)	(0.199)
ΔRL	0.006	0.006
	(0.002)	(0.002)
ΔRL ×ΔGDP	0.003	0.002
	(0.001)	(0.000)
Obs	614	614
Number groups	41	
R-squared	0.357	
Adj R-square	0.349	
F(3, 610)		35.44
Prob		0.000
Wald chi2	57.3	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Since the variables possessed a unit root in their time series representation the study apply Newey-West standard error which is robust to both arbitrary autocorrelation as well as arbitrary heteroskedasticity to make the result more efficient.

The result shows an improvement on the result in column three of Table 15 above. It could be deduced that the coefficients of the parameters are over-estimated and so also is the standard errors. The variable of interest is till significant and the sign is as expected. The relationship between ΔRL and ΔSMC is expressed by 0.006 with a 0.002 Newey-West standard error all other variables constant. The coefficient of 0.043 depicts the partial effect of ΔRL on ΔSMC. By implication 1% improvement in ΔRL assuming an average value of ΔGDP leads to 0.043% increase in ΔSMC. There is enough evidence to conclude that there is linear relationship between ΔRL and ΔSMC at 5% significance level.

It could be deduce from the analysis that as the study correct for heteroskedasticity and serial correlation, the standard errors of the estimates become reasonable smaller, indicating how efficient and reliable the result have become. Breusch-Pagan test with a small chi-square 0.412 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW test (2.012) also shows that the problem of serial correlation of the errors has been corrected. Post estimation test support the result that the model fit the sample data and the result is an efficient and unbiased result as shown in Table 15 column two. Using the first difference of the variables the VIF 1.91 is a confirmation of the reliability of the result.

Regulatory Quality

The regulatory quality defines the capacity for government to formulate and implement sound policies and regulations that permit and promote private sector development. The objective of this section is to test the hypothesis that regulatory quality (RQ) has no effect on stock market performance. To test the validity of the linearity of model 2 in levels with RQ, the study sets all the all parameters to be equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of F test of 48.15 indicates that most of the variation in stock market performance is explained by RQ, GDP and their interaction. Analyses of variance with F-test of probability zero means that the model fit the data set and that gross domestic product and RQ are linearly related to stock market performance. Average variance inflation factor of 3.0 implies the effect of multicollinearity is minimal and the coefficients are relatively stable.

Table 17 - *Regulatory Quality and Stock Market Performance (Level)*

Variable	OLS	OLS Rob	FGLS
GDP	0.948***	0.948***	0.818***
	(0.282)	(0.206)	(0.171)
RQ	0.077	0.077**	0.077***
	(0.103)	(0.015)	(0.023)
RQ×GDP	0.011	0.011*	0.008**
	(0.082)	(0.004)	(0.003)
Constant	7.014***	7.014***	7.274***
	(1.364)	(0.977)	(1.147)
Obs	615	615	615
Number groups			41
R-squared	0.477	0.477	
Adj R-square	0.411		
F value	48.15	57.94	
Prob F	0.000	0.000	
AR(1)			0.8814
Wald chi2			867.77
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Column one of Table 17 above is the regression where the study determines the relationship between explanatory variables (GDP, RQ and RQ×GDP) with the dependent variable (SMC) using the variables in levels. The study also test the validity of the regression model 2 by testing whether all parameters are equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of F indicates that most of the variation in stock market capitalization is explained by GDP, RQ and RQ×GDP. A small value of F indicates that most of the variations in stock market capitalization are unexplained by GDP, RQ and RQ×GDP. To determine rejection region of α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with F-test of probability of zero means that the model fit the data set and that GDP, RQ and RQ×GDP are linearly related to stock market capitalization.

The relationship between RQ and SMC is expressed by 0.077 with a standard error of 0.103 which yields a t-statistic of 0.75. Even though the sign is as expected there are no enough evidence to statistical conclude that there is significant linear relationship between them. The relationship between GDP and SMC is also described by a coefficient of 0.948 with a standard error of 0.282 which yields t-statistic of 3.36. Here there is enough evidence to conclude that there is positive linear relationship and the sign of the coefficient is as expected. The interaction between RQ and GDP turn out not to be significant in explaining variability SMC. That is there is no significant evidence to conclude that GDP complement RQ in explaining variability in SMC. This could be due to differences in characteristic of the sampled economies. Test for the presence of heteroskedasticity using Breusch-Pagan test gave a large chi-square of 43.16 indicating that heteroskedasticity is present.

From column two of Table 17 the study corrects for the problem of heteroskedasticity by estimating robust standard. Our variable of interest is RQ. The result shows that the relationship between RQ and SMC can be describe by 0.077 with standard error of 0.015 which yields t-statistic of 4.17 assuming all other variables control for in the model is zero (0). The sign for RQ is as expected. The coefficient of the interaction term is significant and positive, which implies that GDP complement RQ in explaining the variations in SMC.

The coefficient of the partial effect of RQ on SMC is expressed by 0.22 with a standard error of 0.063 which yields t-statistic of 3.48. Therefore at the average GDP, our study concludes that RQ has statistically significant positive effect on SMC at 5% significant level. That is 1% enhancement in RQ leads to 0.063% increase in SMC of emerging economies. The sign is as expected.

Durbin-Watson test of 0.614 implies the presence of positive autocorrelation in the error term providing evidence on the non-stationarity of the data series and affirming the need to make them stationary. Breusch-Pagan test with a chi-square value of 34.19 is large, indicating heteroskedasticity is a problem.

Just like the result of other elements of IQ discussed above, due the presence of positive serial correlation OLS coefficients will be unbiased and consistent but inefficient. To improve upon our results the study rerun using FGLS estimating technique correcting for both heteroskedasticity and serial correlation in model and the results are shown in column three of Table 17 above.

Our study confirm that RQ, GDP and its interaction are significant in explaining the variations in SMC. Since GDP influences RQ the study estimates the partial effect of RQ on SMC which gives estimated coefficient of 0.226 with a standard deviation 0.0769 yields z statistic of 2.94. The study now have an improved results where RQ is significant and with the expected sign. Wald chi-square value of 867.77 and p-value of 0.000 implies the model fits the data set. DW of 0.692 implies that serial correlation of the error term is a problem. Breusch-Pagan test of 41.95 also implies that heteroskadicity is also a problem. Comparatively column three is more improved result than column two of Table 17. The parameters were overestimated under column two due to the presence of serial correlation and heteroskedasticity.

Since the regression has been on the variables in levels and the variables GDP and SMC are non stationary, makes the results inefficient. The first difference makes GDP, RQ and SMC stationary. To circumvent the problem of endogeneity and serial correlation the DOLS estimator becomes necessary as it gives unbiased and efficient result.

Table 18 - ***Regulatory Quality and Stock Market Capitalization (Diff)***

Variable	DOLS	Newey-West
ΔGDP	0.748***	0.413**
	(0.198)	(0.140)
ΔRQ	0.071***	0.005**
	(0.023)	(0.002)
ΔRQ ×ΔGDP	0.008**	0.001*
	(0.003)	(0.000)
Obs	614	614
Number groups		
R-squared	0.394	
Adj R-square	0.389	
F(3, 610)		35.44
Prob		0.000
Wald chi2	53.7	
Prob	0.001	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

To avoid the problem of endogeneity and serial correlation, the DOLS estimator becomes necessary as OLS and FGLS will be biased and inefficient. The result of DOLS estimation is given in column one of Table 18 above. The result shows that ΔRQ is significant in explaining variations in ΔSMC and the sign also as expected. Interaction variable is also significant confirms that ΔGDP complement ΔRQ. It is also established that ΔGDP complement the effect of ΔRQ on ΔSMC. The partial effect of ΔRQ on ΔSMC expressed as 0.22 with a Newey-West standard error of 0.072 yields a t-statistic of 3.06. That is as ΔRQ improves by 1% ΔSMC also increases by 0.22%. The R-squared of 0.394 implies the model is able to explain 39.4% of the variations in ΔSMC.

With DW test of 1.21 the study reject that the errors are serial correlated. Wald chi-square value of 53.7 and a probability of 0.001 imply the data set fits the model well. Breusch-Pagan test chi-square of 45.91 rejects the null hypothesis of homoskedasticity. VIF of 3.91 shows that the coefficients from the model are all moderately stable.

Using Newey West technique the study corrects for both heteroskedasticity and serial correlation in the model using the variables in their first difference to make the result more efficient.

Comparing the result from column three of Table 17 with column one if Table 18 the study sees improvement in the result. The variables of interest are still significant and the signs are as expected as shown in Table 18 above. From the result 1% increase in ΔRQ assuming an average value of ΔGDP leads to 0.024% increase in ΔSMC. There is enough evidence to conclude that there is linear relationship between ΔRQ and ΔSMC. This is an improvement of the overestimated coefficients in the earlier two techniques.

F-value of 35.44 with a p-value of 0.000, points to the fact that the model fits the data set well. The VIF 1.79 support that the coefficients are stable and reliable. Breusch-Pagan test of a small chi-square 0.718 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW also of 2.01 implies the residuals are not serially correlated.

Political Stability

This indicator addresses those factors which undermine political stability such as conflicts of ethnic, religious, and regional nature, violent actions by underground political organizations, violent social conflicts, and external public security. To test the validity of the linearity of model 2 with PA, the study sets all the parameters, be equal to zero. All the parameters estimated in the model were equal to zero (0) which implies the model is valid and fits well the data. Average variance inflation factor of 4.4 implies the effect of multicollinearity is high which indication that the estimated coefficients are relatively not stable. A large value of F-statistic of 53.25 indicates that most of the variation in stock market capitalization is explained by GDP, PS and PS×GDP as shown in column one of Table 19 below.

Table 19 - *Political Stability and Stock Market Performance (Levels)*

Variable	OLS	OLS Rob	FGLS
GDP	0.922***	0.922***	0.811***
	(0.118)	(0.193)	(0.264)
PS	0.082	0.082**	0.026***
	(0.057)	(0.039)	(0.009)
PS×GDP	0.009	0.009***	0.009***
	(0.023)	(0.002)	(0.003)
Constant	12.744***	12.744***	8.311***
	(1.264)	(2.100)	(1.703)
Obs	615	615	615
Number groups			41
R-squared	0.541	0.541	
Adj R-square	0.411		
F value	53.25	49.14	
Prob F	0.000	0.000	
AR(1)			0.8954
Wald chi2			887.92
Prob			0.0001

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The relationship between PS and SMC is expressed by 0.082 with a standard error of 0.057 which yields a t-statistic of 1.44. This implies there is not enough evidence to reject the null hypothesis that there is no statistical positive linear relationship between them. The relationship between GDP and SMC is also described by a coefficient of 0.922 with a standard error of 0.811 yields a t-statistic of 7.81. Here there is enough evidence to reject the null hypothesis of no significant relationship. The interaction between PS and GDP turn out not to be significant in explaining variability SMC. That is there is no significant evidence to conclude that GDP complement PS in explaining variability in SMC. The model is able to explain 54.1% of the variations in SMC. A large chi-square value of 34.82 from Breusch-Pagan test shows that heteroskedasticity is a problem in the model. DW of 1.412 implies that serial correlation of the error term is a problem.

The study correct for problem heteroskedasticity and the result is as shown in column two of Table 19. The result shows that the relationship between PS and SMC can be describe by 0.082 with standard error of 0.039 which yields t-statistic of 2.12 assuming all other variables control for in the model is zero (0). This implies that PS has positive effect on SMC but there is not enough evidence to infer a linear relationship at 5% significant level. The coefficient of the interaction term is significant and positive indicating a complementary of GDP to PS in explaining variations SMC.

The partial effect of PS is described by coefficient 0.25 and significant all the traditional significant level. That is 1% enhancement in PS leads to 0.25% increase in SMC of emerging economies. The sign is as expected.

A DW test of 0.971 implies the presence of positive autocorrelation in the error term. That is the error covariances are not zero (0) and this will overestimate the variance of the parameters in the model and also can cause us to accept null hypothesis when it is false. In effect, Durbin-Watson test indicated presence of high positive serial correlations in the regression residuals at level, providing further evidence on the non-stationarity of the data series and affirming the need to make them stationary. Breusch-Pagan test of large chi-square 39.48 implies that heteroskedasticity is probably a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. The F probability of 0.000 implies the data fits the model.

The presence of positive serial correlation and heteroskedasticity implies that our OLS coefficients are still unbiased and consistent but inefficient. This implies that forecasts inefficient, variances of coefficients biased, tests are invalid and R^2 overestimate the fit, indicating a better fit than actually present, and t values imply significance when in essence insignificant coefficients.

To improve upon our result the study adopts GLS estimating technique. Generalized least squares (GLS) allow models to correct for heteroskedasticity and serial correlation and the results are shown in column three of Table 19. This technique confirms that PS, GDP and their interaction are significant in explaining the variations in SMC. By this the study rejects our null hypothesis that PS has no significant linear relationship with SMC. Since GDP influences PS the study estimates the partial effect of PS on SMC. The estimated coefficient of 0.194 with a standard deviation 0.065 yields z statistic of 2.99. Comparing column two and three of Table 19, the study realized that the parameters were overestimated under column two is due to the presence of serial correlation and heteroskedasticity. DW 0.974 and test Breusch-Pagan test of large chi-square of 39.48 implies that heteroskedasticity and serial correlation of the error term is still a problem. Wald chi-square value of 887.92 and p-value of 0.001 implies the model fits the data set.

Test for unit root of GDP, PS and SMC reject the null hypothesis that the variables are stationary. The test for unit root in first difference of the variables was stationary. That is the study fails to reject unit root of the variables in their first difference. The study rerun the regression using dynamic OLS to circumvent the problem of endogeneity as well as serial correlation.

With DOLS ΔPS is significant in explaining variations in ΔSMC and the sign also as expected. Interaction variable is also significant confirm that ΔGDP complement ΔPS. The partial effect of ΔPS on ΔSMC expressed as 0.08 with a Newey-West standard error of 0.026 yields a t-statistic of 3.11. That is as ΔPS improves by 1% ΔSMC also increases by 0.08% given average ΔGDP. The R-squared of 0.481 implies the model is able to explain 48.1% of the variations in ΔSMC. A DW test of 1.08 the study rejects the null hypothesis that the errors are serial correlated. Breusch-Pagan test of large chi-square 47.13 implies that heteroskedasticity is probably a problem. Wald chi-square of probability of 0.000 implies the data set fits the model well. Test of multicollinearity using VIF of 2.09 shows that the model estimated coefficients are relatively stable. Comparing the result from column three of Table 19 with column one of Table 20, the study realizes an improvement the result as depicted by the relatively lower coefficient values and Newey-West standard errors for the parameters of interest.

Table 20 - *Political Stability and Stock Market Performance (Diff)*

Variable	DOLS	Newey-West
ΔGDP	0.309**	0.301**
	(0.110)	(0.103)
ΔPS	0.005**	0.004**
	(0.002)	(0.001)
ΔPS ×ΔGDP	0.004***	0.003*
	(0.001)	(0.002)
Obs	614	614
Number groups	41	
R-squared	0.481	
Adj R-square	0.477	
F(3, 610)		35.44
Prob		0.000
Wald chi2	39.8	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The study correct for the problem of serial correlation and heteroskedasticity in the model using Newey-West technique to make the result more efficient and reliable as shown in column two of Table 20.

With the first difference of the variables of interest the study determines whether the variables are linearly related to ΔSMC using Newey-West technique to control for both heteroskedasticity and serial correlation. The result is as given in column two of Table 20 above. The result in the table improves the earlier result. The variables of interest are still significant and the signs are as expected. The result confirms that there is enough evidence to conclude that there is a linear relationship between ΔPS and ΔSMC and this relationship is expressed by 0.004. It was again established that ΔGDP complement the effect of ΔPS on ΔSMC. The partial effect of ΔPS on ΔSMC is described by 0.06 with Newey-West standard error of 0.021 which yields a t-statistic of 2.91.

An F-value of 35.44 with probability of 0.000 implies the model fits the model fits the data set. An average VIF of 1.09 for the model shows how the coefficients of the model are stable. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A small chi-square 0.228 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW of 1.99 also implies the errors are not serially correlated.

Government Effectiveness

Government effectiveness measures the quality of public services and policy formulation and implementation, and thus indicates the credibility of the government's commitment to such policies. Our study examined the effect of GE and GDP on stock market performance (SMC) of emerging economies. To test the validity of the linearity of model 2 with GE, the study sets all the parameters, be equal to zero. A large value of F indicates that most of the variation in stock market capitalization is explained by GDP, GE and GE×GDP. *This implies the* model is valid and fits well the data. Average variance inflation factor of 4.7 implies the effect of multicollinearity is high which indication that the estimated coefficients are relatively not stable. A large value of F-statistic of 48.21 indicates that most of the variation in stock market capitalization is explained by GDP, GE and GE×GDP. The model is able to explain 41.1% of the variation in SMC as depicted in column one of Table 21 below.

Table 21 - ***Government Effectiveness and Stock Market Performance (Level)***

Variable	OLS	OLS Rob	FGLS
GDP	0.921***	0.921***	0.711***
	(0.238)	(0.236)	(0.202)
GE	0.011	0.011***	0.009***
	(0.009)	(0.002)	(0.003)
GE×GDP	0.009	0.009***	0.007***
	(0.007)	(0.003)	(0.002)
Constant	11.028***	11.028***	7.048***
	(2.864)	(3.206)	(1.377)
Obs	615	615	615
Number groups			41
R-squared	0.445	0.445	
Adj R-square	0.411		
F value	48.21	48.14	
Prob F	0.000	0.000	
AR(1)			0.8814
Wald chi2			972.06
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The relationship between explanatory variables (GDP, GE and GE×GDP) with the dependent variable (SMC) using the variables in levels. To determine rejection region of α 5%, there is a great deal of evidence to infer that the model is valid. The relationship between GE and SMC is expressed by 0.011 with a standard error of 0.009 which yields a t-statistic of 1.22. To test the statistical significance of the linear relationship, the study found out that there is not enough evidence to reject the null hypothesis no relationship between GE and SMC. The relationship between GDP and SMC is also described by a coefficient of 0.921 with a standard error of 0.238. At 5% significant level the study rejects the null hypothesis that there is significant relationship between GDP and SMC. The signs are all as expected. The interaction between GE and GDP turn out not to be significant in explaining variability in SMC. That is there is no significant evidence to conclude that GDP complement GE in explaining variability in SMC. Breusch-Pagan test of a large chi-square value of 34.82 indicate that heteroskedasticity is present. A DW test of 1.13 the study rejects the null hypothesis that the errors are serial correlated.

In column two above the study corrects for problem of heteroskedasticity by computing robust standard error. The result shows that there is enough evidence to conclude that there is linear relationship described by 0.011 between GE and SMC assuming that GDP is constant. The study also establishes that there is complementary relationship between GE and GDP to SMC, making the coefficient of GE of 0.011 misleading. To determine the effect of GE the study calculates the partial effect of GE given the average GDP of 18.64 is described by 0.179 with a robust standard error 0.067 which yields a t-statistic of 2.66.

With the F-statistic of 48.14 which yields F-probability of 0.000 the study presents that the model fit data. DW test of 0.719 for serial correlation and Breusch-Pagan test of chi-square of 49.17 for heteroskedasticity reject the null hypothesis for the two tests at 5% significant level.

To improve upon the result the study corrects for the presence of autocorrelation and heteroskedasticity in the model using FGLS. The result as depicted in column three Table 21 above confirms that GDP complement the effect of GE on SMC and this is described by 0.007 with a standard error of 0.002. The partial effect GE on SMC is expressed by 0.139 at 5% significance level is an improvement on the overestimated OLS result as shown in column two of Table 21. Using FGLS it again established that GDP complement the effect of GE on SMC which is expressed by 0.007 with a standard error of 0.002. DW test of 0.218 for serial correlation and Breusch-Pagan test of chi-square of 36.84 for heteroskedasticity reject the null hypothesis for the two tests at 5% significant level. A wald chi-square value of 972.06 which yields p-value of 0.000 means the model fits well the data set.

To account for the nonstationarity of the variables in the model as shown in Table 10 above the study takes the first difference of the variables which make all the variables stationary. The study then controls for the problem of endogeneity by running the regression with DOLS technique. The result established that the linear relationship between ΔGE and ΔSMC can be described by 0.006 with a standard error of 0.003. There is enough evidence to conclude that there exist a linear relationship between ΔGE and ΔSMC given that other explanatory variables in model are constant.

The relationship between the interaction variable in model and ΔSMC is also expressed by 0.005 with a standard error of 0.002 as shown in column one of Table 22 below. This implies that ΔGDP complements the effect ΔGE on ΔSMC. Since the interaction variable is significant the explaining of ΔGE assuming ΔGDP is zero is unrealistic. This is because zero ΔGDP is not in the range of ΔGDP data in the sample. The partial effect of ΔGE assuming average ΔGDP is expressed by 0.16 with a Newey-West standard error of 0.054.

Table 22 - ***Government Effectiveness and Stock Market Performance (Diff)***

Variable	DOLS	Newey-West
ΔGDP	0.483***	0.409***
	(0.139)	(0.148)
ΔGE	0.006*	0.004**
	(0.003)	(0.001)
ΔGE ×ΔGDP	0.005**	0.002**
	(0.002)	(0.001)
Obs	614	614
Number groups	41	
R-squared	0.367	
Adj R-square	0.363	
F(3, 610)		44.16
Prob		0.001
Wald chi2	46.4	
Prob	0.000	

Dependent variable SMC; * p < 0.1, ** p < 0.05, *** p < 0.01
Source: Field survey, Winful (2016)

Controlling for the effect of endogeneity and autocorrelation the result is much better than the FGLS result above. The study rejects the null hypothesis that the errors are not serial correlated with DW test of 0.397. With Breusch-Pagan test of chi-square of 38.09 the study also rejects the null hypothesis of homoskedasticity. Wald chi-square value 46.4 with probability of 0.000 shows that the data set fits the model well.

In column two above the study establishes the relationship between ΔGE and ΔSMC by correcting for both heteroskedasticity and serial correlation using Newey-West technique. The result in the table improves the earlier result. The variables of interest are still significant and the signs are as expected. The result confirms that there is enough evidence to conclude that there is a linear relationship between ΔGE and ΔSMC and this relationship is expressed by 0.004. There is also enough evidence to conclude that GDP complement GE on the effect on ΔSMC.

The partial effect of ΔGE on ΔSMC is described by 0.041 with Newey-West standard error of 0.013 which yields a t-statistic of 3.13. From the result above 1% increase in ΔGE assuming an average value of ΔGDP leads to 0.031% increase in ΔSMC. There is enough evidence to conclude that there is linear relationship between ΔGE and ΔSMC. An F probability of 0.000 proves that the results are reliable and efficient. An average VIF of less than five (< 5) for the model implies that the study concludes that the multicollinearity is minimized hence all the estimated coefficients in models are relatively stable. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A small chi-square 0.196 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. Serial correlation test with DW of 1.97 implies the errors of the model are not serially correlated. These findings are consistent with Ali (2011) and Yartey (2008).

Institutional Quality

The measurement of institution quality (IQ) is the average of CC, VA, RL, RQ, PS and GE. To test the validity of the linearity of the model the study sets all the parameters, to be equal to zero. That is whether GDP, institutional quality (IQ) and the interaction of IQ and GDP are linearly related to SMC. A large value of F-statistic of 43.26 indicates that most of the variation in stock market capitalization is explained by GDP, IQ and IQ×GDP. Model 2 of Table 23 column one is the regression where the study determines the relationship between explanatory variables (GDP, IQ and IQ×GDP) with the dependent variable (SMC) using OLS technique.

Table 23 - ***Institutional Quality and Stock Market Performance (Level)***

Variable	OLS	OLS Rob	FGLS
GDP	0.973***	0.973***	0.716***
	(0.274)	(0.218)	(0.182)
IQ	-0.792*	-0.792	0.194**
	(0.361)	(0.472)	(0.063)
IQ×GDP	0.015	0.015**	0.017***
	(0.024)	(0.005)	(0.005)
Constant	18.681***	18.681***	-6.137***
	(1.563)	(1.903)	(1.258)
Obs	615	615	615
Number groups			41
R-squared	0.476	0.476	
Adj R-square	0.411		
F value	43.26	83.97	
Prob F	0.000	0.000	
AR(1)			0.8644
Wald chi2			784.34
Prob			0.0001

Dependent variable SMC; * p < 0.1, ** p < 0.05, *** p < 0.01
Source: Field survey, Winful (2016)

The relationship between IQ and SMC is expressed by -0.792 with a standard error of 0.361 which yields a t-statistic of -2.19. The relationship between GDP and SMC is also described by a coefficient of 0.973 with a standard error of 0.274. For both variables there is enough even to conclude that there is significant linear relationship between them and SMC. The sign for the parameter of GDP is as expected but that of IQ is not expected. The interaction between IQ and GDP turn out not to be significant in explaining variability SMC. That is there is no significant evidence to conclude that GDP complement IQ in explaining variability in SMC.

Table 23 column two correct for heteroskedasticity problem by using robust standard errors. The result shows that the relationship between IQ and stock market performance can be describe by -0.792 with standard error of 0.472 which yields t-statistic of -1.68 assuming all other variables control for in the model is zero (0). This implies that IQ has negative effect on stock market performance but there is not enough evidence to infer a linear relationship. The relationship between GDP and stock market performance is also described by 0.973 with a standard error of 0.218 which yields t-test of 4.47 all other things being equal. The sign for IQ is not as expected but GDP had the expected sign. The coefficient of the interaction term is significant and positive, which implies that GDP complement IQ in explaining the variations in SMC. The partial effect of IQ on SMC is the complementary effect of 0.015. A DW test of 1.27 the study rejects the null hypothesis that the errors are serial correlated. Breusch-Pagan test of a large chi-square of 52.33 indicate that heteroskedasticity is present in the model.

As long as the explanatory variables are strictly exogenous, the OLS estimators are unbiased in the presence of autocorrelated errors. This is analogous to our results in the case of heteroskedasticity, where the presence of heteroskedasticity alone does not cause bias or inconsistency in the OLS point estimates. However, following that parallel argument, the study is concern with the properties of our interval estimates and hypothesis tests in the presence of autocorrelation. A DW test of 1.28 implies the presence of positive autocorrelation in the error term. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause us to reject null hypothesis when it is true. The presence of positive serial correlation implies that our OLS coefficients are still unbiased and consistent but inefficient because there is no lagged dependent variable (SMC) on the RHS as an explanatory variable. Forecasts inefficient, variances of coefficients biased and tests are invalid and R^2 overestimate the fit, indicating a better fit than actually present, and t values imply significance when in essence insignificant coefficients. Breusch-Pagan chi-square of 43.75 shows that heteroskedasticity is a probable problem. The F probability of 0.000 implies the data fits the model with an average VIF of 4.86, shows that the coefficients of the model are relatively unstable.

To improve upon our result our study runs OLS correcting for both serial correlation and heteroskedasticity by using FGLS estimating technique, the result presented in column three of Table 23. This technique also confirms that IQ, GDP and its interaction are significant in explaining the variations in SMC. Since GDP influences IQ the study estimates the partial effect of IQ on SMC. The estimated coefficient of 0.511 with a standard deviation 0.150 yields z statistic of 3.41. The study now have an improved results where IQ is significant and also with the expected sign. The improvement is seen in the reduce standard errors and coefficient values. Wald chi-square value of 784.34 and p-value of 0.000 implies the model fits the data set.

A DW test of 1.34 and Breusch-Pagan test of 47.7 means that our study have problem with the serial correlation and heteroskedasticity. This gives evidence that the data may not be stationary as shown in Table 10 above. However, since the regression has been on the variables in levels and the variables GDP, IQ and SMC are non stationary, makes the results inefficient. The first difference makes these variables GDP, IQ and SMC stationary and the study rerun the regression using DOLS gives the result in column one of Table 24 below.

Stationarity is important for estimation. Applying least squares regressions on nonstationary variables can give misleading parameter estimates of the relationships between variables. It also enables us to make an accurate prediction in forecasting the effect of the explanatory variables on the stock market performance. Using DOLS the study corrects for serial correlation and endogeneity using the variables in levels. The result confirms that there is enough evidence to conclude a linear relationship between ΔIQ and ΔSMC. The relationship is expressed by 0.009 with a Newey-West standard error of 0.003 which yields a t-statistic of 3.41. The interaction effect also shows that ΔGDP complements ΔIQ.

Table 24 - *Institutional Quality and Stock Market Performance (Diff)*

Variable	DOLS	Newey-West
ΔGDP	0.708***	0.423***
	(0.198)	(0.158)
ΔIQ	0.009***	0.005**
	(0.003)	(0.002)
ΔIQ ×ΔGDP	0.004*	0.003**
	(0.002)	(0.001)
Obs	614	614
Number groups	41	
R-squared	0.387	
Adj R-square	0.373	
F(3, 610)		44.16
Prob		0.001
Wald chi2	57.5	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

To determine the statistical significance of the coefficient of the partial effect of ΔIQ on stock market capitalization the study needs to rerun the regression where the study replace the interaction variable with gross domestic product less the average gross domestic product multiple by ΔIQ. Running this new regression gives the standard error for $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 0.084$ as 0.028, which yields $t = 3.01$. Therefore at the average gross domestic product, the study concludes that ΔIQ has statistically significant positive effect on stock market performance. That is 1% enhancement in ΔIQ leads to 0.0.084% increase in ΔSMC of emerging economies. The study realizes that accounting for endogeneity and serial correlation the result has become more efficient and reliable. These finding confirms the work of Clark (2003) and Ngugi (2003). The R-squared of 0.387 implies the model is able to explain 39% of the variations in ΔSMC.

DW test of 0.918 gives an indication of the presence of serial correlation. The study rejects null hypothesis and conclude that the errors have first-order autocorrelation. Test for the presence of heteroskedasticity in the model with

Breusch-Pagan test of chi-square of 43.95 given evidence of heteroskedasticity in the errors. The wald chi-square test is used to test the probability that the correlation coefficients for all the variables included in the models are zero. The study test the validity of the regression model by testing whether all parameters in each model are all equal to zero. If at least one of the parameters is not equal to zero (0), the model does have some validity. A large value of wald chi-square of 57.5 indicate that variations in stock market capitalization is explained by the models. At α 5%, there is a great deal of evidence to infer that the model is valid. Analyses of variance with wald chi-square -test of probability zero means that the model fit the data set hence the quality of the regression. A VIF of 3.1 means that multicollinearity is moderate and hence the coefficients are relatively stable. Severe multicollinearity is problematic because it can increase the variance of the regression coefficients, making them unstable.

In Table 24 column two above presents the relationship between ΔIQ and ΔSMC by correcting for both heteroskedasticity and serial correlation using Newey-West technique. The variables in the model are significant and the signs are as expected. The result confirms that there is enough evidence to conclude that there is a linear relationship between ΔIQ and ΔSMC and this relationship is expressed by 0.005 assuming all other variables in the model are constant. There is also enough evidence to conclude that ΔGDP complement ΔIQ on the effect on ΔSMC. The partial effect of ΔIQ on ΔSMC is described by 0.061 with Newey-West standard error of 0.021 which yields a t-statistic of 2.91.

Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A small chi-square 0.135 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW test of 2.08 also implies that serial correlation is not a problem. This result confirms the assertion posed by Igbokwe (2008) and consistent with the work of Abdul-Qadir (2013) and Hooper et al. (2009). Thus countries that have an efficient institutional quality should expect improvements in their stock market performance dynamics. Risk-averse investors would not invest in countries that are not mean-variance efficient. The results indirectly support the view that the ΔIQ reduces both transaction and agency cost, which maximize shareholder return.

Conclusion

Asset prices response to economic news. Daily experience seems to support the view that individual asset prices are influenced by a wide variety of unanticipated events and that some events have a more pervasive effect on asset prices than do others. The contribution of this thesis can be seen in two main areas.

Policy directions have been provided to Ministries of Finance and Education, Securities and Exchange Commission (SEC) and other stakeholders including investors and other financial institutions. The policy recommendation are that emerging economies must follow a parallel policy agenda of improving the quality of their institutions and Labor force. SEC like watchdog agency for securities markets, can be borrowed wholesale from those countries that have already learned how to regulate these markets by their own trial and error. As recommended by OECD's, governments should promote unbiased, fair and coordinated financial education. Financial education should be seen in the improvement of education in general. Also, policy makers have to maintain reasonable fiscal and monetary discipline order to increase the demand for credit to the private sector, and subsequently influence the stock market development.

The methodology used in testing the hypotheses validates the relationship between education, institutional quality and macroeconomic variables on stock market performance. Using interactive variables in the model makes it possible to determine the actual effect of the variables on stock market performance.

CHAPTER SEVEN: MACROECONOMIC VARIABLES AND STOCK MARKET DEVELOPMENT

Introduction

In this empirical chapter, the empirical chapter sought to investigate the relationship between macroeconomic variables, namely Consumer Price Index, Money Supply, gross domestic product and stock market capitalization of emerging markets during the period 1996 to 2011. The chapter also covers descriptive statistics as well the possible relationship between the variables of interest and stock market performance. Conclusion is drawn on the relationship.

Data Sources

The data sets ranged for the same period 1996-2011 and that make the data for study valid. Soundness of data requires that all data sets fall within the same range as well as that the numeric should be digits hence the correctness and reasonableness of the data. The data was obtained from credible sources including World Development Indicators (WDI), the Emerging Market Data Base (EMDB) of the International Finance Corporation (IFC) and local stock.

Our original intention was to cover all emerging market, but given that some countries have not yet established stock markets and other countries established stock markets only in the past couple of years for instance United Arab Emirates, the sample countries included only 41 countries. Data were available for a uniform period for each country.

Descriptive Analysis of Data

Table 25 below summarizes the basic statistical features of the data under consideration. They including the mean, the minimum and maximum values, standard deviation, kurtosis, skewness, and the Jarque-Bera test for the data in their levels. The data revealed that gross domestic product (billions of dollars) varied mostly followed by Consumer Price Index, Money Supply (millions of dollars). Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. The mean value of MS for the emerging markets sampled for this thesis is 1.41E+08 million dollars with a standard deviation of 1.21E+09 million of dollars. This implies the changes in MS in emerging markets are very volatile with a minimum increase of 2761.33 to a maximum of 1.08E+10 million dollars over period under investigation.

Table 25 - *Descriptive analysis of the variables*

	Obs	Mean	Std	Min	Max	skewness	kurtosis	prob
SMC	615	391.27	294.24	33.1	1089.2	0.578	2.983	0.001
MS (mil $)	615	1.41E+08	1.21E+09	2761.33	1.08E+10	0.664	2.331	0.001
CPI	615	114.98	18.18	98.2	214.7	0.598	2.291	0.000
GDP	615	18.64	12.46	6.12	26.13	0.654	2.394	0.000

Source: Field survey, Winful (2016)

In general, the precise evaluation of the normal distribution is given by the values of Skewness and Kurtosis. The Skewness shows the amount and direction of skew (departure from horizontal symmetry), while the Kurtosis shows how tall and sharp the central peak, relative to a standard bell curve. Table 25 above also shows that most of the variables skewed positively, which means that there is a lack of symmetry in other word there is a deviation from symmetry of the distribution of data set. That is to say the large positive change is more common than large negative change in the variables.

Regarding peakness, the Table 25 above shows that the excess kurtosis is larger than 3 for SMC hence the observed distribution has higher peak compared to the normal distribution. These suggest that the distributions of the variables are leptokurtic i.e. non-normal. The data set are not exactly normally distributed since their respective mean, mode and median are not exactly the same, but the data was sufficiently appropriate for the purpose of the study. The mode values were not shown in the Table 25 above due to space. To confirm the accuracy of the normality assumption, JB statistics and the equivalent p-values were used to draw our conclusion. The findings indicated that all variables are rejected at 1%.

Table 25 above revealed that all the variables possess the state of normal distribution, except $SMC_{i,t}$ and $GDP_{i,t}$ which are moderately skewed to the right. $SMC_{i,t}$ has kurtosis value of more than three, and the series is called leptokurtic. As for the remaining variables, the values of kurtosis are less than three, and the series are called platykurtic, see Bulmer, (1965). The study results revealed that the volatility of the variables measured by the standard deviation is high for GDP and Consumer Price Index. To confirm the accuracy of the normality assumption, JB statistics and the equivalent p-values were used to draw conclusiond. The findings indicated that all variables are rejected at 1%, except for Consumer Price Index.

Results and Discussion

a) Correlation analysis

Although this thesis cannot comment on causation, the results reported in Table 26 below reveal information on the strength of the relationships connecting the four macroeconomic variables. It shows a significant positive relationship between stock market capitalization and Money Supply and a negative correlation between Consumer Price Index. These results support the inclusion of these macroeconomic variables in our analysis.

Levine and Zervos (1998) established that measures of stock market development are positively correlated with measures of financial intermediary development. This chapter examine if this complementary relationship exist in emerging economies. Data permitting, this thesis average the data over the period 1996-2011 so that each country has one observation per variable. The computed correlation between stock market development (measured by market capitalization) and all the other explanatory variables for this empirical chapter is shown in Table 26 below.

The correlation analysis reveals that the data sets are highly correlated with each other. $MS_{i,t}$ is highly correlated with both $CPI_{i,t}$. $GDP_{i,t}$ is also found to be highly correlated with $CPI_{i,t}$. Our finding confirms the work of Demirguc-Kunt and Levine (1996b). The financial intermediary development and stock market development are complements rather than substitutes. In general, the data sets are highly correlated meaning a change of one of the variable would result to a substantial change on the other variables which is expected for such macro-economic variables.

Table 26 - *Correlation of macroeconomic variables and SMC (levels)*

	SMC	MS	CPI	GDP	MS×GDP	CPI×GDP
SMC	1.00					
MS	0.531**	1.00				
CPI	-0.454**	0.657	1.00			
GDP	-0.581**	-0.546**	-0.683*	1.00		
MS×GDP	0.507*	0.463	0.647*	0.611	1.00	
CPI×GDP	-0.423*	0.558*	-0.523*	-0.547	0.641	1.00

*, **, *** Correlation is significant at 1%, 5% and 10% level respectively (2-tailed).
Source: Field survey, Winful (2016)

b) Regression Analyses and Hypothesis Testing

However, before the regression analysis, this chapter sought to establish the trend of the four data sets in order to establish the trend of the involved macro-economic variables.

For the heterogeneity across the countries and heterogeneous serial correlation structure of error term, three different panel unit root tests were employed. The research considers three statistical tests for testing if each series in each panel are integrated of order one, otherwise known as stationarity test. These tests are Levin, Lin and Chu (2002) test, Im, Pesaran and Shin(2003) test and Hadri (2000) test for stationarity.

The LLC test is employed to test the stationarity of the panel for it allows heterogeneity of individual deterministic effects and heterogeneous serial correlation structure of the error terms assuming homogeneous first order autoregressive parameters (Chiawa and Asare 2009). LLC model tests the null hypothesis of the presence of unit roots against alternative of stationarity. Im, Persan and Shin (2003) broadened the LLC test by presenting a more flexible and computationally simple test structure. The IPS test made the estimation for each of the 'i' sections possible. IPS tests the null hypothesis of unit root against heterogeneous alternative hypotheses which specify that some series in the panel are non stationary. Hadri (2000) test is distinctive from other two tests mentioned above for testing the absence of unit roots, i.e. variance of the random walk equals to zero. He proposes a parameterization which provides an adequate representation of both stationary and non stationary variables and permits an easy formulation for a residual based Lagrange-Multiplier (LM) test of stationarity. Here, it is assumed that the time series for each cross-sectional unit is stationary around a deterministic level or trend, against the alternative hypothesis of a unit root.

The results of panel unit root tests for each variable in the panel at level and at first difference are presented in Table 27. The results show that all the panels contain unit roots at level. However, at a first differenced of the variables, the panels are said to be stationary, though there may be possibility of non stationary series in a stationary panel as the panel unit root test will not identify the particular series that is not stationary. This is only drawback of the panel unit root test, nevertheless stronger and higher degree of power is gained in panel setting than in the usual single cross-sectional setting. This is as a result of the combination of information from time series and cross-sectional data which leads to improvement of power of test (Im, Pesaran and Shin, 2003). The tests are conducted in two folds. First, carried out with the inclusion of individual effects followed by the inclusion of individual effect plus deterministic time. The results show that some of the panels contain unit root only at the inclusion of time trend while others confirm the presence of unit root at both levels of testing. All the variables are tested at 5% level of significance and the p –values displayed with their corresponding t- statistic in parenthesis.

The results from these three tests provide support for treating all the individual series as non-stationary in their levels but stationary in their first differences.

In order to establish whether there exists a relationship between stock markets performance of emerging economies and macroeconomic variables, a regression analysis is conducted where the stock market performance is regressed against the four predictor variables; Gross Domestic Product (GDP), Consumer Price Index (CPI) and Money Supply (M2).

Table 27 - ***Results of the Panel Unit Root Test (C)***

Variable	LLC Test		IPS Test		Hadri Test	
	NT	T	NT	T	NT	T
SMC	0.031 (4.53)	0.178 (6.51)	0.328 (0.426)	0.327 (0.457)	0.000 (12.177	0.0304 (1.584)
ΔSMC	0.0000 (4.866)	0.0115 (2.431)	0.0000 (5.481)	0.0000 (4.047)	0.276 (0.577)	0.1754 (0.781)
GDP	0.047 (1.571)	0.048 (1.141)	0.341 (0.754)	0.304 (0.755)	0.000 (14.52)	0.000 (7.915)
ΔGDP	0.0114 (2.141)	0.000 (3.552)	0.000 (5.829)	0.000 (5.534)	0.235 (0.677)	0.584 (0.597)
MS	0.022 (4.33)	0.179 (0.66)	0.32 (0.42)	0.32 (0.42)	0.000 (13.16)	0.03 (1.59)
ΔMS	0.000 (5.67)	0.02 (2.11)	0.000 (6.58)	0.000 (4.33)	0.28 (4.33)	0.19 (4.33)
CPI	0.001 (-4.87)	0.001 (-6.70)	0.212 (-0.81)	0.210 (-0.81)	0.000 (-15.34)	0.000 (-9.06)
ΔCPI	0.079 (-1.42)	0.001 (-4.35)	0.212 (-6.59)	0.210 (-5.28)	0.237 (0.72)	0.70 (-0.52)
MS×GDP	0.065 (2.12)	0.057 (2.23)	0.124 (0.34)	0.309 (0.231)	0.000 (7.91)	0.014 (3.98)
ΔMS×ΔGDP	0.000 (7.42)	0.000 (5.23)	0.000 (3.34)	0.000 (4.347)	0.108 (1.83)	0.014 (2.22)
CPI×GDP	0.011 (-2.03)	0.108 (-2.17)	0.077 (-2.34)	0.104 (-1.166)	0.000 (9.37)	0.004 (6.93)
ΔCPI×ΔGDP	0.001 (-4.24)	0.000 (-3.12)	0.000 (3.764)	0.000 (3.443)	0.155 (1.91)	0.012 (1.27)

p-values and brackets is the t-values, the significance level is α =0.05
Source: Field survey, Winful (2016)

Panel Co integration Test

The results of Pedroni (1999) cointegration test for all the panels under investigation is show in appendices 5 and 6. Schwarz Information criteria (SIC) selects the maximum lag of 4 without the inclusion of deterministic trend and intercepts in co integrating relation and results reveal that the panels are co integrated since six out of the seven statistics provided fail to accept the null of no cointegration at 5% level of significance. However, all the four panel statistics of Westerlund test at lag and leads of 1 reject the null of no cointegration at 5% level of significance as shown in appendix 6. All variables in the panel are 5% level of significance with their corresponding t statistic in parenthesis.

To circumvent the problems in the presence of endogeneity between y_{it} and x_{it} and serial correlation between $u_{it}$and v_{it}, the DOLS estimator becomes necessary as OLS will be biased and inefficient (see Kao and Chiang, 2000; and Erikson 2005). Inspite of the advantage of DOLS, OLS was computed and the results compared with DOLS results.

Selected macroeconomic variables

The three predictors for this empirical chapter are GDP, Money Supply and Consumer Price Index, while the criterion variable is stock market capitalization. It is assumed that the selected macroeconomic variables were the best predictors for stock market performance; if not, then the study needed to conduct a further tests in order to eliminate any potential biases to make the OLS regression estimated best linear unbiased estimators (BLUE). According to Addelbaki (2013), in conducting a quantitative research, one of the means of testing objectively the relationship among variables is to engage in an inquiry by having assumptions clearly stated and testing for theories deductively while guarding against bias, controlling for substitute clarifications, and be skillful to generalize and replicate findings.

It is established that least squares method produces the best straight line. However, there may be in fact no relationship or perhaps no linear relationship between the explanatory variables and the dependent variable. By this a straight line model is likely to be impractical. Because of this possible problem it is important that assessment on how well the linear model fits the data is determined using the following techniques, standard error of estimates, coefficient of determination and analysis of variance. Our variable of interest are GDP, MS and CPI, and our interest is to determining whether a linear relationship exit between the explanatory variables and SMC. A large F-statistic value of 52.11 indicates that the model using OLS fits the data series. About 21.7% of the variations in SMC are accounted for by the explanatory variables as shown in Table 28 below.

Table 28 - *Macroeconomic Variables and Stock Market Variable (Levels)*

Variable	OLS	OLS Rob	FGLS
GDP	0.090	0.090	0.077***
	(0.082)	(0.046)	(0.020)
MS	0.034	0.034	0.076***
	(0.047)	(0.025)	(0.018)
CPI	-0.097	-0.097*	-0.042*
	(0.051)	(0.046)	(0.016)
Constant	1.151**	1.151**	-4.677**
	(0.435)	(0.436)	(1.053)
Obs	615	615	615
Number groups			41
R-squared	0.217	0.217	
Adj R-square	0.411	0.216	
F value	52.11	63.57	
Prob F	0.000	0.000	
AR(1)			0.8857
Wald chi2			865.88
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The relationship between GDP and SMC is described by 0.09 with standard error of 0.082. To test the statistical significance of the relationship, at 5% α level our conclusion is that there is not enough evidence to reject the null hypothesis of no relationship. The relationship between MS and CPI on SMC are expressed by 0.034 and -0.097 respectively. The signs are as expected but both were insignificant in explaining variations in SMC. Likely explanation of the insignificant linear relationship of MS and CPI could be due to different economic size and growth rate of emerging countries sampled. That is the characteristics of the emerging economies sampled are relatively different from each other. A VIF value of 4.7 shows that the variables are correlated and that the coefficients from the OLS regression are not stable. With a DW of 1.12 the null hypothesis that there is no serial correlation in the errors. Breusch-Pagan test of a large chi-square of 57.1 indicate that heteroskedasticity is present.

Column two of Table 28 above correct for heteroskedasticity by using robust standard error. Comparing column one with column two of Table 28 it abundantly clear that correcting for heteroskedasticity improves the result slightly. A relatively high value of F-statistic in relation to column two of Table 28 implies that the model best described the data set. All (GDP, MS and CPI) the variables were not significant at all three traditional significant levels. The F test was significant indicating that the model fits the data set. Breusch-Pagan test of a large chi-square of 49.89 indicate that heteroskedasticity is present. Our study also reject the null hypothesis of no serial correlation in the errors with DW test of 0.89.

Using FGLS the study corrects for both heteroskedasticity and serial correlation in the model gives the following result as shown in column three of Table 28 above. All the explanatory variables which not significant in column two became significant in explaining variations in SMC. That is modeling heteroskedasticity and autocorrelation in the models, the variables became significant in explaining variations in SMC. The p-value 0.000 of wald test the model fits the data set.

The relationship between the explanatory variables GDP, MS and CPI with SMC are expressed by the following coefficients, 0.077; 0.076; and -0.042 respectively. The signs are all as expected. To test the statistical significance of the relationships, the p-values of the z-scores of 0.000 for all explanatory variables implies that there are enough evidence to conclude that there is significant linear relationship between them and SMC. DW test of 1.17 and Breusch-Pagan test of 53.19 suggest that serial correlation and heteroskedasticity are statistically significant in the model.

Though there are statistical evidence to show that GDP, MS and CPI influence SMC our work cannot draw a firm conclusion based on these results because the regression results displayed were based on level, nonstationary data series and could represent a spurious problem. It is also established in literature that stationary and weakly dependent data is able to correct the effect of serial correlation on goodness of fit measures, R-squared and adjusted R-squared. Due to the fact that the variables are non stationary, the first difference of the variables are computed to determine whether they will be stationary. The result from Table 27 above shows that the first difference of the variables is stationary.

It also realize that correlation of first difference of the data series are significant as shown in Table 29 below but correlation coefficients are relatively small. This reduces the possibility of multicollinearity problem.

Table 29 - ***Correlation of macroeconomic variables and SMC (diff)***

	$\Delta SMC_{i,t}$	$\Delta MS_{i,t}$	$\Delta CPI_{i,t}$	$\Delta GDP_{i,t}$
$\Delta SMC_{i,t}$	1.00			
$\Delta MS_{i,t}$	0.04**	1.00		
$\Delta CPI_{i,t}$	-0.09*	0.16**	1.00	
$\Delta GDP_{i,t}$	0.09**	0.09**	0.09**	1.00

The dependent variable is ΔSMC; ** and * denote statistical significance at the 0.01 and 0.05 levels respectively.
Source: Field survey, Winful (2016)

Due to fact that the variables are non stationary the first difference of variables which are stationary will give more reliable results hence their inclusion. To account for the problem of endogeneity and serial correlation, the study employed the use of DOLS estimator. The result of DOLS estimation of model 3 of the difference in variables is shown in column one of Table 30 below. Wald chi-square of p-value 0.000 implies the model fit the data set. All the explanatory variables are significant in explaining variations in ΔSMC and the signs are as expected.

The relationship between ΔMS and ΔSMC is expressed by 0.131 with a standard error of 0.038. There is enough evidence to conclude that there is positive linear relationship between them with the t-statistic of 3.42. The coefficient of -0.385 describes the relationship between ΔCPI and ΔSMC. There is enough evidence to statistically conclude that there is linear relationship. The test of the null hypothesis of the relationship between ΔGDP and ΔSMC is also rejected at 5% significant level. An R-square of 0.298 implies the model is able to account for 29.8% of variability of ΔSMC.

Table 30 - *Macroeconomic Variables and Stock Market Performance (Diff)*

Variable	DOLS	Newey-West
ΔGDP	0.225**	0.177**
	(0.084)	(0.062)
ΔMS	0.131***	0.081***
	(0.038)	(0.006)
ΔCPI	-0.385**	-0.058***
	(0.137)	(0.019)
Obs	614	614
Number groups	41	
R-squared	0.298	
Adj R-square	0.270	
F(3, 610)		47.51
Prob		0.000
Wald chi2	49.3	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Test for the presence of serial correlation in the errors with a DW test of 0.93 means that serial correlation is present in the residuals. Our study also reject the null hypothesis of homeskedasticity (Bresuch-Pagan test 49.63). The estimated regression parameters remain unbiased estimators of the corresponding true values, leaving the estimated models appropriate for establishing point estimates and the models can be used for predicting values. The VIF test of 2.15 implies that there is not enough evidence to conclude that multicollinearity is relatively absent in the model. Hence there is stability in the coefficients of the model and variance of the regression estimate.

Column two of Table 30 above establishes the relationship between macroeconomic variables (ΔMS and ΔCPI) and ΔSMC by correcting for both heteroskedasticity and serial correlation using Newey-West technique. The variables in the model are significant and the signs are as expected. The result confirms that there is enough evidence to conclude that there is a linear relationship between the selected macroeconomic variables and SMC. These relationship are expressed by ΔGDP (0.177), ΔMS (0.081) and ΔCPI (0.058) with associated Newey-West standard errors of 0.062; 0.006; 0.019 and 0.028 respectively assuming all other variables in the model are constant in the case of each. There is also enough evidence to conclude that these variables are significant with the right signs at 5% significant level. The DW test of 1.97 implies that our study fails to reject the null hypothesis that errors are serially correlated at 5% significance level. Breusch-Pagan test of chi-square of 0.438 fail to reject the null hypothesis. That is no problem of heteroskedasticity.

Money Supply

Our study test the relationship between Money Supply and stock market performance with model 3 as shown in column one of Table 31 using OLS. The intercept is 3.915 which is the stock market performance when all the independent variables are zero (0). It is misleading to interpret particularly if zero (0) is outside the range of the values of the independent variables. The relationship between the variable of interest Money Supply and stock market performance is described by 0.076. For every 100% increase in Money Supply (MS), stock market performance increases by 7.6%. The sign is as expected.

The value of the test statistic t is 1.73 implies that there is not enough evidence to infer the existence of a linear relationship between the MS and stock market performance. The interaction effect the MS and GDP is also not statistically significant but there is enough evidence to infer linear relation between GDP and stock market performance.

Table 31 - ***Money Supply and Stock Market Performance (Levels)***

Variable	**OLS**	**OLS Rob**	**FGLS**
GDP	0.427	0.427	0.084***
	(0.220)	(0.209)	(0.009)
MS	0.076	0.076	0.234**
	(0.044)	(0.046)	(0.084)
MS×GDP	0.047	0.047	0.013***
	(0.053)	(0.05)	(0.002)
Constant	3.915***	3.915***	-3.701***
	(1.202)	(1.201)	(1.102)
Obs	615	615	615
Number groups			41
R-squared	0.273	0.273	
Adj R-square	0.411	0.246	
F value	48.15	57.96	
Prob F	0.000	0.000	
AR(1)			0.8657
Wald chi2			768.14
Prob			0.001

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The model is able to explain 27.3% of the variations in ΔSMC. A large F-statistic of 51.03 implies that the model fit the data set. VIF value of 4.9 shows how unstable the coefficients of the model are. From all the variables of interest there is enough evidence to conclude that there is no statistical significant relationship between them. Breusch-Pagan test of a small chi-square 45.87 implies that heteroskedasticity is probably a problem. DW of 1.09 implies that residuals are positively correlated.

From column two above of Table 31 above our study correct for heteroskedasticity from the model by computing robust standard error. Our results still have ΔMS and the interaction of ΔGDP and ΔMS not being statistical significant but there is significant evidence to reject the null hypothesis that ΔGDP has no significant effect on ΔSMC. The VIF of 4.6 implies that the coefficients of the estimate are not relatively stable.

Breusch-Pagan test of a large chi-square indicate that heteroskedasticity is present. In this model, the chi-square value of 34.82 is large, indicating heteroskedasticity is a problem. DW of also 0.854 implies that residuals are positively correlated. An F-statistic of 57.96 shows that the model fit well the data set.

Our study correct for the problem of heteroskedasticity and serial correlation by using FGLS as shown in column three of Table 31. A wald chi2 of 768.14 confirms that the model fits the data. There is significant improvement in the result as our study correct for both heteroskedasticity and serial correlation. Our variable of interest which were not significant in explaining variations in SMC turn out to be significant as our study corrected for heteroskedasticity and serial correlation.

All the variables of interest are statistical significant in explaining changes in SMC. The signs are all as expected. Since the value zero is outside the range of values of independent variables the interpretation of the coefficient of MS is misleading. To resolve this problem our study determine the partial effect of MS given average GDP and this coefficient is described by 0.093 with Newey-West standard error of 0.033which yields t-statistic of 2.82. That is 1% increase in MS given average GDP yields 0.093% increase in SMC. It is established that GDP complement MS in explaining variation in SMC. Breusch-Pagan test of a large chi-square 68.45 implies that heteroskedasticity is probably a problem. DW test of 1.019 reject the null hypothesis of no serial correlation. Wald chi-square of 768.14 confirms that the model fit the data set.

Estimation on nonstationary variables had the tendency to give a misleading parameter estimate of the relationship between independent variables and dependent variable. To account for the problem of endogeneity and serial correlation, our study uses use DOLS estimator. The result of DOLS estimation of model 3 of the difference in variables is presented in column one of Table 32 below. Wald chi-square of p-value 0.000 implies the model fit the data set. All the explanatory variables are significant in explaining variations in ΔSMC and the signs are as expected.

Table 32 - ***Money Supply and Stock Market Performance (Diff)***

Variable	DOLS	Newey-West
ΔGDP	0.644**	0.644***
	(0.241)	(0.162)
ΔMS	0.042***	0.081***
	(0.013)	(0.016)
ΔMS×ΔGDP	0.001***	-0.058***
	(0.0003)	(0.019)
Obs	614	614
Number groups		
R-squared	0.384	
Adj R-square	0.263	
F(3, 610)		43.64
Prob		0.000
Wald chi2	54.9	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

To determine the statistical significance of the coefficient of the partial effect of ΔMS on stock market performance our study need to rerun the regression where it replace the interaction variable with gross domestic product less the average gross domestic product multiple by ΔMS. This gives as the new coefficient on ΔMS (the coefficient of partial effect), the estimated effect at gross domestic product of 18.64, along with a standard error. Running this new regression gives the standard error of $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 0.063$ as 0.0235, which yields t = 2.66. Therefore at the average gross domestic product, our study conclude that ΔMS has statistically significance positive effect on stock market performance. An increase in Money Supply will increase the liquidity in the economy resulting in an increase in the purchasing power of the citizenry. This means that more money will be available not just for consumption but also for investment hence, an increase in stock market performance. Also people tend to demand more when they have more money in their hands and thereby the prices of shares may increase which leads to stock market performances rising. These results support the real activity theorists' argument that an increase in Money Supply increases stock prices and vice versa.

There is also enough evidence to infer a linear relationship between ΔGDP and stock market performance for all the three models. Most industries are procyclical in nature, meaning that the firms in the industry do well as the economy does well and vice versa. If ΔGDP is high, the stock prices generally tend to be high as companies are doing better than otherwise. So, ΔGDP is an important determinant of stock prices. Breusch-Pagan test of a small chi-square 0.473 implies that heteroskedasticity is probably not a problem. DW test serial correlation of 1.05 also reject the null hypothesis of no serial correlation. The results are in line with the findings of Levine and Zervos (1998), Garcia and Liu (1999), Yartey (2008) and Mishal (2011).

Our study account for the problem heteroskedasticity and serial correlation using Newey-West technique on the variables in their first difference. As presented in column two of Table 32 above. The linear relationship between the variable of interest ΔMS is expressed by 0.042 with Newey-West standard error of 0.013 assuming that ΔGDP and the interaction of ΔMS and ΔGDP are constant. Since the value does not fall within the range of values for ΔGDP and also the fact that the interaction effect is significant makes the interpretation of ΔMS tricky. To resolve this problem our study determined the partial effect of ΔMS given average ΔGDP and this coefficient is described by 0.061 with Newey-West standard error of 0.017 which yields t-statistic of 3.47. That is 1% increase in ΔMS given average ΔGDP yields 0.061% increase in ΔSMC. It is established that ΔGDP complement MS in explaining variation in ΔSMC. The R-squared of 0.366 implies that the model explains 36.6% of the variations ΔSMC. Breusch-Pagan test of a small chi-square 0.457 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW test serial correlation of 2.019 also fail to reject the null hypothesis of no serial correlation. Wald chi-square of 82.3 confirms that the model fit the data set.

Consumer Price Index

Our study test the relationship between Consumer Price Index and stock market performance with model 3 as presented in column one of Table 33 below. The intercept is 2.931 which is the stock market performance when all the independent variables are zero (0). It is misleading to interpret particularly if zero (0) is outside the range of the values of the independent variables.

Table 33 - ***Consumer Price Index and Stock Market Performance (Level)***

Variable	**OLS**	**OLS Rob**	**FGLS**
GDP	7.54***	7.54***	0.051***
	(2.163)	(2.161)	(0.007)
CPI	0.008	0.008	-0.105***
	(0.011)	(0.005)	(0.029)
CPI×GDP	-0.003	-0.003***	-0.005***
	(0.006)	(0.001)	(0.001)
Constant	2.931**	2.931**	-14.051***
	(1.019)	(1.018)	(2.192)
Obs	615	615	615
Number groups			41
R-squared	0.233	0.241	
Adj R-square	0.411	0.231	
F value	48.15	55.82	
Prob F	0.000	0.001	
AR(1)			0.8633
Wald chi2			974.15
Prob			0.0000

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

The relationship between the variable of interest Consumer Price Index and stock market performance is described by 0.008. For every 100% increase in Consumer Price Index (CPI), stock market performance increases by 8%. The sign is as expected. The value of the test statistic t is 0.73 implies that there is not enough evidence to infer the existence of a linear relationship between the CPI and stock market performance. The interaction effect of CPI and GDP is rather statistically significant. That is our study infer that but there is enough evidence to infer linear relation between interaction effect of CPI and GDP, and stock SMC. The model is able to explain 23.3% of the variations in ΔSMC. A large F-statistic of 48.15 implies that the model fit the data set. VIF value of 4.9 shows how unstable the coefficients of the model are. From all the variables of interest there is enough evidence to conclude that there is no statistical significant relationship between them. A DW test of 1.14 and Breusch-Pagan test of 51.4 means that our study have problem with the serial correlation and heteroskedasticity.

Correcting for heteroskedastic using robust standard error in column two above shows an improvement in the result in column one of the same table. F-statistic of 55.82 implies the entire model fit the data set and it explains 24.1% of the variations in SMC.

In model 3 our study consider the effect of Consumer Price Index (CPI) on stock market performance of emerging markets. This relationship is expressed by 0.008 with standard error of 0.0048 which yield a t-statistic of -1.67 assuming that all other factors are zero. The sign is not as expect. By implication there is no evidence to conclude that the coefficient of CPI is not equal to zero (0). This may mean no evidence of linear relationship or there is linear relationship but because of the problem of multicollinearity our study fail to reject the null hypothesis.

The interaction effect of CPI and GDP on SMC is significant which implies that the coefficient of CPI when all other factors are zero is misleading since the effect CPI on SMC is also influenced by GDP. To determine the actual effect of CPI on SMC, our study must plug in interesting values of GDP to obtain the partial effect. The mean value of GDP is 18.64, so at the mean GDP, the effect of CPI on SMC is -0.048. The standard error of this coefficient is

0.016 yields a t-statistic of -2.99. With relation of GDP to SMC there still enough evidence to conclude that there is a linear relation between them confirming the relationship in model 3.

Our study test for serial correlation and Heteroskedasticity in the error term in the model using DW. This assumption is formally expressed as E $(e_i e_j) = 0$ for all $i \neq j$, which means that the expected value of all pair-wise products of error terms is zero. Because testing hypotheses about the slope coefficients and computing the corresponding confidence intervals rely on the calculated *t* values as the test statistics, the presence of correlated error terms means that inferences cannot be made reliably. A DW test of 0.351 implies the presence of positive autocorrelation in the error term at 5% significance level. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause use to reject null hypothesis when it is true. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A large chi-square of 37.83 indicates that heteroskedasticity is present.

In the analysis above the study reject the null hypothesis of no autocorrelation and also the assumption of homoscedasticity for all the models discussed. The method of generalized least squares (GLS) is introduced to improve upon estimation efficiency when var(SMC) is not a scalar variance-covariance matrix. This technique allows estimation in the presence of AR(1) autocorrelation within panels and cross-sectional correlation and heteroskedasticity across panels. Although these conditions have no effect on the OLS method per se, they do affect the properties of the OLS estimators and resulting test statistics. Hypothesis testing based on the standard OLS estimator of the variance covariance matrix becomes invalid.

Using FGLS gives the following result as shown in column three of Table 33 above. The p-value of wald test for all the models were significant at all the traditional significant levels. The relationship between CPI and SMC is expressed by -0.105 with standard error of 0.029 which yield a t-statistic of -3.63 assuming that all other factors are zero. The sign is as expect. By implication there is enough evidence to conclude that the coefficient of CPI is not equal to zero (0). This may mean there is enough evidence to infer linear relationship. The interaction effect of CPI and GDP on SMC is significant which implies that the coefficient of CPI when all other factors are zero is misleading since the effect CPI on SMC is also influenced by GDP. To determine the actual effect of CPI on SMC, the study must plug in interesting values of GDP to obtain the partial effect. The mean value of GDP is 18.64, so at the mean GDP, the effect of CPI on SMC is -0.048. The standard error of this coefficient is 0.016 yields a t-statistic of -2.99. With the relation of GDP to SMC there still enough evidence to conclude that there is a linear relation between them confirming the relationship in model 3.

The study test for serial correlation in the error term using DW. A DW test of 0.614 implies the presence of positive autocorrelation in the error term at 5% significance level. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause use to reject null hypothesis when it is true. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A large chi-square of 41.32 indicates that heteroskedasticity is present. The consequence of this is that the standard errors and t-statistics for the models are invalid. The VIF test was performed in order to measure the extent to which the repressors were related to other repressors and to find out how the relationship affected the stability and variance of the regression estimates. Variance inflation factor of 4.54 shows that model have relatively moderate multicollinearity problem. Severe multicollinearity is problematic because it can increase the variance of the regression coefficients, making them unstable.

Since the variables under consideration are not stationary the study used the first difference of the variables to confirm our results using DOLS estimation technique. The study also realize that correlation of first difference of the data series are significant as shown in column one of Table 34 below. This reduces the possibility of multicollinearity problem.

Table 34 - *Consumer Price Index and Stock Market Performance (Diff)*

Variable	DOLS	Newey-West
ΔGDP	0.161***	0.101***
	(0.055)	(0.034)
ΔCPI	-0.081**	-0.063*
	(0.029)	(0.029)
ΔCPI×ΔGDP	-0.062**	-0.009***
	(0.023)	(0.003)
Obs	614	614
Number groups	41	
R-squared	0.336	
Adj R-square	0.323	
F(3, 610)		48.29
Prob		0.001
Wald chi2	48.9	
Prob	0.000	

Dependent variable SMC; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Field survey, Winful (2016)

Correcting for serial correlation of the errors and endogeneity problem the relationship between ΔCPI and ΔSMC is statistically significant and expressed by -0.081 when all other explanatory variables in the model are held constant. As shown in column one of Table 34, the sign of the linear relationship is as expected. That is 100% increase in ΔCPI decrease the ΔSMC by 8.1%. There is also enough evidence to conclude that there is linear relationship between the interaction of ΔCPI & ΔGDP and ΔSMC. With the interaction effect being significant then the actual effect of ΔCPI at mean GDP is -0.027 with a standard error 0.0104 which yields a t test of -2.64. Therefore at the average ΔGDP, the study concludes that ΔCPI has statistically significance negative effect on stock market performance.

DW test of 1.32 testify that the errors are serially correlated at 5% significance level. That is the error covariances are not zero (0) and this will underestimate the variance of the parameters in the model and also can cause use to reject null hypothesis when it is true. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A large chi-square of 54.09 indicates that heteroskedasticity is present. The consequence of this is that the standard errors and t-statistics for the models are invalid. The VIF test of 2.16 shows that model have relatively moderate multicollinearity problem hence the regression coefficients are stable.

To account for the problem of heteroskedasticity and serial correlation our study used Newey-West technique on the variables in their first difference. As shown in column two of Table 34 above. The effect of ΔCPI on ΔSMC is expressed by -0.063 with a t-statistic of -2.91. This implies there is enough evidence to conclude that there is negative linear relationship between ΔCPI and ΔSMC assuming that other variables in the model are constant. That is as ΔCPI increases by 1% ΔSMC reduces by -0.063. It is also established that interaction effect has negative effect on ΔSMC. The partial effect of ΔCPI given average ΔGDP is expressed by -0.249 with Newey-West standard error of 0.080 which yields a t-statistic of -3.11. The relationship between GDP and CPI is expressed by 0.101 with Newey-West standard error of 0.034. With this the study infer that there is enough evidence to conclude that GDP and SMC are positively linearly related.

Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. Breusch-Pagan test of a small chi-square 0.457 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it isn't a multiplicative function of the predicted values. DW test serial correlation of 2.012 also fail to reject the null hypothesis of no serial correlation. Wald chi-square of 87.5 confirms that the model fit the data set. VIF of 1.06 for model 3 shows that the coefficients are relatively stable.

The Consumer Price Index is used as a proxy for inflation. In times of inflation, prices are always unstable and rising. Income is therefore devoted for consumption purposes. Savings and investment will therefore be negatively affected hence affecting stock market performance of emerging economies.

The argument that the stock market serves as a hedge against inflation is based on the fundamental idea of Irving Fisher (1930), and is known as the Fisher Effect. The Fisher Effect states that in the long run, inflation and the nominal interest rate should move one-to-one with expected inflation. This implies that higher inflation will increase the nominal stock market return, but the real stock return remains unchanged. Therefore, investors are fully compensated.

Conclusion

Using a sample of 41 emerging stock economies over a period 1996 2011, our study found that gross domestic product and Money Supply in dollars and Consumer Price Index are the important determinants of stock market development.

Several policy implications can be drawn from this study. The government, in formulating monetary policy, must be aware of the fact that the stock market responds more favorably to an increase in the Money Supply. Leaders in emerging economies must also be conscious of the fact that stock prices tend to increase when the leaders implements expansionary policy to increase GDP.

From the study, it can be observed that there exists a significant relationship between macroeconomic variables and the stock market performance. This relationship can either be positive or negative depending on which variable is being put under consideration. The study therefore recommends that the macroeconomic environment is very important and should be closely monitored to ensure stability.

CHAPTER EIGHT: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

Introduction

This thesis has examined empirically the Education, institutional quality, and macroeconomic determinants of stock market development, using a panel data of 41 emerging market countries for the period 1996 to 2011. This chapter covers the summary of the main findings of the thesis. It also covers the conclusions arrived. Policy recommendations are also suggested and discussed in this chapter.

Summary of Findings

Education

One of the interests of this thesis is to establish the possible effect of the ability of the individual to invest in explaining the stock market development in emerging countries. The model suggests that the Education per labor force and economic growth can make a statistically significant and economically meaningful contribution to stock market development. This study conforms to the theoretical postulation and in the study of Ali (2011) and Yartey (2008). It is clear from these results that countries with high levels of education stand to benefit more in terms of stock market development. The results suggest that policy makers should not expect significant stock market development if the country's educational structure is poor. These results are generally in agreement with the theoretical and empirical literature. There is widespread and robust evidence that education plays a key role in enhancing stock market performance, especially in those sectors where productivity and labour utilization is relatively low. It is obvious that a healthy and dynamic stock market plays an elementary role in spurring stock market performance. Therefore, improving education – in quantitative and qualitative terms – has to be at the heart of policy measures aimed at raising the stock market performance in a sustainable manner.

Poor understanding of issues on the part of the public discourages potential investors from participation in stock markets. Roc (1996) argues that the propensity to invest in shares rises with the level of education. That is, a higher level of education increases confidence in stock markets by contributing to a higher level of knowledge concerning financial activities. Without an educated public which understands the fundamental rules, benefits, and potential pitfalls of participating in financial investment, stock markets may not be able to develop. Further, an educated population can increase the number of available professionals (e.g. financial analysts, accountants and regulatory analysts) necessary for the development of an institutional and regulatory framework.

Our findings have important policy implications for emerging countries. Firstly, education plays a crucial role in stock market development. Policymakers in emerging economies may initiate policies to foster growth in the number of secondary school enrolment in emerging economies. Overall, there is widespread and robust evidence that education plays a key role in enhancing stock market performance, especially in those sectors where productivity and labour utilization is relatively low. It is obvious that a healthy and dynamic stock market plays an elementary role in spurring stock market performance.

Institutional Quality

The second interest is the effect of institutional quality on stock market performance. Estimates from several empirical studies like Ali (2011) and Yartey (2008) specifications were consistent with this model suggesting that institutional quality can make a statistically significant and economically meaningful contribution to stock market development. It has also been established that components of institutional quality also have positive influence on stock market development of emerging markets. By this findings policies tailored to reduce corruption, government effectiveness, political stability, voice and accountability, regulatory quality and rule of law should be taken seriously and encouraged. The payoffs from strong institutional quality include not only larger stock markets, but also greater integration with world capital markets via the influx of capital. Better governance environments increases returns to shareholders by reducing both transaction costs and agency costs. All these go to improve on the performance of stock markets. Our findings have important policy implications for emerging countries in that development of good quality institutions can affect the attractiveness of equity investment and lead to stock market development. Also emerging countries should improve their institutional framework because strong institutional quality reduces political risk which is an important factor in investment decision. Policy makers must make sure that a fair level playing field is established, so that investors can focus their attention on exploiting growth opportunities without fearing for their property rights.

Emerging economies have markets that are taking too long to pick-up. The road to stock market development depends significantly on institutional arrangements and the regulatory environment. Quite often these arrangements have been ignored. Corruption remains dire in emerging economies and represents a significant risk to financial market development. As stock markets grow broader and deeper in emerging economies the question becomes more critical. Results demonstrate a significant positive association between stock market performance measures and the element of institution quality (control of corruption, political stability, rule of law, regulatory quality, voice and accountability and government effectiveness). These findings suggest countries with better developed institutional quality would lead to stock markets performance. A future research direction on the association between institutional factors and financial markets should use firm-specific indicators to confirm the findings. Also, exploring how foreign direct investment is impacted by the institutional quality could have interesting policy implications. The findings of this paper calls for institutional reforms as supported by the findings of Clark (2003), Ngugi (2003), and Mutenheri & Green (2003).

According to Bartels et al., (2009) improvements in political economy considerations, especially the mitigation of political & regulatory uncertainty (Toumi, 2011) and reduction of corruption (Darley, 2012) will increase the possibility of funding through stock markets.

Macroeconomic variables

The last concerns of this thesis is to find out the effect of macroeconomic variables on stock market performance of 41 emerging stock economies over a period 1996 2011. The study found that gross domestic product, Money Supply, and Consumer Price Index, are the important determinants of stock market development.

Several policy implications can be drawn from this study. The government, in formulating monetary policy, must be aware of the fact that the stock market responds more favorably to an increase in the Money Supply. Leaders in emerging economies must also be conscious of the fact that stock prices tend to increase when the leaders implement expansionary policy to increase GDP.

Conclusion

This result is generally in agreement with the theoretical and empirical literature. For instance, Ali (2011) and Garcia and Liu (1999) found that policy rate, market liquidity and education have a positive effect on stock market development in emerging markets. The variable of interest Education is positive and significant in explaining stock market development in emerging markets. Barro (1991), Benhabib and Spiegel (1994), Barro and Xavier Sala-i-Martin (1995), Sala-i-Martin (1997), and Salami and Acquah-Sam (2013) also found schooling to be positively correlated with the growth rate of per capita ΔGDP across countries.

In the case of institutional quality on stock market performance the study was interested in the effect of institutional quality on stock market development for emerging economies. Six different sub-categories of institutional quality (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption) are analyzed. The empirical results are based on annual panel of data of 41 countries covering the years between 1996 and 2011. The results suggest that institutional quality has a positive and significant effect on stock market development. Of all the components of institutional quality only regulatory quality turn out to be insignificant in explaining stock market performance in the emerging stock markets.

The study also establishes that financial intermediary (policy rate), stock market liquidity and the stabilization variable (consumer price change) are the important determinants of stock market development, while Money Supply does not prove to be significant. In addition, the study found that financial intermediaries and stock markets are complements rather than substitutes in development process. In order to promote stock market development in emerging economies, it is important to improve stock market liquidity, develop financial intermediaries and then control inflation.

The salient conclusions drawn from this study suggest that strong institutional quality, education and macroeconomic variables are important for the stock market development in an emerging country's markets. To reverse the persistent anemic stock market performance trend in emerging economies, both domestic and external policy makers may have to place significant emphases on the maintenance of the voice and accountability, political stability, government effectiveness, rule of law, and control of corruption. The need to stabilize the macroeconomic indicators as well as improving upon the knowledge base of the citizenry is equally important for performance of stock markets in emerging economies. Although our empirical results are intriguing, they warrant further analysis. Much work remains to be done to better understand the relationship between stock market performances. Although the paper sheds light on the role of knowledge, institutional quality and macroeconomic variables on stock market development, it does not study individual country cases, nor analyzes when countries are ready for stock markets development. Finally, Stock market performance is an indicator to the foreign investors on the stability of the stock market. It is therefore recommended that good measures should be put in place to promote the stock market activities which in turn increases the stock market performance.

Recommendations

The findings from the three empirical chapters of this thesis have important policy implications for emerging economies. The following are some recommendations for policy directions to ensure longer-term development of emerging economies' stock markets by considering the following policies;

1. Macroeconomic indicators stabilization will provide certain commodities and materials, including copper, gold, steel, cocoa and wheat, would provide support for companies in those sectors going forward.
2. Promoting the supply of capital by development of a deep and broad investor base. This liberalization allows foreigners to purchase domestic stocks and it removes restrictions on capital inflows and typically on capital

outflows. Four categories of investors have a complementary role in capital market development. These groupings include:

- "Buy and hold investors" like insurance companies or pension funds. Defined-contribution public and private pension funds are critical to longer-term capital market development.
- "Buy and trade investors" policymakers can help to develop these types of investors through educational programs as well as policies to incentivize and encourage the middle class to place savings in mutual funds, unit-linked insurance, and other medium-term products.
- "Active investors" like hedge funds, some academics and government officials, among others, attribute volatility and liquidity crises in emerging markets to active investors, prompting many markets to restrict their ability to trade. Policymakers should seek an appropriate balance in the regulation of active investors, given the benefits they offer financial markets.
- "Private market investors" such as private equity or venture capital funds should also be encourage by policymakers. These investors provide capital for growth, for pre-listing stages, and for financial and operational restructuring.

3. Improve the demand for capital by increasing issuer participation through the following;
   - Promoting or mandating the use of debt capital markets. Policies can lead state-controlled entities to use debt capital markets to diversify at least part of their debt funding from the banking sector. Similar policies mandating diversification could easily be extended to large companies.

- Promoting capital markets for financing infrastructure. Though few emerging markets have successfully done so, this could be a powerful lever.
- Promoting the development of fast-growing small companies outside of conglomerates. Developing vibrant startup ecosystems and venture capital industries to supplant conglomerates as the main source of funding for innovation would have a considerable impact on the demand for IPOs in the medium term and hence improve the performance of the stock markets.

4. Encouraging intermediation by creating competition among market participants
5. Promoting free markets by setting a path for sustainable integration into global markets, and
6. Supporting price discovery and resource allocation. Policymakers should sets precedents and influences market development. No market is perfect and interpretations of day-to-day or month-to-month price movements will vary. Some circumstances call for direct or indirect intervention to suppress the adverse impact of excessive volatility or to redistribute resources to different groups of people in the economy. These decisions mirror macroeconomic variables, and human development which in this case is education. This does not mean abdicating policy, but rather using the market and incentives embedded in them to carry out policies.
7. Policymakers in emerging economies should establish transparent regulations and standards. The main objective of sound regulation is to create a transparent environment with predictable enforcement. The

objective is for both regulatory and self-regulated institutions to promote standardization, and as a result, decrease financial cost and risk for market participants. Pursuing these goals will often require a modified approach. Emerging economies can achieve a good part of their objectives by adopting standards and regulations that have worked in other economies and have been adopted broadly in international markets, such as those set by bodies like the International Organization of Securities Commissions. There should a balance between supervision and regulation. Emerging market should concentrate on better regulation and more engaged, development-minded supervision.

Policymakers in Emerging economies also need enforcement mechanism that matches the maturity of the legal system. Most developed markets rely heavily on an independent, efficient, and well-functioning judiciary to support market development. This is not the case in many emerging economies, and fit-for-purpose institutions or processes could be considered to replace or complement the judiciary. While this may be beyond the scope of work for emerging market regulators, they could benefit from creating avenues to resolve disputes, such as arbitration forums to settle commercial disputes and specific paths to resolve challenges like bankruptcy. This is an adjudicating authority with the exclusive jurisdiction to deal with all disputes including insolvency-related cases. This will ensure faster resolution of commercial conflicts.

All these policy directions call for stable macroeconomic indicators, good governance and education of general population.

REFERENCES

Abdul-Qadir, A. B. (2013). Does Corruption Matter in The Development of the stock market in Nigeria? ESUT Journal of Accountancy, Vol. 4., No.1

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). An African Success Story: Botswana, MIT Department of Economics Working Paper No. 01-37. Available at http://dx.doi.org/10.2139/ssrn.290791.

Ades, A., & di Tella, R. (1996). 'The causes and consequences of corruption: a review of recent empirical contributions', IDS Bulletin, vol. 27, no. 2, pp. 6-11.

Aduda, J., Masila, J. M., & Onsongo, E. N. (2012). The Determinants of Stock Market Development: The Case for the Nairobi Stock. International Journal of Humanities and Social Science, 2(9), 214-227.

Agenor, R. (2000). Monetary Policy under flexible exchange rate and introduction to inflation targeting, Policy Research Working Papers Series 2511, The World Bank.

Ajayi, R. A., & Mbodja, M. (1996). On the Dynamic Relation between Stock Prices and Exchange Rates. Journal of Financial Research 19, 193–207.

Ali, M. B. (2011). Impact of Micro and Macroeconomic Variables on Emerging Stock Market Return: A Case on Dhaka Stock Exchange (DSE), Interdisciplinary Journal of Research in Business, 1(5).

Anyanwu, J. C. (1997). Stock Market Development and Nigeria's Economic Development, Nigeria Financial Review, P6-13.

Arowolo, E. A. (1971). The Development of Capital Markets in Africa with Particular Reference to Kenya and Nigeria, IMF Staff papers Vol.18.

Bagehot, W. (1873). Lombard Street, a Description of the Money Market. London: Kegan Paul. Rpt., London: John Murray, 1920.

Barro, R. J. (1991). Economic Growth in a Cross-Section of Countries. Quarterly Journal of Economics, 106, 407-443.

Barro, R. J., & Lee, J. W. (1993). International Comparisons of Educational Attainment. Journal of Monetary Economics, 32, 363-394.

Barro, R. J., & Sala-i-Martin, X. (1995). Economic growth. New York: McGraw-Hill.

Barro, R. J., & Sala-i-Martin, X. (1995). Economic Growth. MIT Press, Cambridge MA.

Becker, G. S. (1964). Human capital, Chicago: University of Chicago Press.

Bekaert, G. (1999). Is there a free lunch in emerging market equities?' Journal of Portfolio Management, Vol.25(3), pp. 83-96.

Bekaert, G., & Harvey, C. (2003). 'Emerging market finance', Journal of Empirical Finance, Vol.10. pp.3-55.

Bekaert, G., Claude, B. E., Campbell, Harvey, R., & Tadas, E. V. (1998). Distributional characteristics of emerging market returns and asset allocation; Analyzing returns that cannot be summarized by a normal distribution, Journal of Portfolio management, pp 102-116.

Benhabib, J., & Spiegel, M. (1994). The role of human capital in economic development: Evidence from aggregate cross-country data. Journal of Monetary Economics, 34, 143-174.

Bennaceur S., Ghazouani S., & Omran M. (2007). "The Determinants of Stock Market Development in the Middle-Eastern and North African Region", Managerial Finance, 33 (7), 477–489.

Black, F. (1988). Yes Virgina, There is Hope: Test of the Value Line Ranking System, Graduate School of Business, University of Chicago.

Brodie-Smith, A. (2005). 'How are emerging markets faring this year?', The Association of investment trust companies. Retreieved from http://www.aitc.co.uk/news events/aitcviews.asp?id=4411.

Butkiewicz, J. L., & Yanikkaya, H. (2004). Institutional quality and economic growth: maintenance of the rule of law or democratic institutions, or both? University of Delaware, Alfred Lerner College of Business & Economics, Working Paper.

Calderon-Rossell, R. J. (1991). "The Determinants of Stock Market Growth," in S. Ghon, Rhee and Rosita P. Chang (eds.), Pacific Basin Capital Markets Research Proceeding of the Second Annual Pacific Basin Finance Conference, Vol. II, Bangkok, Thailand, 4–6 June, (Amsterdam: North Holland).

Campos, N., & Giovannoni, F. (2006). The determinants of asset stripping: Theory and evidence from the transition economies. Journal of Law and Economics, 49, 681–706.

Charemza, W.W., & Deadman, D.F. (1997). New Directions in Econometric Practice, Edward Elgar, Cheltenham.

Chen, H., &Volpe, R. (1998). An Analysis of Personal Financial Literacy Among College Students, Financial Services Review, Vol. 7, No. 2, pp. 107-128.

Chen, N. F. (1991). Financial Investment Opportunities and the Macro economy, Journal of Finance. 46: 529-554.

Chen, N. F., Roll, R., & Ross, S. (1986). Economics forces and the stock market. Journal of Business. 59 (3): 383-403.

Chiawa, M. A., & Asare, B.K. (2009). A Panel Data Approach for Estimating Equilibrium Real Exchange Rates of Currencies of Countries in West Africa, Bagale Journal of and Applied Sciences 7: 35-49 .

Cho, Y.J. (1986). "Inefficiencies From Financial Liberalization in the Absence of Well-Functioning Equity Markets," Journal of Money, Credit, and Banking, Vol. 18, 191-199.

Chong, C. S., & Goh, K. L. (2003). Linkages of economic activity, stock prices and monetary policy: the case of Malaysia.

Chow, K.V., & Denning, K. (1993). A simple multiple variance ratio test, Journal of Econometrics 58, 385-401.

Chuhan, P. (1992). 'Sources of portfolio investment in emerging markets'. Working Paper, International Economies Department, World Bank.

Coffee, J. (1999). Privatization and corporate governance: the lessons from securities market failure. Columbia Law School Center for Law and Economics Studies Working Paper 158, New York, NY.

Cont, R. (2001). Empirical properties of asset returns: Stylized facts and statistical issues, Quantitative Finance, vol. 1, pp. 1–14.

Darley, W. K. (2012). "Increasing Sub-Saharan Africa's Share of Foreign Direct Investment: Public Policy Challenges, Strategies, and Implications", Journal of African Business, 13(1), pp.62-69.

de la Fuente, Á., & Antonio C. (2002). "Human capital in a global and knowledge-based economy." European Commission; Directorate-General for Employment and Social Affairs.

Demirguc-Kunt, A., & Maksimovic, V. (1998). Law, finance and firm growth. Journal of Finance 53, 2107–2137.

Divecha, A., Drach, J., & Stefek, D. (1992). 'Emerging markets: A quantitative perspective', Journal of Portfolio Management, Vol. 19(1), pp.41 -51.

Dornbusch, R., & Fischer, S. (1980). Exchange rates and the current account. American Economic Review, 70, 960–971.

Edison, H. (2003). Testing the Links; How strong are the links between institutional quality and economic performance, Journal of Finance and Development, 40(2), 35 -37. http://www.imf.org/external/pubs/ft/weo/2003/01/index.htm.

Eita, J. H. (2012). Modelling Macroeconomic Determinants Of Stock Market Prices: Evidence From Namibia, The Journal of Applied Business Research, Volume 28, Number 5, pp. 871 – 884.

Ellison, G., & Drew F. (1995). "Word-of-Mouth Communication and Social Learning", Quarterly Journal of Economics 110, 93-125.

Errunza, V. (1997). 'Research on emerging markets: past, present, and future'. Emerging Markets Quarterly, Vol.1(3), p.5-19.

Falcetti, E., Lysenko, T., & Sanfey, P. (2006). Reforms and growth in transition: re-examining the evidence, Journal of Comparative Economics, 34 (2006), pp. 421–445.

Fama, E. F. (1965). The Behavior of Stock-Market Prices. Journal of Business, 38, 34-105.

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. Journal of Finance, 25(2), 383-417.

Fama, E. F. (1981). Stock Returns, Real Activity, Inflation, and Money, The American Economic Review. 71 (4): 545-565.

Fama, E. F. (1990). Stock Returns, Expected Returns, and Real Activity. Journal of Finance, 45 (4), 1089-1108.

Fama, E. F. (1991). Efficient Capital Markets: II. Journal of Finance, 96, 1575-1617.

Fama, E., & French, K.R. (1989). "Business conditions and expected returns on stocks and bonds", Journal of Financial Economics, 25, 23-49.

Fitzsimons, P. (1999). Human capital theory and education. The Encyclopedia of Education. London: Macmillan.

Gani, A., & Ngassam, C. (2008). Effect of institutional factors on stock market development in Asia, American J. of Finance and Accounting, Vol. 1, No. 2.

Garavan, T. N., Morley, M., Gunnigle, P., & Collins, E. (2001). Human capital accumulation: The role of human resource development. Journal of European Industrial Training, 25, 48–68.

Garcia, V., & Liu, L. (1999). ''Macroeconomic determinants of stock market development'', Journal of Applied Economics, Vol. 2, pp. 29-59.

Geske, R., & Roll, R. (1983). The fiscal and monetary linkage between stock returns and inflation. Journal of Finance. 38: 7-33.

Gjerde, Ø. and Sættem, F., (1999), Causal relations among stock returns and macroeconomic variables in a small, open economy. Journal of International Financial Markets, Institutions & Money. 9: 61-74.

Goh, K.S. (1979). Report on the Ministry of Education 1978, Singapore National Printers, Singapore.

Goldsmith, R. W. (1969). Financial Structure and Development, New Haven, Yale University Press.

Grubb, W. N., & Marvin L. (2004). The Education Gospel: The Economic Power of Schooling. MA: Harvard University Press.

Gul, F., & Qui, H. (2002). Legal Protection, Corporate Governance and Information Asymmetry in Emerging Financial Markets, SSRN Working Paper.

Habibullah, M., & Baharumshah, A. Z. (1996). Money, Output and Stock Prices in Malaysia: An Application of the Cointegration Tests. International Economic Journal. 10 (2): 121-130.

Habibullah, M., Baharumshah, A. Z., Mohamed, A., & Wan Ngah, W.A. S. (1999). Stock Market and Economic Activity: A Causal Analysis: Department of Economics.

Hadri, K. (2000). Testing for Stationarity in Heterogeneous Panel Data; Econometric Journal; Vol. 3; pp148-161.

Hall, R. E., & Jones, C. I. (1999). 'Why do countries produce so much more per worker than others', Quarterly Journal of Economics, vol. 114, no. 1, pp. 83-116.

Hamao, Y. (1988). An Empirical Examination of the Arbitrage Pricing Theory: Using Japanese Data. Japan World Economy. 1: 45-61.

Hamao, Y., & Campbell, J. (1992). "Predictable Stock Returns in the U.S. and Japan: A study of Long-Term Capital Market Integration," Journal of Finance, 47(1).

Hanousek, J., & Filer, R. K. (2000). The relationship between economic factors and equity markets in Central Europe. Economics of transition , 8 (3), 623-638. ISSN: 1468-0351.

Hargis, K. (1997). 'Emerging equity markets: are they for real?'. The Journal of Finance Research, Vol.10(2), pp. 243-262.

Harvey, c. (1995b). 'The risk exposure of emerging equity markets', The World Bank Economic Review, Vol.9(l), pp, 19-50.

Hearn, B., & Piesse, J. (2010). Barriers to the Development of Small Stock Markets: A Case Study of Swaziland and Mozambique. Journal of International Development, Vol. 22, 1018-1037.

Hooper, V., Sim, A. B., & Uppal, A. (2009). Governance and stock market performance, Journal of Economic Systems, vol. 33, pp., 93-116. Retreived from http://ro.uow.ed.au/commpapers/115.

Ibrahim, I., & Jusoh, M. A. (2001). The Causes of Stock Market Volatility in Malaysia. Proceedings of the Malaysian Finance Association Third Annual Symposium.

Ibrahim, M. (2002). Volatility Interactions Between Stock Returns and Macroeconomic Variables Malaysian Evidence. Savings and Development. **26** (2): 483-194.

Im, K., Pesaran, H., & Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels. Journal of Econometrics, 115:53-74.

International Finance Cooperation. (1991 & 1996), IFC Fact book, New York.

Jahur, M. S., Quadir, S. M., & Khan, M. A. (2014). Determinants of stock market performance in Bangladesh. Indonesian Management and Accounting Research, 13(1), 16-28.

Kassimatis, K. & Spyrou, S. (1999). 'Stock and Credit Market Expansión and Economic Development in Emerging Markets: Further Evidence Utilizing Cointegration Analysis', Discussion Paper Series: Economies, Middlesex University Business School, No.76

Kaufmann, D. (2003a). "Rethinking Governance, Empirical Lessons Challenge Orthodoxy", Discussion Paper, Washington DC: World Bank Institute. Retrieved from http://www.worldbank.org/wbi/governance.

Kaufmann, D., Kraay, A., & Zoido-Lopaton, P. (1999), 'Governance matters', World Bank Policy Research Working Papers, no. 2196.

Kaufmann, D., Kraay, A., & Zoido-Lopaton, P. (2002). 'Governance matters II – updated indicators for 2000/2001', World Bank Policy Research Working Papers, no. 2772.

Kaul, G. (1990). "Monetary Regimes and the Relation between Stock Returns and Inflationary Expectations", Journal of Financial and Quantitative Analysis, Cambridge University Press, 25(03): 307-321.

Keane, S. (1993). 'Emerging markets - the relevance of efficient market theory', ACCA Research, Occasional Research Paper, No.15.

Kemboi, J. K., & Taru, D. K. (2012). Macroeconomic Determinants of Stock Market Development in Emerging Markets: Evidence from Kenya, Research Journal of Finance and Accounting, Vol. 3, No 5 pp 57-68.

Kimani, D. K., & Mutuku, C. M. (2013). Inflation Dynamics on the Overall Stock Market Performance: The Case of Nairobi Securities Exchange in Kenya. Economics and Finance Review, 2(11), 1-11.

Knack, S., & Keefer, P. (1995). Institutions and Economic Performance: Cross Country Tests Using Alternative Institutional Measures, Economics and Politics, Vol. 7: 207-227.

Knack, S., & Keefer, P. (1997a). 'Does social capital have an economic payoff? A cross-country investigation', Quarterly Journal of Economics, vol. 112, no. 4, pp. 1251-1288.

Knack, S., & Keefer, P. (1997b). 'Why don't poor countries catch up? A cross-national test of institutional explanation', Economic Inquiry, vol. 35, no. 4, pp. 590-602.

Kormendi, R. C., & Meguire, P. G. (1985). 'Macroeconomic determinants of growth: cross-country evidence', Journal of Monetary Economics, vol. 16, no. 2, pp. 141-163.

Kuwornu J. K. M., & Owusu-Nantwi V. (2011). "Macroeconomic Variables and Stock Market Returns: Full Information Maximum Likelihood Estimation", Research Journal of Finance and Accounting, 2(4): 49 – 63.

Kyereboah-Coleman, A., & Agyire-Tettey, K. F. (2008). "Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange", Journal of Risk Finance, 9(4): 365 – 378.

La Porta, R., Lopez -de Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and Finance, Journal of Political Economy 106, 1113-1155.

La Porta, R., Lopez -de Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal Determinants of External Finance, Journal of Finance 52, 1131-1150.

Lakner, P. (1995). Utility Maximization with Partial Information, Stochastic Processes and their Applications, 247-273.

Lakner, P. (1998). Optimal Trading Strategy for an Investor: The Case of Partial Information, Stochastic Processes and their Applications, 77-97.

Levine, R., & Zervos S. (1998). Stock Markets, Banks, and Economic Growth, American Economic Review, Vol. 88, pp. 536–558.

Li, Q., Yang, J., Hasiao, C., & Chang, Y., J. (2005). "The Relationship between Stock Returns and Volatility in International Stock Markets". Journal of Empirical Finance, 12, pp. 650- 665.

Lin, J. Y., & Jeffrey, B. N. (1995). 'Institutions and economic development' in J. Behrman and T. N. Srinivasan (eds), Handbook of Development Economics, vol. 3A, Amsterdam: North-Holland, chapter 38.

Liptser, R.S., & Shiryaev, A.N. (1977). Statistics of Random Processes: I. General Theory, Springer-Verlag.

Little, W. A. (2003). Motivating Learning and the Development of Human Capital. Compare, 33(4), 437-452.

Loyaza, N., & Soto, R. (2002). "The Sources of Economic Growth; An Overview." in "Economic Growth: sources, trends and cycles" (2002), Loayza, N. and R. Soto (Eds), Santiago, Chile.

Maku, O. A., & Atanda, A. A. (2010). Determinants of stock market performance in Nigeria: long-run analysis. Journal of Management and Organizational Behavior, 1(3), 5-16.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). "A Contribution to the Empirics of Economic Growth." Quarterly Journal of Economics, May, 107(2): 407-437.

Maskay, B. (2007). Analyzing the Effect of Change in Money Supply on Stock Prices, The Park Place Economist, 15 (1), 72 - 79. ISSN: 0736-8631.

Maysami, R. C., & Koh, T. S. (2000). A vector error correction model of the Singapore stock market. International Review of Economics and Finance. 9: 79-96.

McKinnon-Shaw, E.S. (1973). Financial Deepening in Economic Development, New York: Oxford University Press.

McKinsey & Company. (2017, April). Deepening capital markets in emerging economies. Banking & Finance. Sydney Design Studio.

Mehwish, Z. (2013). Determinants of Stock Market Performance in Pakistan. Interdisciplinary Journal of Contemporary Research in Business, 4(5), 1017-18.

Mincer, J. (1974). Schooling, experience, and earnings. New York: Columbia University Press.

Mishal, Z. A. (2011). Financial Development and Economic Growth: Evidence from Jordan Economy. Journal of Business & Economic Studies, 17(2), 20-35.

Mukherjee, T., & Naka, A. (1995). Dynamic Linkage Between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model, Journal of Financial Research 18, 223-237.

Nehru, V., Swanson, E., & Dubey, A. (1993). A New Database on Human Capital Stock Sources, Methodology, and Result. Working Paper No. 1124, Washington DC: World Bank.

North, D. C. (2005). Understanding the Process of Economic Change, Princeton University Press.

Ochieng, D. E., & Adhiambo, E. O. (2012). The Relationship between Macro Economic Variables and Stock Market Performance in Kenya. DBA Africa Management Review 2012, Vol 3 No 1 pp., 3(1), 38-49.

Ologunde, A.O., Elumilade, D.O., & Asaolu, T. O. (2006). Stock Market Capitalization and Interest Rate in Nigeria: A Time Series Analysis. International Research Journal of Finance and Economics, 4, 154-166.

Osaze, B.E. (1985). Effect corporate earnings, Dividend and volume on Stock Price Movements in Nigeria: 1976- 1980, Benin Journal of Social Sciences, Vol1, No1.

Osei, K. A. (2006). Macroeconomic factors and Ghana stock market, The African Financial Journal, 8(1), 26-38.

Philips, P. C. B. (1986). Understanding Spurious Regression in Econometrics.

Poon, S. H., & Taylor, S.J. (1992). Stock Returns and Volatility: an Empirical Study of the U.K Stock Market. Journal of Banking and Finance. **16**: 37-59.

Psacharopoulos, G., & Arriagada, A. M. (1986). The Educational Attainment of the Labor Force: An International Comparison. International Labor Review, CXXV, 32-52.

Psacharopoulos, G., & Layard, R. (1979). Human Capital and Earnings: British Evidence and a Critique. The Review of Economic Studies, 46, 485–503.

Psacharopoulos, G., (1994). 'Returns to education: a global update', World Development 22, 1325—1343.

Rastogi, P. N. (2002). Knowledge Management and Intellectual Capital as a Paradigm of Value Creation. Human Systems Management, 21(4). 229-240.

Roc, C. (1996). Emerging Asian Equity Markets Development: A Historical Perspective" in "The Changing Capital Markets of East Asia", ed., Ky Cao, Routledge, London.

Rodriguez, P. J., & Loomis, R. S. (2007). A New View of Institutions, Human Capital, and Market Standardization. Education, Knowledge & Economy, 1(1), 93–105.

Rodrik, D. (1999). 'Where did all growth go? External shocks, social conflict, and growth collapses' Journal of Economic Growth, vol. 4, no. 4, pp. 385-412.

Rodrik, D. (2000). 'Institutions and high-quality growth: what are they and how to get them' Studies in Comparative International Development, vol. 35, no. 3, pp. 3-31.

Rodrik, D. (2003). In Search of Prosperity: Analytic Narratives on Economic Growth, Princeton: Princeton University Press.

Rodrik, D. (2005). Why we learn nothing from regressing economic growth on policies, Mimeo. Harvard University.

Romer, P. M. (1990). Endogenous Technological Change. Journal of Political Economy, 98(5), 71–102.Sheffrin, M. S. (2003). Economics: Principles in Action. New Jersey: Pearson Prentice Hall.

Rosen, S. (1976). "A Theory of Lifetime Earnings." Journal of Political Economy, 84(4).

Sala-i-Martin, X. (1997). "I Just Ran Four Million Regressions." National Bureau of Economic Research (Cambridge, MA) Working Paper No. 6252.

Salami A. K., & Acquah-Sam, E. (2013). Analysis of knowledge influences in Ghana's capital market development, Journal of Business Administration and Management Sciences Research Vol. 2(9), pp. 203-208.

Sangmi, M.D., & Mubasher, H.M. (2013). Macroeconomic variables on stock market interactions: The Indian experience. Advances In Management. 6(8). Retrieved from http://dx.doi.org/10.9790/487x-01131528.

Sass, J., & Haussmann, U.G. (2004). Optimizing the terminal wealth under partial information: The drift process as a continuous time Markov chain, Finance and Stochastics, 553-577.

Schultz, T. W. (1961). Investment in Human Capital. American Economic Review, 51, 1-17.

Schwert, G. W. (1990, July). "Indexes of U.S. Stock Prices from 1802 to 1987," The Journal of Business, University of Chicago Press, vol. 63(3), pages 399-426.

Scully, G. W. (1988). 'The institutional framework and economic development', Journal of Political Economy, vol. 96, no. 3, pp. 652-662.

Sellin, P. (2001). "Monetary Policy and the Stock Market: Theory and Empirical Evidence." Journal of Economic Surveys, 15 (4), pp. 491-541.

Sen, A. (1999). Development as Freedom. New York: Anchor Books.

Sleezer, C. M., Conti, G. J., & Nolan, R. E. (2003). Comparing CPE and HRD Programs: Definition, Theoretical Foundations, Outcomes, and Measures of Quality. Advances in Developing Human Resources, 6(1), 20-34.

Smith, A. (1976). An Inquiry into the Nature and Causes of the Wealth of Nations, edited by R. H. Campbell et al, Oxford: Oxford University Press.

Soenen, L. A., & Hennigar, E. S. (1988). An Analysis of Exchange Rates and Stock Prices: the U.S. Experience between 1980 and 1986. Akron Business and Economic Review 7–16.

Songole, R. K. (2012). The Relationship between Selected Macroeconomic Variables and Stock Return at the Nairobi Securities Exchange. Nairobi: University of Nairobi.

Spyrou, I. S. (2001). Stock returns and inflation: evidence from an emerging market. Applied Economics Letters, 8, 447-450.

Subramanian, A., & Roy, D. (2001). Who can explain the Mauritian Miracle: Meade, Romer, Sachs or Rodrik, IMF working paper.

Ting, H. L., Feng, S. C., Weng, T. W., & Lee, W. K. (2012). Macroeconomic Determinants of the stock Market Return: The Case in Malaysia. Kuala Lumpur: Universiti Tunku Abdul Rahman.

Uddin, M. G. S., & Alam, M. M. (2007). The Impacts of Interest Rate on Stock Market: Empirical Evidence from Dhaka Stock Exchange. South Asian Journal of Management and Sciences, 1(2), 123-132.

Uddin, M. G. S., & Alam, M. M. (2009). The relationship between Interest Rate and Stock Price: Empirical Evidence from Developed and Developing countries, International Journal of Business and Management, vol. 4, No. 1, 43 - 51Vol. 7, no. 3.

Van Rooij, M., Lusardi, A., & Alessie, R. (2011). "Financial literacy and stock market participation", Journal of Financial Economics, 101(2), pp. 449-472.

Venniker, R. (2001). "Social Returns to Education: A Survey of Recent Literature on Human Capital Externalities." CPB (Netherlands Bureau for

Economic Policy Analysis) Report 00/1. Retrieved from http://www.cpb.nl/eng/cpbreport.

Volpe, R., Kotel, J., & Haiyang, C. (2002). A Survey of Investment Literacy Among Online Investors, Financial Counseling and Planning, Vol. 13, No. 1, pp. 1-13.

Wai, U., & Pactrick, H.T. (1973). Stock and Bond Issues and Capital Markets in less developed countries, IMF Staff papers, No, 20.

West, G. T. (1996). "Managing Project Political Risk: The Role of Investment Insurance," Journal of Project Finance, Volume 2 (4), pp. 5-11.

Williamson, O. E. (1995). "Hierarchies, Markets and Power in the Economy: An Economic Perspective," Industrial and Corporate Change, Oxford University Press, vol. 4(1), pages 21-49.

Wolf Jr., C. (1955). 'Institutions and economic development', American Economic Review, vol. 45, no. 5, pp. 867-883.

Wongbangpo, P., & Sharma, C. (2002). "Stock Market and Macroeconomic Fundamental Dynamic Interaction: ASEAN-5 Countries", Journal of Asian Economics, vol.13 pp.27-51.

Woodhall, M. (2001). Human capital: educational aspects, International Encyclopedia of the Social & Behavioral Sciences.

Yartey, C. A. (2008). Determinants of Stock Market Development in Emerging Economies: Is South Africa Different? IMF working Paper-WP/08/32 Washington, International Monetary Fund.

Yip, P. (1996). Exchange rate management in Singapore, In Economic Policy Management in Singapore, ed. Lim Chong Yah, 237-273. Singapore: Addison Wesley.

Youndt, M.A., Subramaniam, M., & Snell, S.A. (2004). "Intellectual Capital Profiles: An Examination of Investment and Return", Journal of Management Studies, Vol. 41, No. 2, pp 335–361.

APPENDICES

Appendix 1 - Indicators of stock market development 1996 – 2011

Country	Total Value Traded (% of ΔGDP)	Stock Market Capitalization (% of ΔGDP)	Turnover Ratio (%)	Number of Listed Companies	ΔGDP per Capita $
Argentina	3.75	30.10	23.36	135	4285.75
Bangladesh	3.77	5.47	54.44	216	377.21
Bolivia	0.11	14.26	0.97	27	1020.64
Botswana	0.88	23.03	5.38	16	4981.22
Brazil	19.67	38.61	53.21	464	4582.71
Bulgaria	2.08	13.03	13.13	402	3437.66
Chile	12.06	95.18	12.66	252	6669.80
Colombia	2.65	25.02	9.93	117	3295.39
Costa Rica	0.67	9.72	5.29	17	4683.95
Czech Republic	12.64	23.77	53.42	265	11852.47
Ecuador	0.38	7.16	5.20	47	2903.80
Egypt	12.29	34.88	27.11	690	1158.47
Ghana	0.45	15.37	3.29	26	486.02
Hungary	15.57	20.22	66.30	46	9372.58
India	44.04	47.66	103.11	4845	641.97
Indonesia	11.72	26.66	47.89	294	1195.98
Jamaica	3.88	117.63	3.14	39	4178.91
Jordan	39.69	109.20	29.04	169	2135.87
Kenya	1.58	23.49	5.68	55	528.17
Malaysia	68.64	162.95	39.58	748	4919.38
Mexico	8.52	27.38	32.97	168	7468.29
Morocco	7.98	38.12	17.58	60	1796.14
Nigeria	1.73	14.40	8.53	189	684.49
Pakistan	31.50	19.38	167.50	683	631.11
Panama	0.55	24.84	2.75	22	4573.13
Paraguay	0.12	3.37	5.17	54	1558.13
Peru	3.58	31.72	16.37	225	2706.04
Philippines	12.26	51.51	23.53	219	1123.98
Poland	8.11	19.12	61.71	238	7199.95
Romania	1.45	10.79	21.14	2963	4280.12
Saudi Arabia	73.95	61.17	84.02	87	13402.12

Appendix 1 - *Indicators of stock market development 1996 – 2011 (Continuation)*

Country	TVT (% of ΔGDP)	SMC (% of ΔGDP)	Turnover Ratio (%)	Listed Companies	ΔGDP per Capita $
Slovak Republic	2.18	5.83	40.82	346	10871.28
Slovenia	2.65	19.63	24.27	65	16522.56
South Africa	60.32	173.05	32.81	534	4990.85
Sri Lanka	2.81	17.92	16.10	227	1103.19
Thailand	44.10	57.64	84.48	424	2401.98
Tunisia	1.68	13.11	12.61	39	2859.05
Turkey	32.11	23.95	135.91	260	6320.72
Uruguay	0.02	0.74	2.77	13	5460.68
Venezuela	1.69	8.57	14.66	74	5462.98
Zimbabwe	9.40	84.05	11.03	70	592.08

Source: Word Development Index (2012)

Appendix 2 - Mean values of component of institutional quality

Country	CC	VA	RL	RQ	PS	GE
Argentina	-0.4034	0.29274	-0.54595	-0.449	-0.158	-0.04
Bangladesh	-1.0853	-0.419	-0.88288	-0.9328	-1.236	-0.708
Bolivia	-0.5842	-0.0207	-0.71315	-0.4165	-0.58	-0.441
Botswana	0.89018	0.58373	0.604985	0.60495	0.9571	0.5529
Brazil	-0.0226	0.38306	-0.30584	0.17987	-0.121	-0.062
Bulgaria	-0.2042	0.50559	-0.18042	0.49189	0.2576	0.0326
Chile	1.41986	0.97859	1.244058	1.47027	0.5722	1.2025
Colombia	-0.2673	-0.3235	-0.62147	0.12835	-1.822	-0.146
Costa Rica	0.55271	0.9973	0.50956	0.52709	0.6717	0.2557
Czech Republic	0.35474	0.94333	0.84427	1.10567	0.8756	0.8707
Ecuador	-0.8574	-0.2572	-0.91583	-0.8018	-0.744	-0.782
Egypt	-0.4762	-1.0205	-0.06214	-0.3276	-0.627	-0.329
Ghana	-0.1112	0.19119	-0.09981	-0.1357	-0.071	-0.06
Hungary	0.52146	1.03645	0.848601	1.10686	0.8661	0.8262
India	-0.4185	0.38603	0.102799	-0.3277	-1.168	-0.051
Indonesia	-0.8133	-0.3025	-0.70697	-0.3783	-1.395	-0.351
Jamaica	-0.3978	0.54104	-0.44346	0.25653	-0.215	0.1539
Jordan	0.16751	-0.5878	0.332669	0.25026	-0.305	0.145

Appendix 2 - ***Mean values of component of institutional quality Continuation***

Country	CC	VA	RL	RQ	PS	GE
Kenya	-0.9503	-0.4172	-0.96109	-0.2284	-1.18	-0.556
Malaysia	0.26401	-0.3936	0.497353	0.53187	0.2162	1.0591
Mexico	-0.2926	0.14942	-0.5209	0.33923	-0.529	0.193
Morocco	-0.1556	-0.6245	-0.0692	-0.1643	-0.357	-0.112
Nigeria	-1.1099	-0.8482	-1.24584	-0.8989	-1.7	-1.021
Pakistan	-0.9354	-0.9798	-0.8272	-0.6124	-1.944	-0.549
Panama	-0.3139	0.496	-0.14782	0.43084	0.029	0.0989
Paraguay	-1.1311	-0.3213	-1.00916	-0.5856	-0.787	-0.938
Peru	-0.2706	-0.0817	-0.65427	0.34411	-0.955	-0.309
Philippines	-0.5756	0.04629	-0.42186	-0.0458	-1.336	-0.046
Poland	0.36823	0.97555	0.560471	0.79406	0.6237	0.5508
Romania	-0.2833	0.40729	-0.10001	0.30437	0.1844	-0.328
Saudi Arabia	-0.2407	-1.6093	0.156765	0.02081	-0.281	-0.219
Slovak Republic	0.2732	0.87462	0.41101	0.92968	0.871	0.7573
Slovenia	0.96691	1.09796	0.98243	0.83968	1.0384	0.9661
South Africa	0.37684	0.66464	0.090105	0.51175	-0.153	0.5842
Sri Lanka	-0.2432	-0.3323	0.112142	-0.0735	-1.32	-0.215
Thailand	-0.2344	-0.1166	0.11109	0.25933	-0.576	0.2873
Tunisia	-0.0073	-0.9512	0.026233	-0.0333	0.1073	0.4315
Turkey	-0.1496	-0.2042	0.034432	0.26525	-0.901	0.1311
Uruguay	0.98092	0.98193	0.543132	0.4374	0.7737	0.5012
Venezuela	-0.9906	-0.594	-1.30372	-1.0288	-1.128	-0.972
Zimbabwe	-1.145	-1.3643	-1.56669	-1.8256	-1.117	-1.07

Source: World Governance Indictors (2012)

Appendix 3 - Definition and sources of data

Variables	Definition	Sources
Stock market capitalization (SMC)	SMC_{it-1} is the stock market capitalization relative to $\Delta GDP_{i,t}$. $L\Delta SMC_{it-1} = \frac{(\ln SMC_{it} - \ln SMC_{it-1})}{GDP_{it}} \times 100$, where $L\Delta SMC_{it-1}$ is the yearly growth rate of stock market capitalization relative to $\Delta GDP_{i,t}$, at the present year (t). 'L' is the natural logarithm.	WDI, the EMDB of the IFC and local stock markets
Money supply (MS)	M2: M1+ time & savings deposits. $MS_{i,t}$ is the Money Supply relative to $GDP_{i,t}$. It is a proxy for banking sector development. $LMS_{i,t} = \frac{(\ln MS_{i,t} - \ln MS_{i,t-1})}{GDP_{it}} \times 100$ is the yearly growth rate of Money Supply relative to $\Delta GDP_{i,t}$, at the current year (t). 'L' is the natural logarithm.	WDI, the EMDB of the IFC and local stock markets
Consumer Price Index (CPI)	$LCPI_{it}$ is a proxy for macroeconomic stability. $LCPI_{it} = \frac{(\ln CPI_{it} - \ln CPI_{it-1})}{GDP_{it}} x100$, where $LCPI_{it}$ is the yearly growth rate of $LCPI_{it}$ at current time (t). 'L' is the natural logarithm.	WDI, the EMDB of the IFC and local stock markets
Gross domestic product	Gross domestic product over population (GDP per Capita)	WDI, the EMDB of the IFC and local stock markets
Control of corruption (CC)	The abuse of public power, office, or resources by government officials or employees for personal. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Voice and accountability	The degree of citizen participation in government and in the policy making process. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Rule of law (RL)	The right to a fair and public trial without undue delay. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Political stability (PV)	Factors which undermine political stability such as conflicts of ethnic, religious, and regional nature, violent actions by underground political organizations, violent social conflicts, and external public security. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Government effectiveness (GE)	Government effectiveness measures the quality of public services and policy formulation and implementation, and thus indicates the credibility of the government's commitment to such policies. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Regulatory quality (RQ)	The capacity for government to formulate and implement sound policies and regulations that permits and promotes private sector development. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Worldwide Governance indicators
Institutional quality	This is a composite index computed by row average of component of institutional quality computed by the researcher. The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores.	Computed by the researcher
Education (E)	This index is measured by secondary school enrolment as a percent of a total population.	WDI, HDI,

Appendix 4 - Correlation coefficient of institutional quality variables (Difference)

	ΔSMC	ΔGDP	ΔCC	ΔVA	ΔRL	ΔRQ	ΔPS	ΔGE	ΔIQ	ΔCC× ΔGDP	ΔVA× ΔGDP	ΔRL× ΔGDP	ΔRQ × ΔGDP	ΔPS× ΔGDP	ΔGE× ΔGDP
ΔSMC	1														
ΔGDP	0.35*	1													
ΔCC	0.24*	0.12	1												
ΔVA	0.16	0.26	0.72**	1											
ΔRL	0.23*	0.05	0.67**	0.75**	1										
ΔRQ	0.25*	0.04	0.85**	0.89**	0.82**	1									
ΔPS	0.34*	0.11	0.83**	0.93	0.79**	0.89	1								
ΔGE	0.15*	0.11	0.84**	0.88**	0.84**	0.81**	0.87**	1							
Δ1Q	0.23	0.22*	0.51*	0.51*	0.51*	0.57*	0.51*	0.51*	1						
ΔCC×ΔGDP	0.09*	0.07*	0.21*	0.15*	0.31*	0.24*	0.36*	0.36*	0.23**	1					
ΔVA×ΔGDP	0.06*	0.13*	0.37*	0.23*	0.51*	0.36*	0.36	0.44*	0.16**	0.14**	1				
ΔRL×ΔGDP	0.08*	0.12	0.32*	0.17*	0.19	0.15	0.12*	0.23**	0.23*	0.33**	0.03**	1			
ΔRQ×ΔGDP	0.03**	0.20**	0.41	0.18**	0.26**	0.44*	0.23*	0.17*	0.51*	0.21*	0.51*	0.26*	1		
ΔPS×ΔGDP	0.18*	0.09*	0.37*	0.29*	0.15*	0.11*	0.54*	0.31*	0.23*	0.22	0.12**	0.23**	0.16*	1	
ΔGE×ΔGDP	0.14*	0.10*	0.19*	0.34*	0.13*	0.32*	0.77*	0.36*	0.41	0.24*	0.38*	0.15**	0.19**	0.39*	1

The dependent variable is SMC; ** and * denote statistical significance at the 0.01 and 0.05 levels respectively.

Appendix 5 - Pedroni Cointegration Test

Within stat	Panel rho	Panel v	Panel PP	Panel ADF
Statistic	-3.411	0.54967	-5.309	-6.408
P-value	0.024	0.2897	0.0000	0.0000

Between stat	Group rho	Group PP	Group ADF
Statistic	-3.8121	-4.0947	-5.991
P-value	0.000	0.031	0.0000

Source: Field survey, Winful (2016)

Appendix 6 - Westerlund Cointegration Test

Within stat	G tau	G alpha	P tau	P alpha
Statistic	-5.933	-11.401	-14.108	-21.433
P-value	0.021	0.0000	0.0000	0.0000

Source: Field survey, Winful (2016)

VITA

Ernest Christian Winful
Accountancy Studies Department, Accra Polytechnic, Accra.
Tel.: 0208152323; Email: ephlameswinful@yahoo.com

CURRENT POSITION

Senior Lecturer, 17th October 2011 - present
Accountancy Studies Department, Accra Polytechnic, Accra

Administrative duties

Position	Responsibilities and duties	Year
Dean School of Business and Management Studies	Responsible for coordinating five Departments; Language and Liberals Studies, Accountancy Studies, Marketing Studies, Purchasing & Supply Studies, and Secretaryship and Management Studies.	1 Nov 2013 – Date
Head of Department (Purchasing & Supply)	Responsible for teaching and non-teaching duties in the department, allocating course to lecturers, academic board rep for the department, coordination of activities in the department	12 Aug 2013 –11 Aug 2014
Head of Department (Accountancy)	Responsible for teaching and non-teaching duties in the department, allocating course to lecturers, academic board rep for the department, coordination of activities in the department	1 Sept 2010 - 31 Aug 2012
ACTING Head of Department (Accountancy)	Responsible for teaching and non-teaching duties in the department, allocating course to lecturers, academic board rep for the department, coordination of activities in the department	Sept 2010 - 31 Aug 2013
Head of Department (Accountancy)	Responsible for teaching and non-teaching duties in the department, allocating course to lecturers, academic board rep for the department, coordination of activities in the department	1 Oct 2013 – 31 Oct 2013
Chairman, Quality Circles	Audit Departmental activities. Ensure that lecturers comply with quality circles in the department.	3 Oct 2011 – 2013
Academic counselor	Counseling of Part time students (both academic and on social issues)	2013/2014 academic year
Examination officer	Preparation of results, collation of End of Semesters questions, releasing of results, invigilation of exams, responding to student problems relating to their result, academic board representative for exams and preparing results for National Board for Professional and Technician Examination (NABPTEX)	10 April2006– 31 Aug 2008
Examination officer	Preparation of results, collation of End of Semesters questions, releasing of results, invigilation of exams, responding to student problems relating to their result, academic board representative for exams and preparing results for National Board for Professional and Technician Examination (NABPTEX)	1 Sept 2008– 31 Aug 2010
Coordinator HND part time	See to the day to day coordination of the program and reporting to the Head of Department	2007 – 2010
Coordinator Non Tertiary	See to the day to day coordination of the program and reporting to the Head of Department	2008 – 2010

Extra department activity

- Member of Executive Committee (2014 – date)
- Member of Development Committee to Council (5 May July 2014 – date)
- Member of Finance Committee to Council (5 May July 2014 – date)
- Member of Planning and Resources Committee (5 May July 2014 – date)
- Member of the Research and Conferences Committee (5 May July 2014 – date)
- Member of the Post-Graduate Scholarship and Staff Development Committee (5 May July 2014 – date)
- Member of Business Advisory Board (5 May July 2014 – date)
- Member of Examination Committee (22 July 2010 – 31Aug 2012)
- Member of Examination Committee (5 May July 2014 – date)
- Member of Technical Committee on Examination Results (30 June 2014 – date)
- Member of Academic Standard Committee (2011)
- Member of Admissions Committee (22 July 2010 – Date
- Member of the Library and Bookshop Committee (5 May July 2014 – date)
- Chairman of School Board (School of Business and Management Studies) (23 May 2013 – date)
- Member of the Industrial Relations Committee (5 May July 2014 – date)
- Member of ICT Committee (10 March 2009)
- Member of Examination Committee (2010 – date)
- Member of Technical Committee on Examination Results (May 2014 – date \
- Member of Committee (Students / SRC / Accra Polytechnic Court case in relation to SRC constitution) (Sept 2014)

Community and National Activities

i) **National/International**

a. Member of Editorial Board, Journal of the Institute of Certified Economists of Ghana (JOICEG), 2014

b. External Assessor, Koforidua Polytechnic, 12 Sept 2013 to date

c. Reviewer; Third research Conference of Polytechnics, Sept 2014, Ho Polytechnic.

d. National Policy Dialogue on Tertiary Education in Ghana; Repositioning Tertiary Education for National Development; May 8 - 9, 2013; Mensvic Hotel, East Legon (contributed to the National Policy Dialogue)

e. Reviewer; Journal of Africa Studies and Development (2011 – date)

f. Steward for Operations, Methodist Church Ghana, Teshie-Estate Society, January 2002 to October 2008.

g. Founder and Owner of Archesi Kid Court School at Kasoa, Opeikuma. Find attached certificate of ownership and other necessary documents.

ii) **Community**

a. Speaker on the Topic "Savings Planning", organized by Hotel Catering and Institutional Management, Demonstration Block, Accra Polytechnic (2014)

b. Chairperson of morning session (22/02/2012), Building Our Research Capacities for National Development (Part Two), Accra Polytechnic Second Research Conference, Accra Polytechnic Auditorium.

c. Winful, Ernest, (2007), Making a Good Decision, , A-Poly Teller, A Quarterly Newsletter of Accra Polytechnic, 3rd edition, Accra Polytechnic

d. Led Accountancy Department to participate in the First Accra Polytechnic Poster and Exhibition Conference 2013.

e. Patron, Association of Polytechnic HND Accountancy Students of Ghana (APHAS), Accra Polytechnic, 2010-2013

Technical / Expert Tasks:

- Member, Committee to recommend appropriate monthly rent and management of the newly constructed stores (8th October 2015)
- Member of a task force on conversion of Accra Polytechnic into a technical University (January, 2015)
- Chairman, Investigative Committee, (25th October 2015)
- Member, Disciplinary Board, (July 15, 2015)
- Chairman, Committee to review the rules governing Examination Malpractice (6th Feb 2014)
- Chairman of Committee (Review and Development of relevant market driven programmes for Accountancy department (DOW Chemical)) 27th March 2014
- Co-Chairman B'Tech Procurement and Supply Chain Management (syllabus development and accreditation) 2013
- Disciplinary Committee: 8 August 2014; March 2014
- Disciplinary Committee: 19 March 2014
- Upgraded a template for the generation of students academic results (2006)
- Developed a working document for Weekend program for school of Business (8th Oct 2013)
- Head of the Group developing a curriculum for BTECH Accounting
- Development and presentation of document for accreditation of BTECH program
- Chairman of the team that developed a working document for the computerized Accounting Applications program. (2010/2011 academic year)
- Member of the Team that developed Polytechnic Student Hand Book for BTECH programs (March 2014)
- Examination Center Supervisor K-Block (2013-date)

PREVIOUS EMPLOYMENT

- Teaching Assistant, Centre for Development Studies, UCC, 1998 – 1999
- National Commission for Civic Education, NCCE, 2000 – 2002

EDUCATION

- PhD, (Economics); University of Cape Coast, Cape Coast. (awaiting viva)
- MA. Finance and Industrial Relations Management, Kwame Nkrumah University of Science and Technology, Kumasi 2000
- B.A., (Economics); University of Cape Coast 1997
- Diploma in Education; University of Cape Coast 1997

SHORT COURSES

- Certification in Econometric Modelling, Financial Modelling and Consultancy Practice; The Institute of Certified Economist of Ghana. (1st Sept to 8Th Sept 2014)
- Certification in Data Management and Analysis, Institute of Statistical, Social & Economic Research (ISSER), Legon, 11th – 22nd June 2012

MEMBERSHIP OF PROFESSIONAL BODIES

- Research Fellow, The Institute of Certified Economist of Ghana (2014)
- Professional Certificate in Corporate Governance, Institute of Directors – Ghana (april, 2011)
- Professional Diploma in Corporate Governance, Institute of Directors – Ghana (October, 2011)

PUBLICATIONS

1. **Winful, Ernest Christian**, Sarpong David Jnr and Agyei-Ntiamoah Jones, (October 2016), Relationship between institutional quality and stock market performance: Evidence from emerging economies, African Journal of Business Management, Vol.10(19), pp. 469-484
2. **Winful, Ernest Christian**, Sarpong David Jnr and Sarfo Adjei Kofi, (August, 2016), Macroeconomic variables and stock market performance of emerging countries, Journal of Economics and International Finance, Vol. 8(7), pp. 106-126
3. **Winful, Ernest Christian**, Sarpong, David (Jnr.), Kumi-Koranteng, Prince, (September, 2012), Performance of Ghana stock exchange for the period 2007 – 2009, African Journal of Business Management Vol. 6(38), pp. 10340 – 10359.
4. **Winful, Ernest Christian**, Sarpong, David (Jnr.) and Ntiamoah, Jones, (2012), Provident Fund as a Tool for Motivating Lecturers in Accra Polytechnic, Journal of Polytechnics (JOPOG), vol., 5 no. 2
5. **Winful, Ernest Christian**, Sarpong, David (Jnr.) and Agbodohor, William, (May, 2013), Economic Downturn and efficient Market Hypothesis: Lessons so Far for Ghana, Journal of Contemporary Issues in Business Research Volume 2, Issue No. 6, pp. 991 – 1002
6. **Winful, Ernest Christian**, (2011), The Effects Of Communication Services Tax: A Case Study On Subscribers In Accra Polytechnic, Journal of Polytechnics (JOPOG), vol. 5, pp. 109 – 128 No.1.
7. **Winful, Ernest Christian**, (2009), When does one Invest in Capital Market Instruments: The case Ghana Stock Exchange, JOPOG, vol. 3, no. 3, pp 17-28
8. **Winful, E. C.**, Arhenful, P. and Sarpong, D., (2014), Effect of FINSSP on Stock Price Volatility in Ghana; Firm level analysis, European **Journal** of Business and Management, vol. 6, no 2, pp. 68-88
9. **Winful, E. C.** Kumi-Koranteng, P. and Owusu-Mensah, M., (January, 2013), "Investment Education" on Stock Market Performance: Case of GSE, Journal of Contemporary Management, ID: 1929-0128-2013-04-29-17
10. Sarpong, David (Jnr.), **Winful, Ernest Christian** and Ntiamoah, Jones, (September, 2013), Determination of wide interest margins in Ghana: A panal EGLS analysis, African Journal of Business Management, Vol. 7(35), pp. 3535-3544, 21. www. academicjournals.org/AJBM
11. Sarpong David Jnr., **Winful Ernest Christian** and Owusu-Mensah Matthew, (July, 2014), Assessing the performance of banks listed on Ghana stock exchange: Financial ratio analysis (2005 to 2011), Journal of Economics and International Finance, Vol.6 (7), pp. 144-164
12. Sarpong, David (Jnr.), **Winful, Ernest Christian** and Ntiamoah, Jones, (March, 2016), Training Accountants for the dynamisms of modern business, Journal of Multidisciplinary Research, 1(1), Accra Polytechnic Press, pp34-38
13. Owusu-Mensah Matthew, Kumi, P.K, **Winful, E.C.** and Osabutey, D., (2014), Consumption Savings and Perception of Poverty among Informal Entrepreneurs in Accra, European Journal of Business and Management, Vol 6, No 15
14. Kumi, P. K., Amoamah M.O. and **Winful, E.**, (2013), Evaluation of the Performance of Banks in Ghana Using Financial Ratios: A Case Study of Barclays Bank Ghana Limited (BBGL), Ghana Commercial Bank (GCB) and Agricultural Development Bank (ADB), European Journal of Business and Management vol. 5, no. 28, 126-138
15. Koranteng-Kumi, P., Owusu-Mensah, M. and **Winful, E.**, (2014), Evaluating the Relationship between Small Enterprise Performance and Poverty Reduction in Ghana, European Journal of Business and Management, Vol.6, No.10

CONFERENCE

1. Kumi-Koranteng, P., Owusu-Mensah, M. and **Winful, E. C.**, Relation between Poverty Reduction and Growth of Small Scale Enteprise, International Conference on "Regional Cooperation in TVET for Sustainable Development in Africa," CAPA, Banjul, 2nd – 8th June, 2013.
2. Agbodohu, W., **Winful, E. C.** and Sarpong, D. (Jnr.), (October, 2011), Managing an Electronic Voting for Credible Results: The Case of Accra Polytechnic 2011 SRC Elections, Second Accra Polytechnic Conference, Auditorium, Accra Polytechnic.
3. David Sarpong, **Ernest, Winful**, and Jones Ntiamoah, (March 2011), Grooming the 21st Century Accountant, Accra Polytechnic First Conference Paper, Accra Polytechnic Auditorium
4. **Winful, Ernest Christian**, Sarpong, David (Jnr.) and Ntiamoah, Jones, (March 2011), The Double edge Sword Provident Fund: The case of Accra Polytechnic (Accra Polytechnic First Conference Paper).

SEMINAR AND WORKSHOPS

- National Policy Dialogue on Tertiary Education in Ghana; Repositioning Tertiary Education for National Development; (May 8 - 9, 2013); Mensvic Hotel, East Legon (The team from Accra Polytechnic is made up of Rector, Vice Rector, Ameko, **Ernest Winful** Okai-addo, and Dr. Obri-Yeboah)

PUBLICATION OF BOOKS

1. **Winful Ernest**, Sarpong D. (JNR) and Agbodohu William, (2014), An introduction to Business Finance, ed 2nd, BIS SYSTEM, Accra, ISBN 978-9988-1-5581-0
2. Sarpong, D. (JNR) and **Winful, E.**, (2014), Public Sector Accounting; Principles and Concepts, ed 2nd, BIS SYSTEM, Accra, ISBN 978-9988-1-5581-0
3. Arhenful P., **Winful E.**, (2013), Elements of Microeconomics, Dicovenditures, Accra, ISBN: 978-9988-1-7799-7

PERSONAL DATA

Date of birth:	8th October 1970
Languages Spoken:	English, Akan, and Ga.
Marital Status:	Married
Computer literate:	STATA, EViews, SPSS, STATISTICA, Excel, Word, and Power Point

REFEREES

Mr. Michael Benstil,
Registrar.
Cape Coast Tech. University.
Tel: 0264776048

Dr. Kofi Asenso,
National Health Insurance,
Accra,
kofiasenso@hotmail.com
Tel: 0243613635

Mr. David Sarpong Jnr.
Senior Lecturer,
Head of Department.
Accountancy Dept.
Accra Technical University.
Tel: 0264530561

academicJournals

Vol. 8(7), pp. 106-126, August, 2016
DOI: 10.5897/JEIF2016.0743
Article Number: C1AE2FD59878
ISSN 2006-9812

http://www.academicjournals.org/JEIF

Journal of Economics and International Finance

Full Length Research Paper

Macroeconomic variables and stock market performance of emerging countries

Winful Christian Ernest*, Sarpong David Jnr and Sarfo Adjei Kofi

Accountancy Department, Accra Polytechnic, Ghana.

Received 6 January, 2016; Accepted 18 May, 2016

This article seeks to fill the gap of severe data limitations on the link between macroeconomic variables and stock market performance. A panel data of 41 emerging countries for the period 1996 to 2011 was used to estimate the results. The model used by Sangmi and Mubasher (2013) was adopted and modified to determine the effect of macroeconomic variables on stock market capitalization. The four techniques to investigate the effects were robust ordinary least squares (OLS), FGLS, dynamic ordinary least squares (DOLS) and then Newey-West. It was discovered that depreciation in exchange rate in dollars and reduction in consumer price index affects stock market development negatively, while increase in money supply does influence stock market positively. The findings highlight the significance of macroeconomic factors such as consumer price index, exchange rate, money supply and GDP in explaining the stock market performance in emerging stock economies.

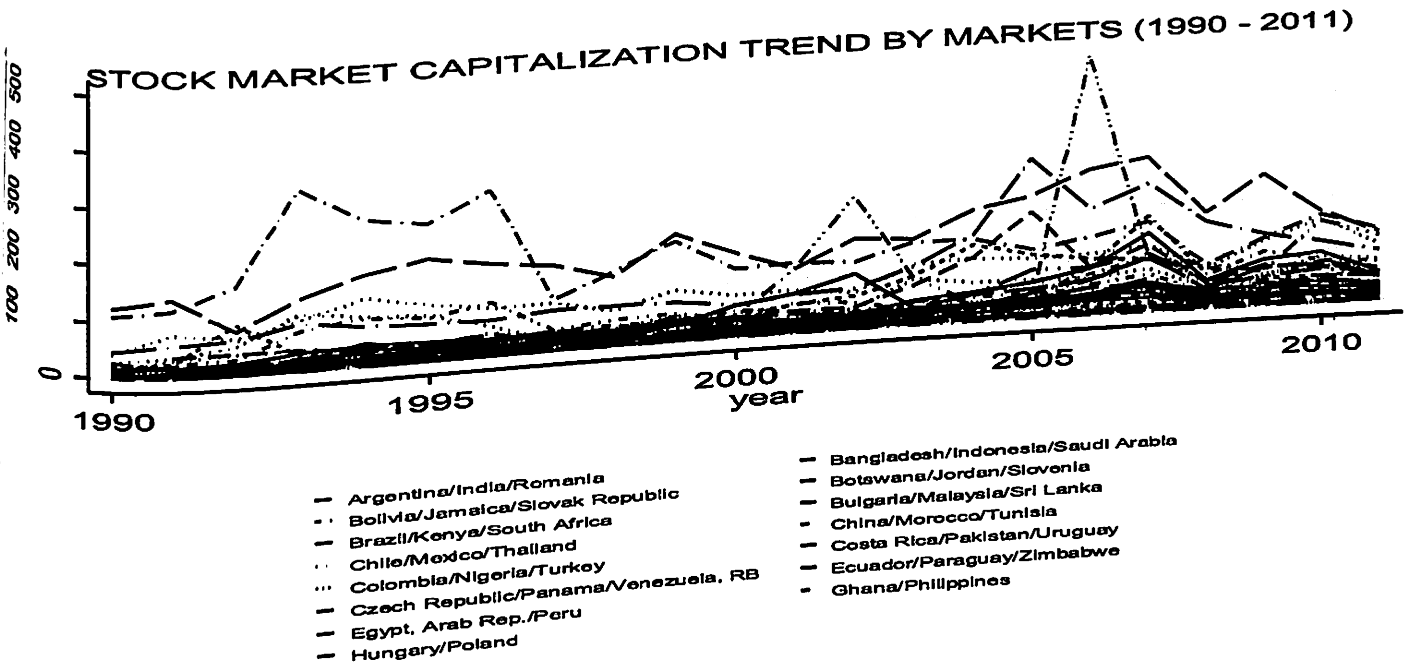
Key words: Stock Market Capitalization, Money Supply, Consumer Price Index, GDP and Stock Market

INTRODUCTION

The stock market plays a vital role in the modern economy since it acts as a mediator between lenders and borrowers. Financial markets, especially stock markets, have contributed considerably to the development of emerging economies over the last two decades. This trend is recorded at the same time that these economies are characterized with stable macroeconomic variables. The market capitalization of emerging stock markets rose from $604 billion to $3,074 billion for the period of 1990 to 1999. The trend continued in 2000 with countries like Malaysia, Jordan, Jamaica, Chile, Saudi Arabia, Thailand, and Philippines accounting for the rise in stock market capitalization. This trend is supported by Figure 1. It could be deduced that after 2000 most markets saw an increase in Stock Market Capitalization (SMC) as shown by markets sampled in this article.

Interestingly, countries cited as having high stock market capitalization over the period under study recorded low average GDP. The trend shows an inverse relationship between GDP and stock market capitalization which do not conform to literature reviewed in this article and hence raises questions worth researching. Various macroeconomic variables affect stock market behavior in line with intuitive financial theory (Maysami and Koh, 2000) for which existing literature provides number of theories illustrating the link between stock market behavior and macroeconomic variables. The effect of macroeconomic variables on the stock

*Corresponding author. E-mail: ephlameswinful@yahoo.com.



igure 1. Stock market capitalization trend by markets (1990 to 2011).

arket characteristics is deep-rooted in literature. owever, more studies are focused on the developed untries such as the US, UK and Japan (Fama, 1981; mao, 1988; Chen, 1991; Poon and Taylor, 1992) than have for emerging economies.

The work of Garcia and Liu (1999) established that croeconomic volatility does not affect stock market formance, while Maku and Atanda (2010) established t stock market performance in Nigeria is mainly ected by macro-economic factors in the long run. Ting al. (2012) established that Kuala Lumpur Composite dex is consistently influenced by interest rate, money pply and consumer price index in the short run and g-run in Malaysia. Mehwish (2013) recognized a gative relationship between real interest rate and stock arket performance in Pakistan. Consumer price index d interest rate have significant impact on the stock arket performance in Bangladesh according to the dings of Jahur et al. (2014).

A regression analysis conducted by Aduda et al. (2012) ported that there is no relationship between stock arket development and Macro-economic stability - flation and private capital flows. Mongeri (2011) tablished that foreign exchange rates have a negative gnificant impact on stock market performance. Also, ngole (2012) established that market interest rate, nsumer price index and exchange rate have a negative lationship with stock return. Ochieng and Adhiambo 012) established that 91 – day T-bill rate has a negative lationship with the NASI while inflation has a weak sitive relationship with the NASI. Kimani and Mutuku 013) showed that there is a negative relationship tween inflation and stock market performance.

There has being no research in an attempt to explain the current performance of stock markets in emerging economies in relation to macroeconomic variables that have seen remarkable improvement for emerging economies over sampling period of this article 1996 to 2011. We argue that macroeconomic instability and ceteris paribus negatively impacts stock market development.

In contrast to this study, many researchers such as Black et al. (1997), Hamao and Campbell (1992), Chen et al. (1986), Cochran et al. (1993), Fama and French (1989), Harvey et al. (2002) and Schwert (1990) have based their analysis on business cycle variables or stock market valuation measures such as the term spread or dividend yield. These variables are usually found to be stationary which is the reason why they were not accounted for.

The main objective of this article is to examine the effect of the selected macro-economic (consumer price index, money supply, and exchange rate in dollars) and GDP on stock market performance in emerging economies.

Hypotheses

i. H_0: There is no significant relationship between the designed macroeconomic variables and stock market performance of emerging countries. This hypothesis tests the relationship between consumer price index, money supply, and exchange rate in US dollars.

H_1: There is significant relationship between the designed macroeconomic variables and stock market performance f emerging countries. This hypothesis tests the lationship between consumer price index (-), money pply (+) and exchange rate in dollars (-).

escriptive statistics of emerging stock market mpled

o understand the economic importance of the stock arket in the sample of 41 countries, the stock market pitalization ratio was examined. The choice of untries and times series data for this article rests on e availability of data. Data for this article are from orldwide Governance indicators, World Development dicator (WDI) and Global Finance and Development FD). The stock market capitalization ratio is defined as e value of domestic equities traded on the stock market ative to GDP. As can be observed from Appendix 1, ock market development indicators exhibit a nsiderable variability across countries, according to the ck market capitalization ratio. The top ten countries in ms of mean stock market capitalization for the period der review are South Africa, Malaysia, Jamaica, rdan, Chile, Zimbabwe, Saudi Arabia, Thailand, ilippines and India in that order. The countries with west stock market capitalization are Ecuador, Slovak epublic, Bangladesh, Paraguay and least Uruguay. As n be seen in stock market development in terms of al value trade as percentage of GDP, South Africa ved from the first to third position with Saudi Arabia cupying the first position from our sample. Stock rket capitalization has very little to do with the size of a ntry. China, which has the largest economy by far ong these countries, has a smaller average market italization than Hong Kong over the period. South ica and Taiwan approached China in terms of stock rket capitalization despite vastly smaller population d GDP. Again even though Nigeria has a larger nomy than Ghana, Ghana is ahead of Nigeria in ms of stock market capitalization as a measure of elopment of the capital market.

A National Bureau of Economic Research (NBER) orking Paper in April, 2013 on Financial Development 205 Economies, 1960 to 2010, has gathered bstantial evidence that financial institutions (such as nks and insurance companies) and financial markets cluding stock markets, bond markets, and derivative rkets) exert a powerful influence on stock market elopment, poverty alleviation, and economic stability. ock market development has been central to the mestic financial liberalization programs of most erging markets. Apart from their role in domestic ancial liberalization, the stock markets have also been ry important in recent years as a major channel for eign capital flows to emerging economies. Net equity ws to the emerging markets have grown over the ars, providing an important source of capital for elopment. The share of foreign direct investment and portfolio equity in the finance mix of many developing countries has grown in recent years. Equity flows accounted for 80% of total external financing to developing nations during 1999 to 2003, compared with just 60% during 1993 to 98 (Global Development Finance, 2005). Cross-border capital flows, which include lending, foreign direct investment and purchases of equity and bonds, rose to a peak of $11.8 trillion in 2007, primarily due to the acceleration in interbank lending with a smaller share being the flow of funds to real economy borrowers. According to a McKinsey Global Institute (MGI) study, as of 2012, cross-border capital flows had declined by 61% from the 2007 peak to $4.6 trillion. Most of this reduction was in intra-European flows, thus raising the share of global capital flows to emerging economies to 32% in 2012 ($1.5 trillion) from 5% in 2000. Capital flows out of developing countries rose to $1.8 trillion in 2012.

Development of stock markets in emerging market does not imply that even the most advanced emerging stock markets are mature. Trading occurs in only a few stocks which account for a considerable part of the total market capitalization. Beyond these actively traded shares, there are serious informational and disclosure deficiencies for other stocks. There are serious weaknesses in the transparency of transactions on these markets. The less developed of the stock markets suffer from a far wider range of such deficits. Compared with the highly organized and properly regulated stock market activity in the US and the UK, most emerging markets do not have such a well-functioning market. Not only are there inadequate government regulation, private information gathering and dissemination firms as found in more developed stock markets are inadequate. Moreover, young firms in emerging stock markets do not have a long enough track record to form a reputation. As a result, one expects share prices in emerging markets to be arbitrary and volatile (Tirole, 1991). Empirical evidence indicates that share prices in emerging markets are considerably more volatile than in advanced markets.

Despite this volatility, large corporations have made considerable use of the stock market. For example, the Indian stock market has more than 8,000 listed firms, one of the highest in the World. Looking at the corporate financing pattern in emerging markets it was found that contrary to expectation, emerging market corporations rely heavily on external finance and new equity issues to finance long term investment and the stock markets have been successful in providing considerable funds.

Market liquidity is one the measures of stock market development. Market Liquidity is ability for investors to buy and sell shares. Stock market performance was measured using total value traded as a share of GDP, which gives the value of stock transactions relative to the size of the economy. According to the work of Levine and Zervos (1998) this measure is used to gauge market liquidity. This is because it measures trading relative to

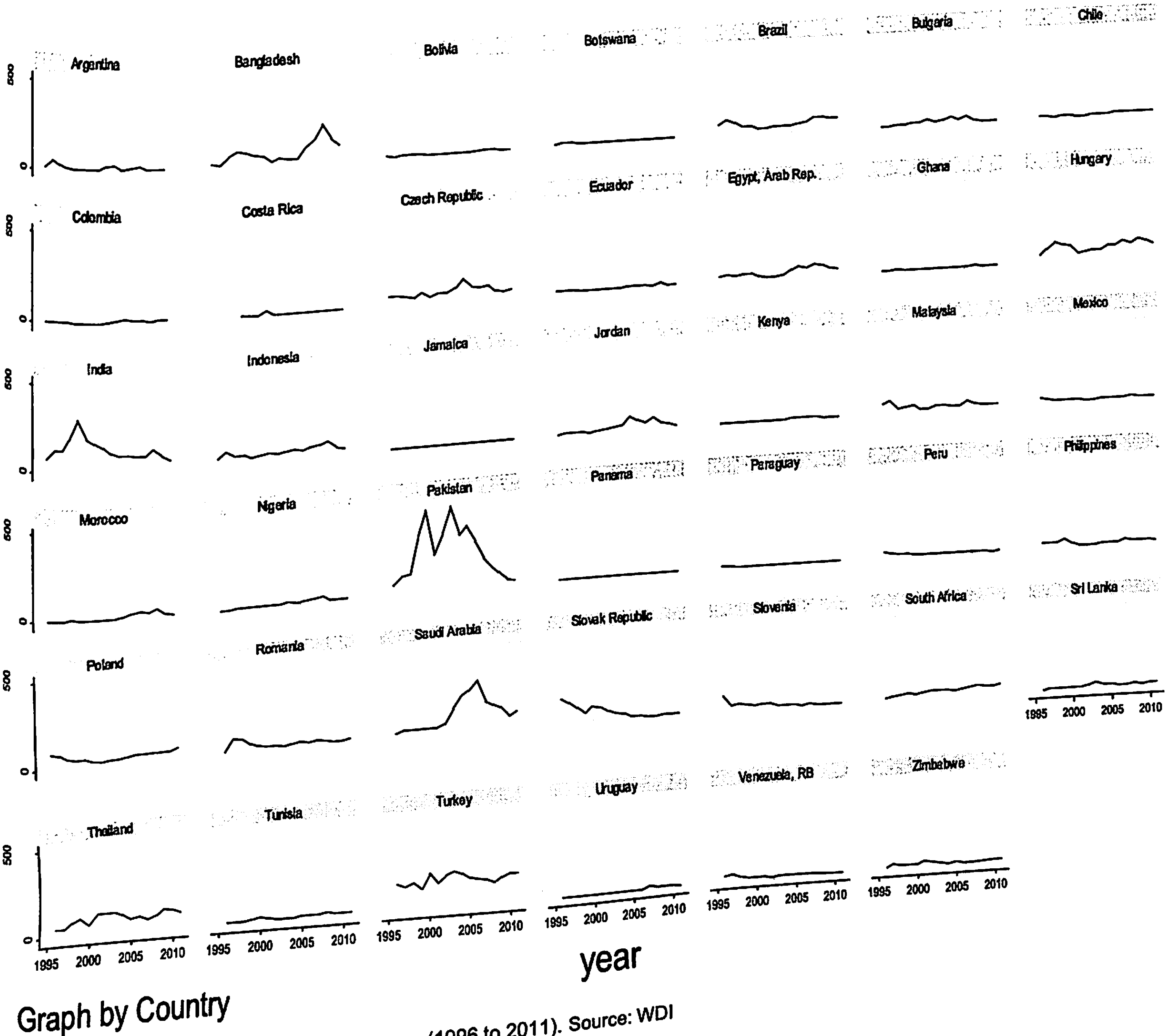


Figure 2. Annual percentage changes of turnover (1996 to 2011). Source: WDI

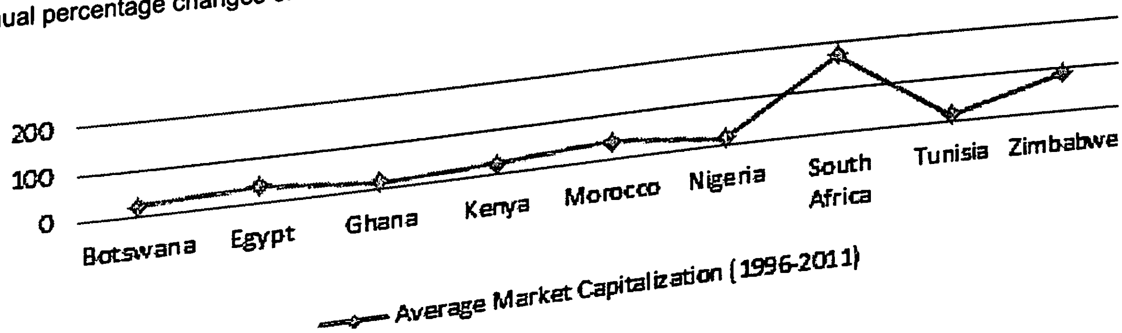


Figure 3. Emerging economies in Africa.

onomic activity. Of the 41 countries Pakistan, Saudi rabia, Bangladesh, Turkey and India turned out to be untries with liquidity as shown in Figure 2. The liquidity these countries was recorded around the late 90's and the early part of 2000 was the time most of these countries have undertaken successful financial liberalization.

Of the economies sampled nine of them are from Africa

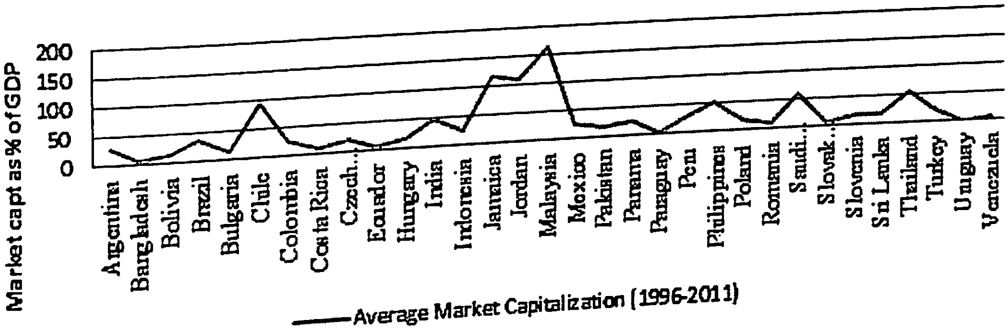


Figure 4. Emerging economies excluding Africa.

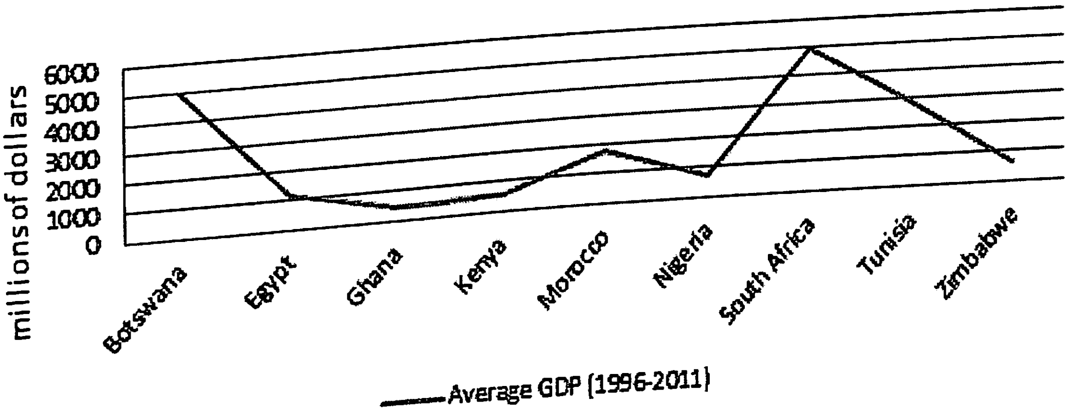


Figure 5. Emerging economies in Africa (GDP).

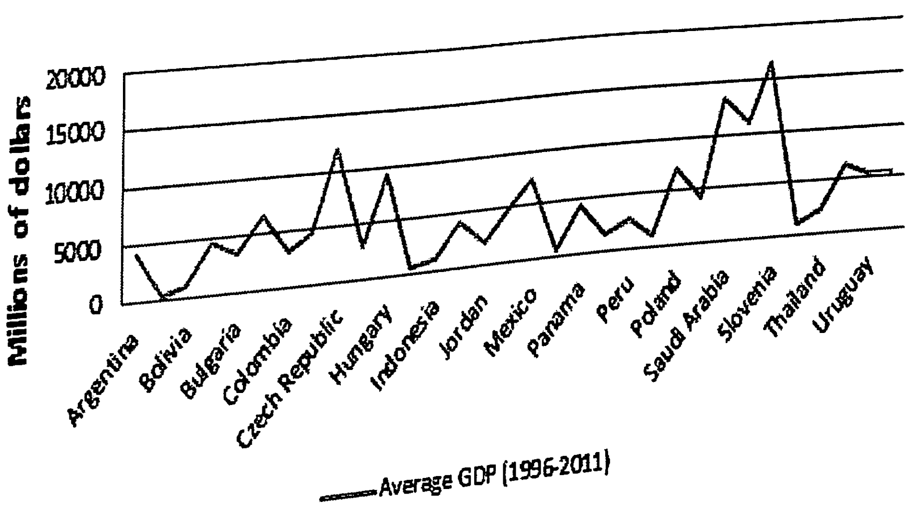


Figure 6. Emerging economies excluding Africa (GDP).

nd thirty-two from other continents. Stock market apitalization which is a measure of stock market evelopment had being relatively stable for emerging frican economies sampled for this article. The proxy for his measure is stock market capitalization relative to GDP in percentage terms. South Africa and Zimbabwe are the only African economies sampled that have stock market capitalization making more than 50% of their GDP as shown in Figure 3. All the other African countries sampled were below 50% of their GDP.

The market capitalization of emerging stock markets ose from $604 billion to $3,074 billion for the period 1990 o 1999. The trend continued in the 2000 with countries ke Malaysia, Jordan, Jamaica, Chile, Saudi Arabia, hailand, and Philippines accounting for the rise in stock arket capitalization as portrayed in Figure 4. In terms of tock market capitalization most of the economies ampled are making less than 50% of GDP. With the frican economies sampled economies with high stock arket capitalization it is only South Africa, Morocco, and gypt. Botswana with GDP like South Africa in ercentage terms is cited as having low stock market apitalization and Zimbabwe with high stock market apitalization cited with low GDP as shown in Figure 5. In the case emerging economies outside Africa ountries cited with high stock market capitalization are ted in Figure 6 with relatively low GDP. Slovenia with w stock market capitalization is cited here as the ountry with the highest GDP so is Czech Republic.

MPIRICAL LITERATURE

acroeconomic variable and stock market evelopment

is often argued that stock prices are determined by me fundamental macroeconomic variables such as the terest rate, the exchange rate and the inflation. Fama 981) highlights that there exists a significant relationship tween stock returns and other macroeconomic iables namely: inflation, national, output and industrial duction. Stock market-output nexus has also been tensively studied (Habibullah and Baharumshah, 1996; abibullah et al., 1999). These results indicate that there ists a long run relationship between stock returns and tput. The levels of real economic activity, money pply M2, exchange rate and interest rate will likely luence stock prices through its impact on corporate ofitability in the same direction. Shiller (1989) argues at changes in stock prices reflect changes in investor's pectations about future values of certain economic riables that affect directly the pricing of equities.

The link between Capital market development and terest rate has in recent time been an issue among searchers (Ologunde et al., 2006; Anthony and Kwame 008). It is asserted that the financial structure of a firm, at is, the blend of debt and equity financing, changes as onomies develop. It moves towards equity financing rough the stock market. If the rate of interest paid by anks to depositors is increased, investors will patronize e banks the more and fewer investors will invest on the pital market. This will lead to a decrease in capital vestment in the economy. Hence, stock market rformance and development will be lowered because e allocation of capital resources plays a crucial role in e determination of the rate of the nation's output.

Osei (2006) investigates both the long run and the short run associations between the Ghana stock market and macroeconomic variables. The paper establishes that there is co-integration between the macroeconomic variables and Ghana stock market. The results of the short run dynamic analysis and the evidence of co-integration mean that there are both short run and long run relationships between the macroeconomic variables and the index. In terms of Efficient Market Hypothesis (EMH), the study establishes that the Ghana stock market is information ally inefficient particularly with respect to inflation, treasury bill rate and world gold price. Kuwornu and Owusu-Nantwi (2011) examined the relationship between macroeconomic variables and stock market returns in Ghana using monthly data. Macroeconomic variables used were consumer price index (as a proxy for inflation), crude oil price, exchange rate and 91-day Treasury bill rate (as a proxy for interest rate). Full information maximum likelihood estimation procedure was used in establishing the relationship between macroeconomic variables and stock market returns. The empirical findings reveal that consumer price index (inflation rate) had a positive significant effect, while exchange rate and Treasury bill rate had negative significant influence on stock market returns. On the other hand, crude oil prices do not appear to have any significant effect on stock returns.

Eita (2012) investigates the macroeconomic determinants of stock market prices in Namibia. Using VECM econometric methodology revealed that Namibian stock market prices are chiefly determined by economic activity, interest rates, inflation, money supply and exchange rates. An increase in economic activity and the money supply increases stock market prices, while increases in inflation and interest rates decrease stock prices. The results suggest that equities are not a hedge against inflation in Namibia, and contractionary monetary policy generally depresses stock prices.

Fama (1981) argues that expected inflation is negatively correlated with anticipated real activity, which in turn is positively related to returns on the stock market. Therefore, stock market returns should be negatively correlated with expected inflation, which is often proxied by the short-term interest rate. Kaul (1990) studied the relationship between expected inflation and the stock market, which, according to the proxy hypothesis of Fama (1981) should be negatively related since expected inflation is negatively correlated with anticipated real activity, which in turn is positively related to returns on the stock market.

Spyrou (2001) also studied the relationship between inflation and stock returns but for the emerging economy of Greece. Consistent with Kaul (1990) results, Spyrou (2001) found that inflation and stock returns are negatively related, but only up to 1995 after which the relationship became insignificant. Kyereboah-Coleman and Agyire-Tettey (2008) used cointegration and the error correction model techniques to show how macroeconomic indicators affect the performance of stock markets by using the Ghana Stock Exchange as a case study. The findings of the study reveal that lending rates from deposit money banks have an adverse effect on stock market performance and particularly serve as major hindrance to business growth in Ghana. Again, while inflation rate is found to have a negative effect on stock market performance, the results indicate that it takes time for this to take effect due to the presence of a lag period; and that investor's benefit from exchange-rate losses as a result of domestic currency depreciation.

Chow et al. (1993) using monthly data for the period 1977 to 1989 found no relationship for monthly excess stock returns and real exchange rate returns. When repeating the exercise, however, with longer than six months horizons they found a positive relationship between a strong dollar and stock returns.

METHODOLOGY

Theoretical models

Macroeconomic variables and Investment

The way of linking macroeconomics variables and stock market returns is through arbitrage pricing (APT) (Ross, 1976). The q approach to the transmission mechanism increases the macroeconomic significance of stock markets which now take on an important role in managing the process of capital accumulation. APT focused on individual security returns (for selection of relevant studies see Fama, 1981, 1990; Fama and French, 1989; Schwert, 1990; Ferson and Harvey, 1991; Black et al., 1997). It is also used in an aggregate stock market framework, where a change in a given macroeconomic variable could be seen as reflecting a change in an underlying systemic risk factor influencing future returns. Most of the empirical studies on APT theory, linking the state of the macro-economy to stock market returns, are characterized by modeling a short run relationship between macroeconomic variables and the stock price in terms of first difference, assuming trend stationarity (Andrew and Peter, 2007).

Portfolio optimization problems under partial information are becoming more and more popular, also because of their practical interest. They have been studied using both major portfolio optimization methodologies, namely Dynamic Programming (DP) and the "Martingale Method" (MM). While DP has a longer tradition in general, also MM has been applied already since some time for the cases when the drift/appreciation rate in a diffusion-type market model is supposed to be an unknown constant, a hidden finite-state Markov process, or a linear-Gaussian factor process. Along this line are the papers Lakner (1995, 1995), and more recently Sass and Haussmann (2004). We consider the portfolio maximization problem under a hidden Markov setting, where the coefficients of the security prices are nonlinearly dependent on economic factors that evolve as a k-state Markov chain.

No satisfactory theory would argue that the relation between financial markets and the macroeconomics is entirely in one direction. However, stock prices are usually considered as responding to external forces. By the diversification argument that is implicit in capital market theory, only general economic state variables like inflation, money supply exchange rate and GDP will influence the pricing of large stock market aggregates.

Empirical models

Macroeconomic variables and stock market development

For the purpose of this empirical study, the unit of analysis is the 41 emerging economies stock market. Here, we will draw upon theory and existing empirical work as a motivation to select a number of macroeconomic variables that we might expect to be strongly related to the real stock price. The real stock price depends upon the expected stream of dividend payments and the market discount rate. Hence, any macroeconomic variable that may be thought to influence expected future dividends and/or the discount rate could have a strong influence on aggregate stock prices. The macro-economic variables selected as explained under theoretical model of this article are; money supply (MS), consumer price index (CI) and foreign exchange rate in US dollars (EXCH). The objective here is to test the effect of economic growth measured by GDP, and macroeconomic variables (MS, CPI, and EXCH) on stock market capitalization of emerging economies. In this paper, we will draw upon theory and existing empirical work as a motivation to select a number of macroeconomic variables that we might expect to be strongly related to the real stock price.

In this study, the model used by Sangmi and Mubasher (2013) was adopted and modified. In this empirical chapter least squares regression is again considered due to the numerous advantages that it has over other estimation techniques. The analytical model for the macroeconomic determinants of stock market performance is depicted by the modified model of Sangmi and Mubasher (2013).

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 MS_{it} + \beta_3 CPI_{it} + \beta_4 EXCH_{it} + \varepsilon_{it} \quad (1)$$

Where SMC_{it} is the stock market capitalization relative to $GDP_{i,t}$. $SMC_{it} = \frac{(SMC_{it} - SMC_{it-1})}{GDP_{it}} \times 100$, where SMC_{it-1} is the yearly growth rate of stock market capitalization relative to $GDP_{i,t}$, at the present year (t). $GDP_{i,t}$ is Gross Domestic Product. It is a proxy for economic development. $GDP_{i,t} = (\frac{GDP_{i,t} - GDP_{i,t-1}}{GDP_{it}}) \times 100$ is the yearly growth rate of GDP relative to $GDP_{i,t}$, at the current year (t). $MS_{i,t}$ is the money supply relative to $GDP_{i,t}$. It is a proxy for banking sector development. $MS_{i,t} = (\frac{MS_{i,t} - MS_{i,t-1}}{GDP_{it}}) \times 100$ is the yearly growth rate of money supply relative to $GDP_{i,t}$, at the current year (t). CPI_{it} is a proxy for macroeconomic stability. $CPI_{it} = (\frac{CPI_{it} - CPI_{it-1}}{GDP_{it}})$x100, where CPI_{it} is the yearly growth rate of CPI_{it} at current time (t). $EXCH_{it}$ is a proxy for macroeconomic stability. $EXCH_{it} = (\frac{EXCH_{it} - EXCH_{it-1}}{GDP_{it}})$ x100%, where $EXCH_{it}$ is the yearly growth rate of $EXCH_{it}$ at current time (t).

GDP was interacted with all the other macroeconomic variables one at time to determine the actual effect of these variables on stock market performance. The following models were run and the significance levels were tested at α=0.05 using different Robust OLS and FGLS, respectively.

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 MS_{it} + \beta_3 CPI_{it} + \beta_4 EXCH_{it} + \varepsilon_{it} \quad (2)$$

$$\beta_0, \beta_1, \beta_2 > 1; \quad \beta_3, \beta_4 < 1$$

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 MS_{it} + \beta_5 (GDP \times MS)_{it} + \varepsilon_{it} \quad (3)$$

$$\beta_0, \beta_1, \beta_2, \beta_5 > 1$$

$$SMC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_3 CPI_{it} + \beta_5 (GDP \times CPI_{it}) + \varepsilon_{it} \quad (4)$$

$\beta_1, \beta_5 > 1; \quad \beta_3, < 1$

$$MC_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_4 EXCH_{it} + \beta_5 (GDP \times EXCH_{it}) + \varepsilon_{it} \quad (5)$$

$\beta_1, > 1; \quad \beta_4, \beta_5 < 1$

here GMS is the interaction of GDP and MS, GCPI is the teraction of GDP and CPI, GEXCH is the interaction and EXCH. he parameters were estimated using OLS technique. The least uares method produces the best straight line. However, there ay in fact be no relationship or perhaps a nonlinear relationship etween GDP, CPI, MS, EXCH and stock market capitalization ence a straight line is likely to be impractical. We assess how well e linear model fits the data. A model results in predicted values ose to the observed data values. The fit of a proposed regression odel should therefore be better than the fit of the mean model. It is sumed that the errors or disturbances have the same variance ross all observation points. When this is not the case, the errors e said to be heteroskedastic and the model is corrected by using bust standard error to determine the significance of the rameters of interest.

The test of significance (α=0.05) for this model sought to tablish the determinants of stock market performance in merging economies. The inferential statistics such as the Pearson oduct Moment correlation coefficient R^2 and the coefficient of termination R of the data set, as well as p-value and F-test tistics were used. The general use of differencing has been und to reduce the possibility of spurious regression results (Philip, 86). Studies by Adams (1992) and Anyanwu and Udegbunam 986) conclude that first-differencing achieves stationarity of riables and thus reduces the possibility of spurious results. Based the suggestions of the aforementioned studies, and to roughly uge the robustness and consistency of our estimation results, the ression Equation 1 is also estimated in first difference form. erencing Equation 1 yields the following equations, which gives dels 2 to 5. The stationarity of the variables are tested at α=0.05 nificance level with the following empirical model, using the owing techniques; Dynamic OLS and Newey-West, respectively.

$$MC_{it} = \beta_0 + \beta_1 \Delta GDP_{it} + \beta_2 \Delta MS_{it} + \beta_3 \Delta CPI_{it} + \beta_4 \Delta EXCH_{it} + \varepsilon_{it} \quad (2')$$

$\beta_1, \beta_2, \beta_5 > 1; \quad \beta_3, \beta_4 < 1$

$$MC_{it} = \beta_0 + \beta_1 \Delta GDP_{it} + \beta_2 \Delta MS_{it} + +\beta_5 (\Delta GDP \times MS_{it}) + \varepsilon_{it} \quad (3')$$

$\beta_1, \beta_2 > 1; \ , \beta_5 < 1$

$$MC_{it} = \beta_0 + \beta_1 \Delta GDP_{it} + \beta_3 \Delta CPI_{it} + \beta_5 (\Delta GDP \times CPI_{it}) + \varepsilon_{it} \quad (4')$$

$\beta_1, > 1; \quad \beta_3, \beta_5 < 1$

$$MC_{it} = \beta_0 + \beta_1 \Delta GDP_{it} + \beta_4 \Delta EXCH_{it} + \beta_5 (\Delta GDP \times EXCH_{it}) + \varepsilon_{it} \quad (5')$$

$\beta_1, > 1; \quad \beta_4, \beta_5 < 1$

e estimate the parameters of the linear regression model by the OLS since it correct serial correlation and endogeneity problems models.

The dependent variable is the stock market performance. This easure equals the stock market capitalization divided by GDP. he assumption behind this measure is that overall market size is sitively correlated with the ability to mobilize capital and diversify sk on an economy-wide basis. This is consistent with Kemboi et al. 012), Yartey (2008) and Levine and Zervos (1998).

Based on theory underpinnings discussed in the literature viewed, we hypothesize a positive relation between exchange te and stock prices. Mukherjee and Naka (1995) and Wongbangpo and Sharma (2002) among others, indicate that both exchange rate levels and changes affect the performance of a stock market. That is currency depreciation will have a favorable impact on a domestic stock market. The opposite should hold when the currencies of the country appreciates against foreign currencies.

The effect of money supply on stock prices can be positive or negative. Since the rate of inflation is positively related to money growth rate (Fama, 1981), an increase in the money supply may lead to an increase in the discount rate and lower stock prices. However, this negative effect may be countered by the economic stimulus provided by money growth, which would likely increase cash flows and stock prices (Mukherjee and Naka, 1995). Following Geske and Roll (1983), Chen et al. (1986), Wongbangpo and Sharma (2002), we hypothesize a negative relation between stock prices and consumer price index (CPI). The levels of real economic activity (proxied by CPI) will likely influence stock prices through its impact on corporate profitability in the same direction: an increase in real economic activity (fall in the consumer price index) may increase expected future cash and hence, raise stock prices, while the opposite effect would be valid in a recession. Consumer price index is used as a proxy for inflation rate. It is chosen because of its broad base measure to calculate average change in prices of goods and services during a specific period. Inflation is ultimately translated into nominal interest rate and an increase in nominal interest rate increases discount rate which results in reduction of present value of cash flows. An increase in inflation is expected to negatively affect the equity prices.

Consumer price index is used to measure macroeconomic stability. Macroeconomic stability may be an important factor for the development of the stock market. It is expected that the higher the macroeconomic stability the more incentive firms and investors have to participate in the stock market. The stock market in countries with stable macroeconomic environment is expected to be more developed. Consistent with previous studies inflation has been used as a measure of macroeconomic stability. Although there is no agreement on the relationship between macroeconomic stability and stock market development, it is argued that higher levels of macroeconomic stability encourage investors to participate in the stock market largely because the investment environment is predictable. Furthermore, macroeconomic stability influence firms profitability, and so the prices of securities in the stock market is likely to increase. Investors whose investments are experiencing a capital gain are more likely to channel their savings to the stock market by increasing their investments, and so this will enhance stock market development. This variable is proxied with consumer price index. The selection of these variables was based upon the present value model (PVM) theory and literature discussed. This study investigates the effect of macroeconomic variables on stock market performance in emerging economies for the period 1996 to 2011.

The technique used to estimate the coefficients of the linear regression model is the least squares method. Although the ordinary least squares (OLS) estimator is consistent in the presence of a serial correlation in the error term and it is well known that the OLS estimator contains the so-called second-order bias. Focus is on the dynamic ordinary least squares (DOLS) estimator instead of fully modified OLS estimators (FMOLS). The Newey-West estimates are also used to correct for the heteroskedasticity and serial correlation in the results.

RESULTS AND DISCUSSION

Descriptive analysis of the variables

Table 1 summarizes the basic statistical features of the data under consideration including the mean, the

Table 1. Descriptive analysis of the variables.

Parameter	Obs	Mean	Std	Min	Max	Skewness	Kurtosis	Prob
SMC	615	391.27	294.24	33.1	1089.2	0.578	2.283	0.001
MS	615	1.41E+08	1.21E+09	2761.33	1.08E+10	0.664	2.331	0.001
CPI	615	114.98	18.18	98.2	214.7	0.598	2.291	0.000
EXCH	615	347.56	1349.48	0.2	11427.7	0.612	2.309	0.002
GDP	615	18.64	12.46	6.12	26.13	0.654	2.394	0.000

inimum and maximum values, standard deviation, urtosis, skewness, and the Jarque-Bera test for the data n their levels. The study revealed that gross domestic roduct (billions of dollars) varied mostly followed by onsumer price index, money supply (millions of dollars). Money and quasi money comprise the sum of currency utside banks, demand deposits other than those of the entral government, and the time, savings, and foreign urrency deposits of resident sectors other than the entral government. The mean value of MS for the merging markets sampled for this article is 1.41E+08 illion dollars with a standard deviation of 1.21E+09 illion of dollars. This implies the changes in MS in merging markets are very volatile with a minimum rowth of 2761.33 to a maximum of 1.08E+10 million ollars over the period under investigation.

Purchasing power parity (PPP) is a theory which states at exchange rates between currencies are in quilibrium when their purchasing power is the same in ach of the two countries. This means that the exchange e between the two countries should equal the ratio of e two countries' price level of a fixed basket of goods nd services. When a country's domestic price level is creasing (that is, a country experiences inflation), that ountry's exchange rate must depreciate in order to eturn to PPP. In this article we proxy EXCH with PPP. he average EXCH for the period under investigation is 47.56 per US dollar. The huge difference between the inimum EXCH and maximum EXCH explains the high tandard deviation of 1349.48.

In general, the precise evaluation of the normal istribution is given by the values of Skewness and urtosis. The Skewness show the amount and direction f skew (departure from horizontal symmetry), while the urtosis shows how tall and sharp the central peak is, elative to a standard bell curve.

The table also shows that most of the variables skewed ositively, which means that there is a lack of symmetry, n other words, there is a deviation from symmetry of the istribution of data set. That is to say the large positive hange is more common than large negative change in he variables.

Regarding peakness, the table shows that the excess urtosis is larger than 3 for stock market capitalization nd exchange rate hence the observed distribution has igher peak compared to the normal distribution. These suggest that the distributions of the variables are leptokurtic, that is non-normal. The data set are not exactly normally distributed since their respective mean, mode and median are not exactly the same, but the data was sufficiently appropriate for the purpose of the study. The mode values were not shown in the table due to space. To confirm the accuracy of the normality assumption, the JB statistics and the equivalent p-values were employed. The findings indicated that all variables are rejected at 1%.

The table revealed that all the variables possess the state of normal distribution, except $SMC_{i,t}$ and $GDP_{i,t}$ which are moderately skewed to the right. $SMC_{i,t}$ and $EXCH_{i,t}$ have kurtosis values of more than three, and the series are called leptokurtic. As for the remaining variables, the values of kurtosis are less than three, and the series are called platykurtic (Bulmer, 1965).

The study results revealed that the volatility of the variables measured by the standard deviation is high for GDP and consumer price index. To confirm the accuracy of the normality assumption, we employed the JB statistics and the equivalent p-values. The findings indicated that all variables are rejected at 1%, except for consumer price index and policy rate at 1%.

Correlation analysis

Although it is not possible to comment on causation, the results reported in Table 2 revealed information on the strength of the relationships connecting the nine macroeconomic variables. It shows strong positive relationship between stock market capitalization and money supply and a negative correlation between consumer price index, exchange rate and market capitalization on the other hand.

These results support the inclusion of these macroeconomic variables in our analysis.

Levine and Zervos (1998) established that measures of stock market development are positively correlated with measures of financial intermediary development. We examine if this complementary relationship exist in emerging economies. Data permitting, we average the data over the 1996 to 2011 period so that each country has one observation per variable. We compute the correlation between stock market development (measured

Table 2. Correlation coefficient of macroeconomic variables and SMC (levels).

Parameter	SMC	MS	CPI	EXCH	GDP	MS×GDP	CPI×GDP	EXCH×GDP
SMC	1.00							
MS	0.647*	1.00						
CPI	-0.454**	0.657	1.00					
EXCH	-0.642*	0.538**	0.655	1.00				
GDP	-0.581*	-0.546**	-0.683*	-0.624*	1.00			
MS×GDP	0.507*	0.463	0.647*	0.389	0.611	1.00		
CPI×GDP	-0.423	0.558*	-0.523*	0.614*	-0.547	0.641	1.00	
EXCH×GDP	-0.619*	0.551**	-0.459	0.597*	-0.691	0.683**	0.573*	1.00

*, **, *** Correlation is significant at 1, 5 and 10% levels, respectively (2-tailed).

y market capitalization) and all the other explanatory ariables for this empirical chapter as shown in Table 2. The correlation analysis reveals that the data sets are ighly correlated with each other. $LSMC_{i,t}$ is found to orrelate much more with $LMS_{i,t}$ and $LEXCH_{i,t}$ as ompared with the rest of the variables. Also notable is hat $LMS_{i,t}$ is highly correlated with both $LCPI_{i,t}$, and EXCH$_{i,t}$. $GDP_{i,t}$ is found to be highly correlated with CPI$_{i,t}$ and $LEXCH_{i,t}$ respectively. Our finding confirms he work of Demirguc-Kunt and Levine (1996b). The financial intermediary development and stock arket development are complements rather than ubstitutes. In general, the data sets are highly orrelated; meaning a change of one of the variable ould result to a substantial change on the other riables which is expected for such macro-economic riables.

egression analyses and hypothesis testing

owever, before the regression analysis, we sought to stablish the trend of the four data sets in order to stablish the trend of the involved macro-economic ariables. For the heterogeneity across the countries and eterogeneous serial correlation structure of error term, e employ three different panel unit root tests. The esearch considers three statistical tests for testing if ach series in each panel are integrated of order one, therwise known as stationarity test. These tests are evin et al. (2002) test, Im et al. (2003) test and Hadri 2000) test for stationarity.

The LLC test is employed to test the stationarity of the anel for it allows heterogeneity of individual deterministic ffects and heterogeneous serial correlation structure of he error terms, assuming homogeneous first order utoregressive parameters (Chiawa and Asare, 2009). LC model tests the null hypothesis of the presence of nit roots against alternative of stationarity. Im et al. 2003) broadened the LLC test by presenting a more exible and computationally simple test structure. The S test made the estimation for each of the 'i' sections possible. IPS tests the null hypothesis of unit root against heterogeneous alternative hypotheses which specify that some series in the panel are non-stationary. Hadri (2000) test is distinctive from other two tests mentioned for testing the absence of unit roots, that is, variance of the random walk equals to zero. He proposes a parameterization which provides an adequate representation of both stationary and non-stationary variables and permits an easy formulation for a residual based Lagrange-Multiplier (LM) test of stationarity. Here, it is assumed that the time series for each cross-sectional unit is stationary around a deterministic level or trend, against the alternative hypothesis of a unit root.

Table 3 shows the results of panel unit root tests for each variable in the panel at level and at first difference. The results show that all the panels contain unit roots at level. However, at a differenced level, the panels are said to be stationary, though there may be possibility of non-stationary series in a stationary panel as the panel unit root test will not identify the particular series that is not stationary. This is only a drawback of the panel unit root test, nevertheless stronger and higher degree of power is gained in panel setting than in the usual single cross-sectional setting. This is as a result of the combination of information from time series and cross-sectional data which leads to improvement of power of test (Im et al., 2003). The tests are conducted in two folds. First, is carried out with the inclusion of individual effects followed by the inclusion of individual effect plus deterministic time. The results show that some of the panels contain unit root only at the inclusion of time trend while others confirm the presence of unit root at both levels of testing. All the variables are tested at 5% level of significance and the p-values displayed with their corresponding t- statistic in parenthesis. The results from these three tests provide support for treating all the individual series as non-stationary in their levels but stationary in their first differences.

In order to establish whether there exists a relationship between stock markets performance of emerging economies and macroeconomic variables, a regression analysis was conducted where the stock market

Table 3. Results of the panel unit root test (C).

Variable	LLC Test		IPS Test		Hadri Test	
	NT	T	NT	T	NT	T
SMC	0.031(4.53)	0.178(6.51)	0.328(0.426)	0.327(0.457)	0.000(12.177)	0.0304(1.584)
ΔSMC	0.0000(4.866)	0.0115(2.431)	0.0000(5.481)	0.0000(4.047)	0.276(0.577)	0.1754(0.781)
GDP	0.047(1.571)	0.048(1.141)	0.341(0.754)	0.304(0.755)	0.000(14.52)	0.000(7.915)
ΔGDP	0.0114(2.141)	0.000(3.552)	0.000(5.829)	0.000(5.534)	0.235(0.677)	0.584(0.597)
MS	0.022(4.33)	0.179(0.66)	0.32(0.42)	0.32(0.42)	0.000(13.16)	0.03(1.59)
ΔMS	0.000(5.67)	0.02(2.11)	0.000(6.58)	0.000(4.33)	0.28(4.33)	0.19(4.33)
CPI	0.001(-4.87)	0.001(-6.70)	0.212(-0.81)	0.210(-0.81)	0.000(-15.34)	0.000(-9.06)
ΔCPI	0.079(-1.42)	0.001(-4.35)	0.212(-6.59)	0.210(-5.28)	0.237 (0.72)	0.70(-0.52)
EXCH	0.175(-2.52)	0.161(-4.63)	0.234(0.34)	0.289(0.283)	0.000(7.91)	0.004(2.28)
ΔEXCH	0.000(-6.68)	0.000(-6.75)	0.000(-8.58)	0.000(-6.66)	0.469(0.91)	0.213(2.05)
MS×GDP	0.065(2.12)	0.057(2.23)	0.124(0.34)	0.309(0.231)	0.000(7.91)	0.014(3.98)
ΔMS×GDP	0.000(7.42)	0.000(5.23)	0.000(3.34)	0.000(4.347)	0.108(1.83)	0.014(2.22)
CPI×GDP	0.011(-2.03)	0.108(-2.17)	0.077(-2.34)	0.104(-1.166)	0.000(9.37)	0.004(6.93)
ΔCPI×GDP	0.001(-4.24)	0.000(-3.12)	0.000(3.764)	0.000(3.443)	0.155(1.91)	0.012(1.27)
EXCH×GDP	0.065(-2.12)	0.057(-2.28)	0.124(1.34)	0.309(0.233)	0.000(7.92)	0.014(3.98)
ΔEXCH×GDP	0.000(-3.62)	0.000(-3.08)	0.010(3.67)	0.003(4.64)	0.311(0.371)	0.277(1.98)

-values and brackets is the t-values, the significance level is $\alpha = 0.05$.

Table 4. Relationship between macroeconomic variables and Stock Market Performance.

SMC	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GDP	0.090	0.046	1.97	0.029	-0.171	0.915
MS	0.034	0.025	1.36	0.034	-0.057	0.194
C I	-0.097	0.046	-2.11	0.016	-1.225	0.023
EXCH	-0.079	0.059	-1.33	0.018	-1.088	0.178
_cons	1.151	0.436	2.64	0.001	0.898	2.984

Number of obs = 615. F(4, 610) = 49.57. Prob > F = 0.000. R-squared = 0.217. Adj R-Square = 0.216. Root MSE = 0.228.OLS result corrected for heteroskedasticity (levels)

erformance is regressed against the four predictor ariables; gross domestic product (GDP), consumer price dex (CPI), money supply (M2), and exchange rate in ollars (EXCH) using robust standard errors. It is stablished that least squares method produces the best traight line. However, there may be in fact no elationship or perhaps no linear relationship between the xplanatory variables and the dependent variable. By this straight line model is likely to be impractical. Because f this it is important that we assess how well the linear odel fits the data by employing standard error of stimates, coefficient of determination and analysis of ariance.

Four predictors were used (GDP, money supply, onsumer price index and exchange rate), while the iterion variable was stock market capitalization. It was ssumed that the selected macroeconomic variables ere the best predictors for stock market performance; if ot, then there was need to conduct a further tests in rder to eliminate any potential biases to make the OLS regression estimated best linear unbiased estimators (BLUE). According to Addelbaki (2013), in conducting a quantitative research, one of the means of testing objectively the relationship among variables is to engage in an inquiry by having assumptions clearly stated and testing for theories deductively while guarding against bias, controlling for substitute clarifications, and be skillful to generalize and replicate findings.

For Table 4, the relationship between dependent variable (SMC) and independent variables (GDP, MS, CPI and EXCH) were determined. All the variables were not significant at all three traditional significant levels. The F test was significant indicating that the model fits the data set. The relationship was then viewed with MS, CPI and EXCH each at time using models 3. In each of this case also, the interaction effect was also determined.

The relationship between money supply and stock market performance was tested with model 3 as shown in Table 5. The intercept is 3.915 which is the stock market performance when all the independent variables are zero

Table 5. Relationship between Stock Market Performance and Money Supply.

SMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GDP	7.230	3.544	2.04	0.022	6.471	7.945
MS	0.076	0.046	1.66	0.034	-0.057	0.194
MS×GDP	0.047	0.05	0.944	0.021	-0.044	0.084
_cons	3.915	1.201	3.26	0.001	2.898	4.984

Number of obs = 615. F(3, 611) = 57.96. Prob > F = 0.000. R-squared = 0.273. Adj R-Square = 0.246. Root MSE = 0.183. OLS result corrected for heteroskedasticity (levels).

Table 6. Relationship between Stock Market Performance and Consumer Price Index.

SMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GDP	7.54	2.161	3.49	0.001	5.134	8.054
CPI	0.008	0.005	-1.67	0.028	-0.013	0.164
CPI×GDP	-0.003	0.001	-3.75	0.001	-0.074	0.009
_cons	2.931	1.018	2.88	0.001	1.713	3.188

Number of obs = 615. F(3, 611) = 55.82. Prob > F = 0.001. R-squared = 0.233. Adj R-Square = 0.231. Root MSE = 0.158. OLS result corrected for heteroskedasticity (levels).

Table 7. Relationship between Stock Market Performance and Exchange Rate.

SMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GDP	6.72	3.692	1.82	0.032	5.924	7.322
EXCH	-0.053	0.019	-2.84	0.004	-0.225	0.277
EXCH×GDP	-0.048	0.014	-3.43	0.000	-0.782	0.018
_cons	3.967	1.562	2.54	0.001	1.044	4.127

Number of obs = 615. F(3, 611) = 59.13. Prob > F = 0.000. R-squared = 0.308. Adj R-Square = 0.254. Root MSE = 0.113. OLS result corrected for heteroskedasticity (levels).

). It is misleading to interpret particularly if zero (0) is tside the range of the values of the independent riables. The relationship between the variable of terest money supply and stock market performance is scribed by 0.076. For every 100% increase in money pply (MS), stock market performance increases by .6%. The sign is as expected. The value of the test atistic t is 1.66 which implies that there is not enough vidence to infer the existence of a linear relationship etween the MS and stock market performance. The teraction effect of the MS and GDP is also not tatistically significant but there is enough evidence to fer linear relation between GDP and stock market erformance.

In model 3, the effect of consumer price index (CPI) on tock market performance of emerging markets is nsidered (Table 6). This relationship is expressed by 008 with standard error of 0.0048 which yield a tatistic of -1.67 assuming that all other factors are zero. he sign is not as expected. By implication, there is no vidence to conclude that the coefficient of CPI is not qual to zero (0). This may mean no evidence of linear relationship or there is linear relationship but because of the problem of multi-collinearity we fail to reject the null hypothesis.

The interaction effect of CPI and GDP on SMC is significant which implies that the coefficient of CPI when all other factors are zero is misleading since the effect CPI on SMC is also influenced by GDP. To determine the actual effect of CPI on SMC, interesting values of GDP must be plugged in to obtain the partial effect. The mean value of GDP is 18.64, so at the mean GDP, the effect of CPI on SMC is -0.048. The standard error of this coefficient is 0.016 which yields a t-statistic of -2.99. With relation of GDP to SMC, there is still enough evidence to conclude that there is a linear relation between them, confirming the relationship in model 3.

The relationship between exchange rate (EXCH) and stock market performance when all other factors are zero is significant so is the interaction effect of EXCH and GDP as shown in Table 7. This implies the coefficient of -0.053 is not appropriate. The actual effect of EXCH at the mean value of GDP is 0.842 with a standard error of 0.658. This implies there is not enough evidence to infer

Table 8. Correlation coefficient of macroeconomic variables and SMC (differences)

Correlation	$\Delta SMC_{i,t}$	$\Delta MS_{i,t}$	$\Delta CPI_{i,t}$	$\Delta EXCH_{i,t}$	$\Delta GDP_{i,t}$
$\Delta SMC_{i,t}$	1.00				
$\Delta MS_{i,t}$	0.04**	1.00			
$\Delta CPI_{i,t}$	-0.09*	0.16**	1.00		
$\Delta EXCH_{i,t}$	-0.08**	0.14**	0.11*	1.00	
$\Delta GDP_{i,t}$	0.09**	0.09**	0.09**	0.14**	1.00

The dependent variable is SMC; ** and * denote statistical significance at the 0.01[a].

linear relationship between EXCH and SMC. The sign as expected. We test for serial correlation and teroskedasticity in the error term in each model using W. This assumption is formally expressed as E (e_ie_j) = 0 all $i \neq j$, which means that the expected value of all air-wise products of error terms is zero. If indeed, the ror terms are uncorrelated, the positive products ll cancel those that are negative leaving an expected alue of 0. If this assumption is violated, although the stimated regression model can still be of some value for rediction, its usefulness is greatly compromised. The stimated regression parameters remain unbiased stimators of the corresponding true values, leaving the stimated model appropriate for establishing point stimates and the model can be used for predicting lues. However, the standard errors of the estimates of e regression parameters are significantly derestimated which leads to erroneously inflated alues. Because testing hypotheses about the slope efficients and computing the corresponding confidence ervals rely on the calculated t-values as the test atistics, the presence of correlated error terms means at these types of inferences cannot be made reliably.

A DW test of 0.351 implies the presence of positive tocorrelation in the error term at 5% significance level. hat is the error covariances are not zero (0) and this will nderestimate the variance of the parameters in the odel and also can cause the rejection of the null pothesis when it is true. Breusch-Pagan is used to test e null hypothesis that the error variances are all equal rsus the alternative that the error variances are a ultiplicative function of one or more variables. A large hi-square of 37.83 indicates that heteroskedasticity is esent. The presence of heteroskedasticity alone does ot cause bias or inconsistency in the OLS point timates. The consequence of this is that the standard rors and t-statistics for the models are invalid. Because e Durbin-Watson statistic is far from 2 (the expected alue under the null hypothesis of no serial correlation) nd well below the 5% lower limit and upper limits, it is oncluded that the disturbances are serially correlated. o address the problem, the variables are made tationary by first difference of all the variables.

Heteroskedasticity has serious consequences for the LS estimator. Although the OLS estimator remains unbiased, the estimated SE is wrong. Because of this, confidence intervals and hypotheses tests cannot be relied on. In addition, the OLS estimator is no longer BLUE. Put more simply, a test of homoscedasticity of error terms determines whether a regression model's ability to predict a dependent variable is consistent across all values of that dependent variable. For heteroskedasticity, the null hypothesis of constant error variance is rejected. Heteroskedasticity has serious consequences for the OLS estimator. Although the OLS estimator remains unbiased, the estimated SE is wrong.

Because of this, confidence intervals and hypotheses tests cannot be relied on. In addition, the OLS estimator is no longer BLUE.

One possible way to address this problem is just to use heteroskedasticity-robust standard errors. OLS assumes that errors are both independent and identically distributed; robust standard errors relax either or both of those assumptions. Hence, when heteroskedasticity is present, robust standard errors tend to be more trustworthy.

The VIF test was performed in order to measure the extent to which the repressors were related to other repressors and to find out how the relationship affected the stability and variance of the regression estimates. Variance inflation factor of 4.54 shows that model have relatively moderate multicollinearity problem. Severe multicollinearity is problematic because it can increase the variance of the regression coefficients, making them unstable.

The F-probability for the model provides statistical evidence that the macroeconomic variables and their interaction to GDP simultaneously and jointly affect SMC. But a firm conclusion cannot be drawn based on these results because the regression results displayed are based on level, non-stationary data series and could represent a spurious problem. The presence of serial correlation in the error terms invalidate the use of R-squared and adjusted R-squared.

Since the variables under consideration are not stationary, the first differences of the variables are used to confirm the results using DOLS and Newey-West estimation technique. It was also realized that that correlation of first difference of the data series are not significant as shown in Table 8. This reduces the

Table 9. Relationship between Stock Market Performance and Macroeconomic Variables.

SMC	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	0.077	0.020	3.84	0.000	-0.082	0.109
MS	0.076	0.018	4.13	0.000	-0.011	0.125
CPI	-0.042	0.016	-2.57	0.000	-0.508	0.044
EXCH	-0.056	0.016	-3.61	0.000	-0.116	0.009
_con	-4.677	1.053	-4.44	0.000	-6.287	-3.056

Number of obs = 615. Number of groups = 41. Time periods = 15. Wald $chi^2(5)$ = 865.88. Prob > chi^2 = 0.0000. FGLS corrected for heteroskedasticity and serial correlation (levels).

Table 10. Relationship between Stock Market Performance and Money Supply.

SMC	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	0.084	0.009	9.45	0.000	-0.014	0.174
MS	0.234	0.084	2.78	0.001	0.895	0.825
MS×GDP	0.013	0.002	6.50	0.000	-0.012	0.064
_con	-3.701	1.102	-3.36	0.000	-4.257	-2.250

Number of obs = 615. Number of groups = 41. Time periods = 15. Wald chi^2 (4) = 768.14. Prob > chi^2 = 0.001. FGLS corrected for heteroskedasticity and serial correlation (levels model 3).

Table 11. Relationship between Stock Market Performance and Consumer Price Index.

SMC	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	0.051	0.007	7.32	0.000	-0.075	0.123
CPI	-0.105	0.029	-3.63	0.000	-0.527	0.025
CPI×GDP	-0.005	0.001	-3.55	0.001	-0.039	0.044
_con	-14.051	2.192	-6.41	0.000	-16.264	-13.233

Number of obs = 615. Number of groups = 41. Time periods = 15. Wald chi^2 (4) = 974.15. Prob > chi^2 = 0.000. FGLS corrected for heteroskedasticity and serial correlation (levels model 3).

Table 12. Relationship between Stock Market Performance and Exchange Rate.

SMC	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	0.078	0.009	9.11	0.000	-0.080	0.109
EXCH	-0.035	0.012	-3.05	0.001	-0.195	0.005
EXCH ×GDP	-0.008	0.002	-3.77	0.002	-0.078	0.057
_con	-3.584	0.704	-5.09	0.000	-5.257	-2.250

Number of obs = 615. Number of groups = 41. Time periods = 15. Wald chi^2 (4) = 873.14. Prob > chi^2 = 0.000. FGLS corrected for heteroskedasticity and serial correlation (levels model 3).

ossibility of multicollinearity problem. In the analysis the ull hypothesis of no autocorrelation and also the ssumption of homoscedasticity for all the models iscussed is rejected. The method of generalized least quares (GLS) is introduced to improve upon estimation fficiency when var(SMC) is not a scalar ariance-covariance matrix. This technique allows stimation in the presence of AR(1) autocorrelation within anels and cross-sectional correlation and heteroskedasticity across panels. Although these conditions have no effect on the OLS method per se, they do affect the properties of the OLS estimators and resulting test statistics. Hypothesis testing based on the standard OLS estimator of the variance covariance matrix becomes invalid.

Using GLS gives the following results as shown in Tables 9 to 12. All the explanatory variables were significant in explaining variations in SMC.

Table 13. Relationship between stock market performance and macroeconomic variables.

SMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.225	0.084	2.68	0.000	0.841	0.821
ΔMS	0.131	0.038	3.42	0.001	0.014	0.918
ΔCPI	-0.385	0.137	-2.81	0.000	-0.754	0.014
ΔEXCH	-0.225	0.084	-2.68	0.000	-0.518	0.016

Number of obs = 614. Number of groups = 41. obs per group min = 614. Avg = 614. Max = 614. R-squared = 0.298. Adj R-squared = 0.270. DOLS Results (Difference model 3).

Table 14. Relationship between stock market performance and money supply.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.644	0.241	2.67	0.003	0.174	1.524
ΔM	0.042	0.013	3.18	0.001	-0.064	0.141
ΔMS×ΔGDP	0.001	0.0003	6.50	0.000	-0.019	0.064

Number of groups = 1. Obs per group min = 614. Avg = 614. Max = 614. R-squared = 0.384. Adj R-squared = 0.263DOLS Results on Macroeconomic variables (Difference).

That is modeling heteroskedasticity and autocorrelation the models, the variables were significant in explaining iations in SMC.

The p-value of Wald test for all the models were gnificant at all the traditional significant levels.

OLS estimation of a co-integrated relation

e to fact that the variables are non-stationary, the first ference of the variables is taken to make them ationary. To account for the problem of endogeneity d serial correlation, DOLS estimator is used. The sults of DOLS estimation of model 3 of the difference in riables are shown in Table 13 and its residuals are also ven. Wald chi-square of p-value 0.000 implies the odel fit the data set. All the explanatory variables are gnificant in explaining variations in ΔSMC and the signs e as expected.

Table 14 test the effect of ΔMS on stock market erformance. This relationship is expressed by 0.42 ssuming that ΔGDP and the interaction effect of GDPand ΔMS are zero (0). From the table there is ough evidence to conclude a linear relationship etween the first difference of money supply (ΔMS) and st difference of stock market capitalization (ΔSMC). The teraction effect is also significant which implies the lationship between ΔSM and ΔSMC when all other riables as zero (0) is not appropriate.

To determine the statistical significance of the efficient of the partial effect of ΔMS on stock market erformance there was need to rerun the regression here the interaction variable is replaced with gross omestic product less the average gross domestic roduct multipled by ΔMS. This gives the new coefficient ΔMS (the coefficient of partial effect), the estimated effect at gross domestic product of 18.64, along with a standard error. Running this new regression gives the standard error of $\hat{\beta}_1 + \hat{\beta}_3(18.64) = 0.063$ as 0.0235, which yields t = 2.66. Therefore at the average gross domestic product, it is concluded that ΔMS has statistically significance positive effect on stock market performance. An increase in money supply will increase the liquidity in the economy resulting in an increase in the purchasing power of the citizenry. This means that more money will be available not just for consumption but also for investment hence, an increase in stock market performance. Also people tend to demand more when they have more money in their hands and thereby the prices of shares may increase which leads to stock market performances rising. These results support the real activity theorists' argument that an increase in money supply increases stock prices and vice versa.

There is also enough evidence to infer a linear relationship between ΔGDP and stock market performance for all the three models. Most industries are procyclical in nature, meaning that the firms in the industry do well as the economy does well and vice versa. If ΔGDP is high, the stock prices generally tend to be high as companies are doing better than otherwise. So, ΔGDP is an important determinant of stock prices. The results are in line with the findings of Levine and Zervos (1998), Garcia and Liu (1999), Yartey (2008) and Mishal (2011).

The relationship between consumer price index and stock market performance is significant and expressed by -0.081 when all other explanatory variables in the model are held constant. As shown in Table 15, model 3, the sign of the linear relationship is as expected. That is 100% increase in consumer price index decrease the performance of stock market by 8.1%. There is also

Table 15. Relationship between stock market performance and consumer price index.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
ΔGDP	0.161	0.055	2.91	0.000	-0.022	0.746
ΔCPI	-0.081	0.029	-2.77	0.002	-0.235	0.088
ΔCPI×ΔGDP	-0.062	0.023	-2.64	0.000	-0.741	0.791

Number of obs = 614. Number of groups = 1. Obs per group min = 614. Avg = 614. Max = 614. R-squared = 0.336. Adj R-squared = 0.323. DOLS results on macroeconomic variables (Difference).

Table 16. Relationship between Stock Market Performance and Exchange Rate.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
ΔGDP	0.743	0.283	2.63	0.000	0.277	1.014
ΔEXCH	-0.234	0.084	-2.78	0.000	-0.865	0.032
ΔEXCH×ΔGDP	-0.017	0.006	-2.81	0.000	-0.119	0.048

Number of groups = 1. Obs per group min = 614. Avg = 614. Max = 614. R-squared = 0.294. Adj R-squared = 0.227. DOLS Results on Macroeconomic variables (Difference)

nough evidence to conclude that there is linear elationship between the interaction of ΔCPI and ΔGDP nd ΔSMC. With the interaction effect being significant hen the actual effect of ΔCPI at mean GDP is -0.027 with standard error 0.0104 which yields at test of -2.64. herefore at the average ΔGDP, it is concluded that ΔCPI as statistically significance negative effect on stock arket performance. The consumer price index is used a proxy for inflation. In times of inflation, prices are ways unstable and rising. Income is therefore devoted consumption purposes. Savings and investment will erefore be negatively affected hence affecting stock arket performance of emerging economies.

The argument that the stock market serves as a hedge gainst inflation is based on the fundamental idea of ving (1930), and is known as the Fisher effect. The isher effect states that in the long run, inflation and the ominal interest rate should move one-to-one with xpected inflation. This implies that higher inflation will crease the nominal stock market return, but the real tock return remains unchanged. Therefore, investors are ully compensated.

Model 3 EXCH of Table 16 test the effect of first ifference of exchange rate (dollar) on first difference tock market performance for emerging markets. The elationship is described by -0.017 with standard error 006 when ΔGDP and the interaction of ΔGDP and EXCH are zero (0). The inverse relation is as expected. ince the interaction effect is significant, the linear elationship between ΔEXCH and ΔSMC when all other xplanatory variables in model is zero is not appropriate ince zero is not in the range of values for exchange rate. he partial effect of ΔEXCH at the mean GDP is xpressed by -0.022 with a standard error 0.008 which ields a t-statistic of -2.75. Therefore at the average gross domestic product, it is concluded that ΔEXCH has statistically significance positive effect on stock market performance.

There are different theoretical approaches to understanding the relationship between the exchange rate and stock prices. Among these approaches, the two most prominent are the goods market approaches introduced by Dornbusch and Fischer (1980) and the portfolio balance approaches discussed by Frankel (1983). The portfolio balance approach stresses the role of capital account transactions on determining the relationship between the exchange rate and stock prices. This approach postulates a positive relationship between stock prices and exchange rates, with stock prices being the root cause of the relationship.

The results of the study support the hypothesis of a negative relationship between exchange rate and stock market capitalization of emerging economies and is consistent with the findings of Soenen and Hennigar (1988), Ajayi and Mougoue (1996) who have reported a significant, negative relationship between the exchange rate and stock return. However, it contradicts the findings of Maysami and Koh (2000). They explained that a stronger domestic currency lowers the cost of imported inputs and allows local producers to be more competitive internationally. Yip (1996) also explained that a strong exchange rate limits imported inflation and hence is perceived as favourable news for stock market performance. On the other hand, some studies, such as Bartov and Bodnar (1994) found no relationship between stock prices and exchange rates.

The DW test of 0.92; 0.83; 0.74 and 0.94 shows that there is evidence of serial correlation in the error term for Tables 17 to 21. Breusch-Pagan test of heteroskedasticity with chi-square of 36.06 means the

Table 17. Relationship between stock market performance and macroeconomic variables.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.177	0.062	2.84	0.000	-1.041	0.921
ΔMS	0.081	0.006	3.14	0.001	-0.91	1.318
ΔCPI	-0.058	0.019	-2.96	0.000	-0.10	0.034
ΔEXCH	-0.075	0.028	-2.68	0.000	-1.018	0.269

Number of Groups = 614. Number of groups = 41. obs per group min = 614. avg = 614. max = 614. R-squared = 0.351. Adj R-squared = 0.342. Newey-West estimation corrected for heteroskedasticity and serial correlation (difference).

Table 18. Relationship between stock market performance and money supply.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.644	0.241	2.67	0.003	-1.074	1.124
ΔMS	0.042	0.013	3.18	0.001	-0.094	0.121
ΔMS×ΔGDP	0.001	0.003	6.50	0.000	-0.081	0.084

Number of groups = 41. obs per group min = 614. avg = 614. max = 614. R-squared = 0.366. Adj R-squared = 0.354.Newey-West estimation corrected for heteroskedasticity and serial correlation (difference).

Table 19. Relationship between stock market performance and consumer price index.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.161	0.055	2.91	0.000	0.087	0.646
ΔCPI	-0.081	0.029	-2.77	0.002	-0. 05	0.038
ΔCPI×ΔGDP	-0.009	0.003	-2.64	0.000	-0.341	0.199

Number of obs = 614. Number of groups = 41. obs per group min = 614. Avg = 614. Max = 614. R-squared = 0.343. Adj R-squared = 0.337. Newey-West estimation corrected for heteroskedasticity and serial correlation (difference).

Table 20. Relationship between stock market performance and exchange rate.

ΔSMC	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ΔGDP	0.743	0.283	2.63	0.000	0.977	1 414
ΔEXCH	-0.117	0.042	-2.78	0.000	-0.815	0.382
ΔEXCH×ΔGDP	-0.021	0.007	-2.81	0.000	-0.119	0.018

Number of Obs = 614. Obs per group min = 614. Number of groups = 41. Avg = 614. Max = 614. R-squared = 0.369. Adj R-squared = 0.358. Newey-West estimation corrected for heteroskedasticity and serial correlation (difference).

ull hypothesis of homoscedasticity is rejected. The onsequence of this is that the standard errors and statistics for the models are valid. The null hypothesis of omoskedasticity at 5% significant level is rejected. odels 3 with 3 ALL, MS, CPI and EXCH for which esults are shown in Tables 17 to 21, respectively explain 9.8, 38.4, 33.6 and 29.4% of the variations in stock arket performance, respectively. The estimated egression parameters remain unbiased estimators of the orresponding true values, leaving the estimated models ppropriate for establishing point estimates and the odels can be used for predicting values.

The VIF test of 2.15; 1.94 and 1.77 for models 1 to 4 of Tables 17 to 21, respectively implies that there is not enough evidence to conclude that multicollinearity is present in the models. Hence the model does not affect stability and variance of the regression estimates. In Table 17 the relationship between macroeconomic variables (ΔMS, ΔCPI and ΔEXCH) and ΔSMC are established by correcting for both heteroskedasticity and serial correlation using Newey-West technique. The variables in the model are significant and the signs are as expected. The result confirms that there is enough evidence to conclude that there is a linear relationship

Table 21. Unit root test of residuals DOLS.

Residuals	LLC Test		IPS Test		Hadri Test	
	NT	T	NT	T	NT	T
Model 1	0.0000(4.014)	0.0103(3.224)	0.0000(4. 654)	0.0000(3.472)	0.3371(0.609)	0.2551(0.714)
Model 2	0.0000(-3.705)	0.0000(-4.106)	0.0000(-4.322)	0.0000(-4.428)	0.2441(0.354)	0.2374(0.735)
Model 3	0.0000(4.315)	0.0005(2.971)	0.0000(3.722)	0.0001(4.907)	0.2417(0.315)	0.2064(0.452)
Model 4	0.0000(-3.903)	0.0000(-4.044)	0.0000(-4.153)	0.0000(-3.472)	0.1092(1.421)	0.1333(0.941)

Residuals are tested at 5% level of significance and the p –values displayed with their corresponding t- statistic in parenthesis.

etween the selected macroeconomic variables and SMC nd this relationships are expressed by ΔGDP (0.177), MS (0.081), ΔCPI (0.058) and ΔEXCH (0.075) with ssociated Newey-West standard errors of 0.062; 0.006; .019 and 0.028, respectively assuming all other ariables in the model are constant in the case of each. here is also enough evidence to conclude that these ariables are significant with the right signs at 5% ignificant level. The DW test of 1.97 implies that we fail o reject the null hypothesis that errors are serially orrelated at 5% significance level. Breusch-Pagan test f chi-square of 0.438 fail to reject the null hypothesis. he results from the unit root tests of LLC, IPS and Hadri onclude that residuals from Newey-West regression are tationary as shown in the table. This implies that the ewey-West regression is not a spurious regression.

In Table 18, the ΔGDP, ΔMS and their interaction on e effect ΔSMC in emerging markets are examined. The ear relationship between the variable of interest MS is pressed by 0.042 with Newey-West standard error of 013 assuming that ΔGDP and the interaction of ΔMS d ΔGDP are constant. Since the value does not fall ithin the range of values for ΔGDP and also the fact that e interaction effect is significant, makes the terpretation of ΔMS tricky. To resolve this problem, we etermine the partial effect of ΔMS given average ΔGDP nd this coefficient is described by 0.061 with ewey-West standard error of 0.017 which yields statistic of 3.47. That is 1% increase in ΔMS given verage ΔGDP yields of 0.061% increase in ΔSMC. It is stablished that ΔGDP complement MS in explaining ariation in ΔSMC. The R-squared of 0.366 implies that e model explains 36.6% of the variations ΔSMC. reusch-Pagan test of a small chi-square 0.457 implies hat heteroskedasticity is probably not a problem or at east that if it is a problem it is not a multiplicative function f the predicted values. DW test serial correlation of .019 also failed to reject the null hypothesis of no serial orrelation. Wald chi-square of 82.3 confirms that the odel fits the data set.

The effect of ΔCPI on ΔSMC is expressed by -0.081 ith a t-statistic of 2.91. This implies there is enough vidence to conclude that there is negative linear elationship between ΔCPI and ΔSMC assuming that ther variables in the model are constant. That is as ΔCPI increases by 1% ΔSMC reduces by 0.081. It is also established that interaction effect has negative effect on ΔSMC. The partial effect of ΔCPI given average ΔGDP is expressed by -0.249 with Newey-West standard error of 0.080 which yields a t-statistic of 3.11. Breusch-Pagan test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. A small chi-square 0.297 implies that heteroskedasticity is probably not a problem or at least that if it is a problem it is not a multiplicative function of the predicted values. DW of 1.92 also implies the errors are not serially correlated. Wald chi-square of 77.9 supports that the model fit the data and that the model is able to explain 34.3% of the variations in ΔSMC.

Table 20 examines ΔGDP, ΔEXCH and their interaction on the effect of ΔSMC. The linear relationship between the variable of interest ΔEXCH is expressed by -0.117 with Newey-West standard error of 0.042 assuming that GDP and the interaction of ΔEXCH and ΔGDP are constant. Since the value does not fall within the range of values for GDP and also the fact that the interaction effect is significant makes the interpretation of ΔEXCH tricky. To resolve this problem, the partial effect of ΔEXCH is determined given average GDP and this coefficient is described by -0.51 with Newey-West standard error of 0.170 which yields t-statistic of 2.99. That is 1% increase in ΔEXCH given average GDP yields 0.51% decrease in ΔSMC. The negative coefficient of the interaction variable implies that ΔGDP does not complement the ΔEXCH of the effect on ΔSMC. The R-squared of 0.369 implies that the model explains 36.9% of the variations ΔSMC. Wald chi-square of 69.5 confirms that the model fit the data set. Breusch-Pagan test of a small chi-square of 0.138 implies that heteroskedasticity is probably not a problem. DW test of serial correlation of 2.14 also fail to reject the null hypothesis of no serial correlation, making the regression result efficient and consistent.

Conclusion

Using a sample of 41 emerging stock economies over a period 1996 to 2011, it was discovered that gross domestic product, money supply, exchange rate in dollars nd consumer price index are the important determinants f stock market development. Several policy implications an be drawn from this study. The government, in rmulating monetary policy, must be aware of the fact at the stock market responds more favorably to an crease in the money supply. Leaders in emerging onomies must also be conscious of the fact that stock ices tend to increase when the leaders implements pansionary policy to increase GDP and also depreciate change rates.

From the study, it can be observed that there exists a ignificant relationship between macroeconomic variables nd the stock market performance. This relationship can ither be positive or negative depending on which ariable is being put under consideration. The study herefore recommends that the macroeconomic nvironment is very important and should be closely onitored to ensure stability. Emerging economies with table macroeconomic environment enjoy increased ctivity at the stock market and hence an increased erformance. Stock market performance is an indicator to he foreign investors on the stability of the stock market. It therefore recommended that good measures should be ut in place to promote the stock market activities which n turn increases the stock market performance.

It was established that financial intermediary (policy ate), stock market liquidity, exchange rate in dollars and he stabilization variable (consumer price change) are the mportant determinants of stock market development, hile money supply does not prove to be significant. In ddition, it was found that financial intermediaries and tock markets are complements rather than substitutes in evelopment process. In order to promote stock market evelopment in emerging economies, it is important to mprove stock market liquidity, efficiently control xchange rate, develop financial intermediaries and then ontrol inflation.

The salient conclusions drawn from this study suggest hat strong macroeconomic variables are important for he stock market development in emerging country's arkets. To reverse the persistent anemic stock market erformance trend in emerging economies, both omestic and external policy makers may have to place ignificant emphases on the maintenance of the voice nd accountability, political stability, government ffectiveness, rule of law, and control of corruption. The eed to stabilize the macroeconomic indicators as well as mproving upon the knowledge base of the citizenry is qually important for performance of stock markets in merging economies. Although the empirical results are ntriguing, they warrant further analysis. Much work emains to be done to better understand stock market evelopment.

These findings also have important policy implications r emerging economies in relation to macroeconomic ariables. Prudent management of macroeconomic ariables can facilitate stock market development.

Rational management of macroeconomic variables ensures greater confidence in the stability of the economy as macroeconomic volatility magnifies the asymmetric information problem. First, macroeconomic variables such as consumer price index, exchange rate in dollars, money supply and GDP all play important role in determining the market performance. Therefore, policy makers have to maintain reasonable fiscal and monetary discipline in order to increase the demand for credit to the private sector, and subsequently influence the stock market development.

Conflict of Interests

The authors have not declared any conflict of interest.

REFERENCES

Aduda J, Masila JM, Onsongo EN (2012). The Determinants of Stock Market Development: The Case for the Nairobi Stock. Int. J. Hum. Soc. Sci. 2(9):214-227.

Chen NF (1991). Financial Investment Opportunities and the Macroeconomy. J. Financ. 46:529-554.

Chen NF, Roll R, Ross S (1986). Economics forces and the stock market. J. Bus. 59(3):383-403.

Chiawa MA, Asare BK (2009). A Panel Data Approach for Estimating Equilibrium Real Exchange Rates of Currencies of Countries in West Africa, Bagale J. Appl. Sci. 7:35-49 .

Chow KV, Denning K (1993). A simple multiple variance ratio test. J. Eco. 58:385-401.

Eita JH (2012). Modelling Macroeconomic Determinants of Stock Market Prices: Evidence From Namibia. J. Appl. Bus. Res. 28(5):871–884.

Fama E, French KR (1989). "Business conditions and expected returns on stocks and bonds". J. Financ. Econ. 25:23-49.

Fama EF (1965). The Behavior of Stock-Market Prices. J. Bus. 38:34-105.

Fama EF (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. J. Financ. 25(2):383-417.

Fama EF (1981). Stock Returns, Real Activity, Inflation, and Money, Am. Econ. Rev. 71(4): 545-565.

Fama EF (1990). Stock Returns, Expected Returns, and Real Activity. J. Financ. 45(4):1089-1108.

Fama EF (1991). Efficient Capital Markets: II. J. Financ. 96:1575-1617

Garcia V, Liu L (1999). "Macroeconomic determinants of stock market development". J. Appl. Eco. 2: 29-59.

Geske R, Roll R (1983). The fiscal and monetary linkage between stock returns and inflation. J. Financ. 38:7-33.

Habibullah M, Baharumshah AZ (1996). Money, Output and Stock Prices in Malaysia: An Application of the Cointegration Tests. Int. Eco. J. 10(2):121-130.

Habibullah M, Baharumshah AZ, Mohamed, A Wan Ngah WAS (1999). Stock Market and Economic Activity: A Causal Analysis: Department of Economics.

Hadri K (2000). Testing for Stationarity in Heterogeneous Panel Data; Econom. J. 3:148-161.

Hamao Y, Campbell J (1992). Predictable Stock Returns in the U.S. and Japan: A study of Long-Term Capital Market Integration. J. Financ. 47(1).

Hamao Y (1988). An Empirical Examination of the Arbitrage Pricing Theory: Using Japanese Data. Japan World Economy 1: 45-61.

International Finance Cooperation (1991 & 1996). IFC Fact book, New York.

Jahur, M. S., Quadir, S. M., and Khan MA (2014). Determinants of stock market performance in Bangladesh. Indones. Manage. Account. Res. 13(1):16-28.

Kaul G (1990). Monetary Regimes and the Relation between Stock

Returns and Inflationary Expectations. J. Financ. Quantit. Anal. Cambridge University Press 25(03): 307-321.

mboi JK, Taru DK (2012). Macroeconomic Determinants of Stock Market Development in Emerging Markets: Evidence from Kenya. Res. J. Financ. Account. 3(5):57-68

mani DK, Mutuku CM (2013). Inflation Dynamics on the Overall Stock Market Performance: The Case of Nairobi Securities Exchange in Kenya. Econ. Fin. Rev. 2(11):1-11.

womu JKM, Owusu-Nantwi V (2011). Macroeconomic Variables and Stock Market Returns: Full Information Maximum Likelihood Estimation". Res. J. Financ. Account. 2(4):49-63.

reboah-Coleman A, Agyire-Tettey KF (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange". J. Risk Financ. 9(4):365-378.

ner P (1995). Utility Maximization with Partial Information. Stochastic Processes Appl. pp. 247-273.

kner P (1998). Optimal Trading Strategy for an Investor: The Case of Partial Information. Stochastic Processes Appl. pp. 77-97.

vine R, Zervos S (1998). Stock Markets, Banks, and Economic Growth. Am. Eco. Rev. 88:536-558.

ku OA, Atanda AA (2010). Determinants of stock market performance in Nigeria: Long-run analysis. J. Manage. Org. Beh. 1(3):5-16

ysami RC, Koh TS (2000). A vector error correction model of the Singapore stock market. Int. Rev. Eco. Financ. 9:79-96.

hwish Z (2013). Determinants of Stock Market Performance in Pakistan. Interdiscipl. J. Contemp. Res. Bus. 4(5):1017-18.

shal ZA (2011). Financial Development and Economic Growth: Evidence from Jordan Economy. J. Bus. Eco. Stud. 17(2):20-35.

ukherjee T, Naka A (1995). Dynamic Linkage Between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model. J. Financ. Res. 18:223-237.

hieng DE, Adhiambo EO (2012). The Relationship between Macro Economic Variables and Stock Market Performance in Kenya. DBA Africa Manage. Rev. 3(1):38-49.

gunde AO, Elumilade DO, Asaolu TO (2006). Stock Market Capitalization and Interest Rate in Nigeria: A Time Series Analysis. Int. Res. J. Financ. Eco. 4:154-166.

sei KA (2006). Macroeconomic factors and Ghana stock market. Afr. Financ. J. 8(1):26-38

ngmi MD, Mubasher HM (2013). Macroeconomic variables on stock market interactions: The Indian experience. Advances In Management. 6(8). Retrieved From http://dx.doi.org/10.9790/487x-01131528.

ss J, Haussmann UG (2004). Optimizing the terminal wealth under partial information: The drift process as a continuous time Markov chain. Fin. Stochastics pp. 553-577.

hwert GW (1990). Indexes of U.S. Stock Prices from 1802 to 1987. J. Bus. Univ. Chicago Press 63(3):399-426.

ngole RK (2012). The Relationship between Selected Macroeconomic Variables and Stock Return at the Nairobi Securities Exchange. Nairobi: University of Nairobi.

yrou IS (2001). Stock returns and inflation: Evidence from an emerging market. Appl. Econ. Lett. 8:447-450.

Ting HL, Feng SC, Weng TW, Lee WK (2012). Macroeconomic Determinants of the stock Market Return: The Case in Malaysia. Kuala Lumpur: Universiti Tunku Abdul Rahman.

Wongbangpo P, Sharma C (2002). Stock Market and Macroeconomic Fundamental Dynamic Interaction: ASEAN-5 Countries". J. Asian Eco. 13:27-51.

Yartey CA (2008). Determinants of Stock Market Development in Emerging Economies: Is South Africa Different? IMF working Paper-WP/08/32 Washington, International Monetary Fund.

Appendix 1. Indicators of stock market performance 1996 to 2011.

Country	Total Value Traded (% of ΔGDP)	Stock Market Capitalization (% of ΔGDP)	Turnover ratio (%)	Number of listed companies	ΔGDP per capita $
Argentina	3.75	30.10	23.36	135	4285.75
Bangladesh	3.77	5.47	54.44	216	377.21
Bolivia	0.11	14.26	0.97	27	1020.64
Botswana	0.88	23.03	5.38	16	4981.22
Brazil	19.67	38.61	53.21	464	4582.71
Bulgaria	2.08	13.03	13.13	402	3437.66
Chile	12.06	95.18	12.66	252	6669.80
Colombia	2.65	25.02	9.93	117	3295.39
Costa Rica	0.67	9.72	5.29	17	4683.95
Czech Republic	12.64	23.77	53.42	265	11852.47
Ecuador	0.38	7.16	5.20	47	2903.80
Egypt	12.29	34.88	27.11	690	1158.47
Ghana	0.45	15.37	3.29	26	486.02
Hungary	15.57	20.22	66.30	46	9372.58
India	44.04	47.66	103.11	4845	641.97
Indonesia	11.72	26.66	47.89	294	1195.98
Jamaica	3.88	117.63	3.14	39	4178.91
Jordan	39.69	109.20	29.04	169	2135.87
Kenya	1.58	23.49	5.68	55	528.17
Malaysia	68.64	162.95	39.58	748	4919.38
Mexico	8.52	27.38	32.97	168	7468.29
Morocco	7.98	38.12	17.58	60	1796.14
Nigeria	1.73	14.40	8.53	189	684.49
Pakistan	31.50	19.38	167.50	683	631.11
Panama	0.55	24.84	2.75	22	4573.13
Paraguay	0.12	3.37	5.17	54	1558.13
Peru	3.58	31.72	16.37	225	2706.04
Philippines	12.26	51.51	23.53	219	1123.98
Poland	8.11	19.12	61.71	238	7199.95
Romania	1.45	10.79	21.14	2963	4280.12
Saudi Arabia	73.95	61.17	84.02	87	13402.12
Slovak Republic	2.18	5.83	40.82	346	10871.28
Slovenia	2.65	19.63	24.27	65	16522.56
South Africa	60.32	173.05	32.81	534	4990.85
Sri Lanka	2.81	17.92	16.10	227	1103.19
Thailand	44.10	57.64	84.48	424	2401.98
Tunisia	1.68	13.11	12.61	39	2859.05
Turkey	32.11	23.95	135.91	260	6320.72
Uruguay	0.02	0.74	2.77	13	5460.68
Venezuela	1.69	8.57	14.66	74	5462.98
Zimbabwe	9.40	84.05	11.03	70	592.08

Source: WDI.

academicJournals

Vol. 10(19), pp. 469-484, 14 October, 2016
DOI: 10.5897/AJBM2016.8153
Article Number: 163C9FE61017
ISSN 1993-8233

http://www.academicjournals.org/AJBM

African Journal of Business Management

Full Length Research Paper

Relationship between institutional quality and stock market performance: Evidence from emerging economies

Ernest Christian Winful*, David Sarpong and Jones Agyei-Ntiamoah

Department of Accountancy, Accra Polytechnic, Ghana.

Received 30 August, 2016; Accepted 21 September, 2016

The purpose of this study is to provide empirical evidence on the effect of institutional quality on stock market performance. In order to evaluate the effect of institutional quality on stock market performance, Calderon Rossell models have been estimated using generalized method of moment's technique. A panel data of 41 emerging countries for the period 1996 to 2011 is used to estimate the results. The results suggest that institutional quality has a positive and significant influence on stock market performance. Policy makers in emerging countries must follow a parallel policy agenda of improving the quality of their institutions as well as education. These are paramount to the performance of stock markets performance in emerging countries.

Key words: institutional quality, stock market, emerging economies, macroeconomic variables.

INTRODUCTION

Gani and Ngassam (2008) examine the links between institutional factors and stock market performance in a sample of eight Asian countries with developing as well as mature stock markets. These are enough to conclude that economic growth, technology, rule of law and political stability affect capital market performance while poor institutional quality negatively affect it. The results support the proposition that institutional quality is an integral part of enhancing the performance of stock markets in a country hence institutional quality matters for stock market performance.

Hearn and Piesse (2010) and Adjasi and Biekpe (2006) finding support the fact the stock market performance relate positively with economic performance. For instance, Kemboi and Taru (2012) and Yartey (2008) established thatconfidence in investments is enhanced with improvement in property right. It is believed that a country with strong institutional structures leads to institutional efficiency and productivity. An improvement in institutional quality leads to higher gross domestic product (GDP) which implies more money for investment. Countries with strong institutional quality have more liquid stock markets. These articles reviewed very little literature of emerging economies on the effect

*Corresponding author. E-mail: ephlameswinful@yahoo.com.

JEL: E44, F01, G28, O43.

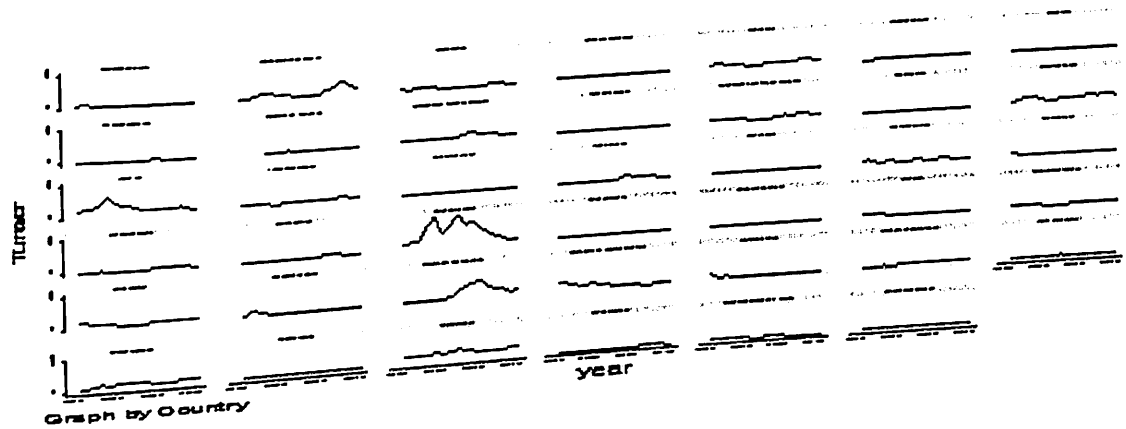


Figure 1. Trend of turnover by countries (1996-2011).

of institutional quality on stock market performance of emerging economies, using a panel data.

This study outlines the main determinants of capital market performance for an emerging economy. This study contributes to literature by confirming the evidence on the relationship between dimensions of institutional quality such as the efficiency of the government, the political climate, the level of corruption and the regulatory authority and performance of stock markets.

Emerging economies

As we can observe from Appendix 1, stock market performance indicators exhibit a considerable variability across countries, according to the stock market capitalization ratio. The top ten countries in terms of mean stock market capitalization for the period under review are South Africa, Malaysia, Jamaica, Jordan, Chile, Zimbabwe, Saudi Arabia, Thailand, Philippines and India in that order. The countries with lowest stock market capitalization are Ecuador, Slovak Republic, Bangladesh, Paraguay and least Uruguay. As we can see stock market performance in terms of total value trade as percentage of GDP, South Africa move from the first to third position with Saudi Arabia occupying the first position from our sample. Market capitalization does not relate with size of a country. Over the period under study China with the largest economy has smaller average market capitalization than Hong Kong whiles South Africa market capitalization is almost the same as China despite their smaller GDP and population. Again even though Nigeria has a larger economy than Ghana, Ghana is ahead of Nigeria in terms stock market capitalization as a measure of performance of the capital market.

Performance of stock markets in emerging economies does not imply that even the most advanced stock markets are mature. With developing economies, considerable part of their total market capitalization is accounted by trading in few stocks. Most stocks on these markets often have informational and disclosure deficiencies hence weakness in the transparency of transactions of these markets. For this reason Tirole (1991) and El-Erian and Kumar (1995) established that share prices in emerging economies are considerably more volatile than advance markets. In spite of this high volatility, most corporations have benefited from stock market in less developed economies for instance Indian stock market.

Market liquidity is one the measures of stock market performance. Market Liquidity is ability for investors to buy and sell shares. We measure the activity of the stock market using total value traded as a share of GDP, which gives the value of stock transactions relative to the size of the economy. According to the work of Levine and Zervos (1998), this measure is used to gauge market liquidity. This is because it measures trading relative to economic activity. Of the 41 countries Pakistan, Saudi Arabia, Bangladesh, Turkey and India turnout to be countries with liquidity as shown in Figure 1. The liquidity in these countries were recorded around the late 90's and the early part of 2000 were most of these countries have undertaken successful financial liberalization (Figure 1).

Institutional quality

Institutional quality can broadly be explained as guidelines to govern and direct the formation of expectations of human beings by one another. Conventional growth models tend to focus largely on the role of physical and human capital in explaining the growth performance within and across time and countries. These have a lot to do with the cost and the ease of doing business. In particular, it has been found that there is a major role that is played by institutions in influencing the effects of either human or physical capital or both in influencing the growth path of economies. It is common knowledge that disparity in financial market performance and economic performance across countries is due to institutional factors the various countries. This view is also captured in Adam Smith work, The Wealth of Nations.

Many researchers like Williamson (1995), Acemoglu et al. (2001), Aron (2000), Collier (2006) and North (1990) established that institutional factors play vital role in economic performance of countries. Researchers like Collier (2006), World Bank (2007), IMF (2003) and Ndulu (2006) have confirmed the assertion by attributing the poor performance of countries in Africa to poor institutional factors. Subramanian and Roy (2001) and Sobhee (2009) on the other hand also confirmed it by saying that good institutional factors explain the impressive track record Mauritius. To operationalize the definition of institutional factors we say it pertains to elements that have to be in place to encourage an enabling business environment. Knack and Keeffer (1995), Hall and Jones (1999), Acemoglu et al. (2002) and La Porta, et al. (1998) all concluded that key determinants of economic development are institutional factors.

The encounter between neoclassical economics and developing societies served to reveal the institutional underpinnings of market economies. Clearly defined system of regulatory apparatus prevents worst fraud. In other words incentives would not work in the absence of adequate institutions, hence market need to be supported by non-market institutions in order to perform well. Example of this point is the Russia experience in price reforms and privatization in the absence of a supportive legal, regulatory and political apparatus. Other examples are Asian financial crisis which has shown that allowing financial liberalization to run ahead of financial regulation is an invitation to disaster, and also that of Latin America. The question therefore is that do institutions matter and how does one acquire them?

LITERATURE REVIEW

It is argued that weak institutional control mechanisms may expose investor's wealth (Khanna, 2009; La Porta et al., 1998; World Bank, 2005). For this reason Hearn and Piesse (2010) concluded that this situation is more prevalent in developing economies where weak regulatory institutions and poor systems of corporate governance are common feature.

Governments throughout the world have become aware of the importance of corporate governance for the efficient performance of the stock market. In the last few years' corporate governance has become an important issue throughout the world. A market that has sound institutional qualities proves to be very efficient. An efficient market in turn attracts more investment and increased transaction thus increasing market capitalization and liquidity.

Although economies are becoming increasingly global, firms with international operations are still subject to the principles and practice of national corporate governance. It has been rightfully seen that a firm's valuation does not only depend on the profitability or the growth prospects embedded in its business model, but also on the effectiveness of control mechanisms, which ensure that investors' funds are not wasted in value decreasing projects. Investors' however are encouraged to invest in sound, orderly and transparent markets. Numerous recent studies on transition economies have emphasized the relevance of law, judicial efficiency and the regulatory framework (Lombardo and Pagano, 1999; Pistor, 1999, 2000; Coffee, 1999; Hooper, 2009; La. Porta et al., 1997, 1999).

Empirical evidence suggests that better legal protection of outside shareholders is associated with easier access to external funds in the form of either equity or debt (La. Porta et al., 1997), higher valuation of listed firms (La. Porta et al., (2002), and lower private benefits of control (Zingales, 1994; Nenova, 1999). Moreover, it has been shown that the enforcement of law and regulations has much higher explanatory power for the level of equity and credit market development than the quality of the law on the books (Pistor et al., 2000; Coffee, 1999).

Edison (2003) found that institutions have a statistically significant influence on economic performance, substantially increasing the level of per capita GDP. These findings hold whether institutional quality is measured by broad-based indicators (such as an aggregate of various perceptions of public sector governance) or by more specific measures (for example, the extent of property rights protection or application of the rule of law). The findings are also consistent for all measures of institutions.

These results suggest that economic outcomes could be substantially improved hence stock market performance if developing countries strengthened the quality of their institutions. In other words, the results indicate that institutions have a strong and significant impact on per capita GDP growth.

METHODOLOGY

To understand the economic importance of the stock market in our sample of 41 countries, we examine the stock market capitalization ratio. The choice of countries and times series data for this article rests on the availability of data. Data for this article are from World Development Indicator (WDI) and Global Finance and Development (GEF). The stock market capitalization ratio is defined as the value of domestic equities traded on the stock market relative to GDP. Institutional quality is modeled by assuming that country believes there is probability of institutional quality not leading to stock market performance. The probability a country places on the likelihood that the institutional quality of a country will not yield returns is a function of institutional quality in the country. Using multiple indicators to measure institutional quality raises the problem multicolinearity. To develop the model, we take from existence causal factors and then concentrate on how to choose and optimally combine the factors to inference on the unobserved underlying process. By this we get indicators that we believe is closest to the unobserved factors. Kaufmann et al. (1990) used a variant of this approach to combine factors. We assume that each observed score for a particular indicator is a linear function of unobserved institutional quality and a disturbance term, which is assumed to be uncorrelated across indicators. The variance of each factor shows how information that factor is with respect to unobserved institutional quality.

Empirical models

Using Cadeleron-Rossell (1990) behavioral structural model economic growth and stock market liquidity are considered the main determinants of stock market performance. We use market capitalization to measure stock market performance. In this study, we modified Cadeleron-Rossell model by introducing institutional quality. Cadeleron-Rossell (1991) revealed that macroeconomic are important determinants of stock market performance. The general econometric model used in the study is as follows:

$$Y_{it} = \alpha_1 + \delta Y_{it-1} + \beta M_{it} + \varphi P_{it} + \varpi E_{it} + \varepsilon_{it} \qquad (1)$$

Where Y is stock market capitalization relative to GDP, α, is the unobserved country specific fixed effect, and ε_{it} is the white noise. M is a matrix of macroeconomic variables made up of GDP per capita, credit to the private sector as a percentage of GDP and its square, gross domestic investment as a percentage of GDP, stock market value traded as a percentage of GDP, private capital flow as a percentage of GDP, foreign direct investment as a percentage of GDP, macroeconomic stability (measured by current inflation and the real interest rate), and gross domestic savings. Cadeleron-Rossell (1991) also included one lag of the dependent variable as one of the right hand side variables because they believed that stock market performance is a dynamic concept. P and E are institutional quality variable and secondary school enrolment respectively.

To avoid multicollinearity problems (1) becomes (2) below. Panel regressions are estimated to test the importance of institutional quality on stock market performance.

$$\frac{\ln Y_{it}}{\sigma P_i} = \rho_1\left(\frac{\delta^Y}{\sigma P_i}\right) + \beta_1\left(\frac{\beta^M}{\sigma P_i}\right) + \theta_1\left(\frac{\varphi^P}{\sigma P_i}\right) + \psi_1\left(\frac{\varpi^E}{\sigma P_i}\right) + [\alpha_1 + \varepsilon_{it}] \qquad (2)$$

Where P represents institutional quality of country i, and σP_i is the standard error of institutional quality for country i.

Estimation technique

Arellano and Bond (1991) used a dynamic panel data estimator based on Generalized Method of Moments (GMM) which is instrumental variable estimator that optimally exploits restrictions implied by the dynamic panel growth model. GMM can be estimated using the levels or the first differences of the variables. Arellano and Bond (1991) proposed two estimators—one step and two step estimators—with the two step being the optimal estimator. The practice is to estimate using two step estimator but base hypothesis tests on the one step estimator's statistics.

However, before proceeding with the GMM the following identifying assumption is necessary. We assume that there is no second order serial correlation in the first differences of the error term. The consistency of the GMM estimator requires that this condition be satisfied. Given the construction of the instruments as lagged variables the presence of second order serial correlation will render such instruments invalid. The specification tests for the GMM estimator are the Sargan test of over identifying restrictions and the test of lack of residual serial correlation. The Sargan test is based on the sample analog of the moment conditions used in the estimation process and evaluates the validity of the set of instruments and, therefore, determines the validity of the assumptions of predeterminacy, endogeneity, and exogeneity. Since in this case the residuals examined are those of the regressions in differences, first order serial correlation is expected by construction and thus only second and higher order serial correlation is a sign of misspecification.

In the case of time-invariant country characteristics (fixed effects) correlating with the explanatory variables, we use the first difference GMM to transform (3) into

$$Ln\Delta Y_{it} = \rho_1 Ln\Delta Y_{it-1} + \emptyset_1 Ln\Delta M_{it} + \vartheta_1 Ln\Delta P_{it} + \psi_4 Ln\Delta E_{it} + \mu_{it} \qquad (3)$$

Bringing in the specific variables in the matrix M and P, the (3) now becomes general empirical form as shown below;

$$Ln\Delta Y_{it} = \rho_1 Ln\Delta Y_{it-1} + \emptyset_1 Ln\Delta SHVT_{it} + \emptyset_2 Ln\Delta CR_{it} + \emptyset_3 Ln\Delta SQCR_{it} + \emptyset_4 Ln\Delta INF_{it} + \emptyset_5 Ln\Delta GDP_{it} + \emptyset_6 Ln\Delta INV_{it} + \emptyset_7 Ln\Delta FDI_{it} + \vartheta_1 Ln\Delta CC_{it} + \vartheta_2 Ln\Delta VA_{it} + \vartheta_3 Ln\Delta RL_{it} + \vartheta_4 Ln\Delta RQ_{it} + \vartheta_5 Ln\Delta PS_{it} + \vartheta_6 Ln\Delta GEFF_{it} + \psi_1 Ln\Delta E_{it} + \psi_2 (Ln\Delta P_{it} \times E_{it}) + \mu_{it}$$

Expected signs are:

$$\rho_1, \emptyset_1, \emptyset_5, \emptyset_6, \emptyset_7, \vartheta_1, \ldots \ldots \vartheta_6, \psi_1, \psi_2 > 0; \ \emptyset_2, \emptyset_3, \emptyset_4 < 0$$

Where P a vector institutional quality; CC, VA, RL, RQ, PS and GEFF

Descriptive analysis

Due to lack of data for institutional quality for periods before 1996, we limit this paper to cover 1996 to 2011

Table 1. Descriptive statistic of explanatory variables.

Variable	Obs	Mean	Std	min	Max
Control of corruption	615	-0.184	0.644	-1.488	1.553
Voice and accountability	615	0.0186	0.727	-1.857	1.318
Role of law	615	-0.153	0.676	-1.841	1.358
Regulatory quality	615	0.070	0.685	-2.210	1.645
Political stability	615	-0.357	0.873	-2.412	1.206
Government effectiveness	615	0.007	0.594	-1.516	1.278
Institutional quality index	615	-0.1	0.623	-1.579	1.248

Source: Field survey 2011, WGI and FDI 2011.

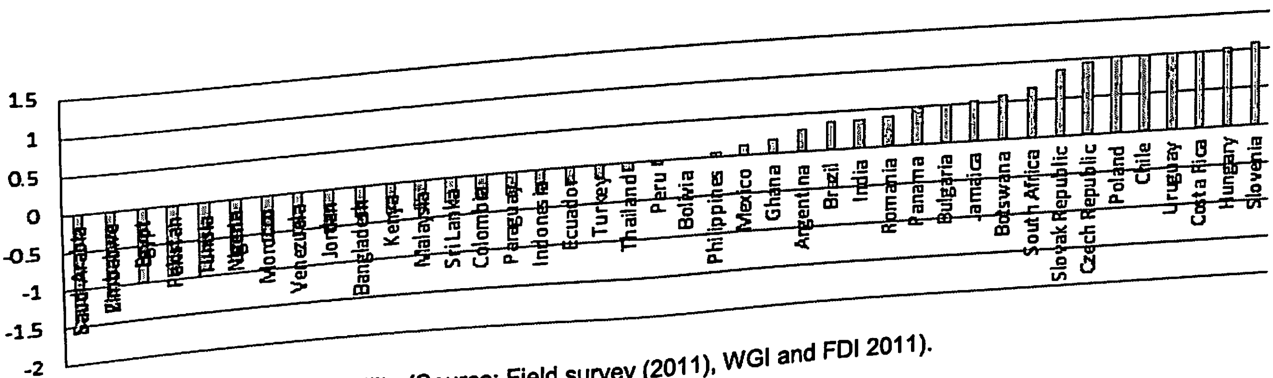


Figure 2. Voice and accountability (Source: Field survey (2011), WGI and FDI 2011).

Table 1). The extremity of the institutional quality indicator range is approximately -2.5 and 2.5 with lower values representative of poorer institutional quality scores. Differences across countries in the margins of error associated with governance estimates are due to cross-country differences in the number of sources in which a country appears and or the differences in the precision of the sources in which each country appears.

Of 41 emerging economies studied, countries like Uruguay, Slovenia, South Africa, Slovenia, Romania, Slovakia Rep, Poland, Panama, Malaysia, Jordan, Hungary, Czech Republic, Costa Rica, Chile, Bulgaria, Brazil and Botswana on the average are classified as countries with good institutional quality. On the other hand twenty five (25) of countries were cited as countries with poor institutional quality because on the average were negative for these countries. Differences across countries in the margins of error associated with voice and accountability are due to cross-country differences and differences in the precision of the sources in which each country appears.

Of all the elements of institutional quality voice and accountability, regulatory quality and then government effectiveness had positive mean values for the period under consideration. In other words for the countries sampled for this article, institutional quality in relation to these areas were strong on the average. The element of institutional quality with the highest standard deviation is political stability. There exists high correlation for each of the governance indicators for the entire period as a whole, and similarly for each individual period. The CC indicator and the RL indicator have the highest correlation amongst indicators for all periods.

Voice and accountability

Voice and accountability covers degree of involvement of citizens in government and in the policy making process. There are different types such as moral, administrative, political, managerial, market, legal, constituency, and professional accountability (Jabbra and Dwivedi, 1989). To enhance the quality of this indicator, civil liberties, political rights should be not only properly and systematically secured, but also significantly improved. Media should be able to publish or broadcast stories of their choice without fear of censorship. Countries with higher scores of WGI in voice and accountability have scores of positive 2.5 while those in lower scores have under negative 2.5 Figure 2 shows the mean value for the various countries sampled for this article. From Figure 2 slightly about 50% of emerging economies sampled have good voice and accountability. Slovenia came out as the country with good voice and accountability with

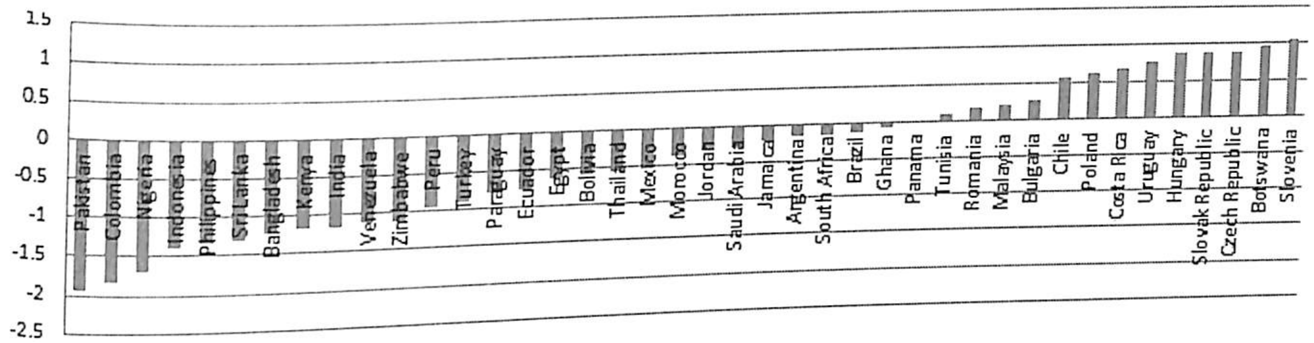


Figure 3. Political stability (Source: WDI and FDI, 2011).

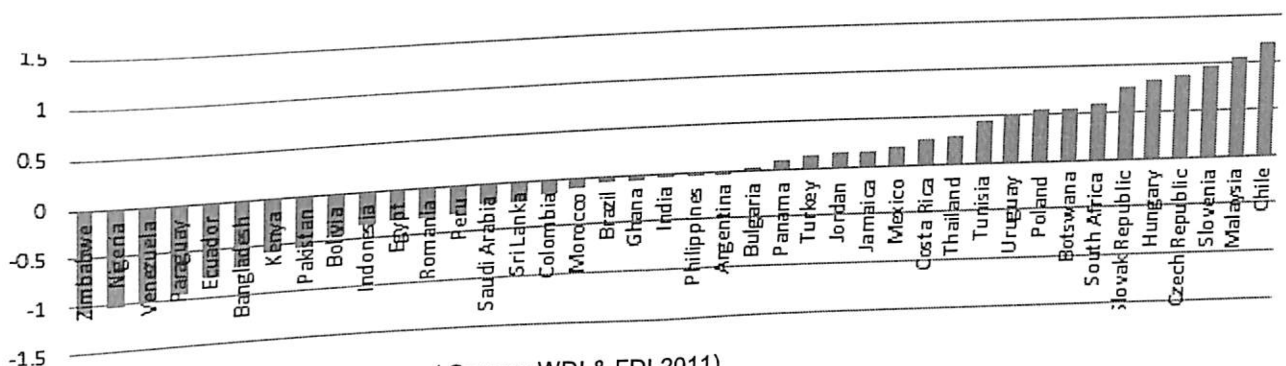


Figure 4. Government effectiveness.(Source: WDI & FDI 2011)

Saudi Arabia recorded as the country with worse voice and accountability. For African countries in the sampled South Africa, Botswana and Ghana came out with good voice and accountability index.

Political stability and absence of violence (PV)

This indicator addresses those factors which undermine political stability such as conflicts of ethnic, religious, and regional nature, violent actions by underground political organizations, violent social conflicts, and external public security. Also included are assessments of fractionalization of the political spectrum and the power of these factions, fractionalization by language, ethnic or religious groups and the power of these factions and restrictive measures required to retain power. Societal conflict involving demonstrations, strikes, and street violence are also considered in this indicator, as well as the military coup risk. Major insurgency and rebellion, political terrorism, political assassination, major urban riots, armed conflict, and state of emergency or martial law are also major determinants of this indicator.

Internal conflict like political violence and its influence on governance is assessed in this measure and external conflict measure is also employed to assess both the risk to the incumbent government and to inward investment. Government stability is measured for the government's ability to carry out its declared programs, and its ability to stay in office. Ethnic tensions component measures the degree of tension within a country attributable to racial, national, or language divisions.

Figure 3 shows that 34% of emerging economies sampled have good political stability index with 66% having bad political stability record. Slovenia and Botswana are the two emerging economies with the highest recorded of good political stability and Pakistan, Colombia and Nigeria had the worst record for political stability respectively. Ghana and South Africa also had bad political stability record.

Government effectiveness (GE)

Government effectiveness measures the quality of public services and policy formulation and implementation, and thus indicates the credibility of the government's commitment to such policies. This covers government citizen relations, quality of the supply of public goods and services, and capacity of the political authorities. This variable being negative means there is low quality of bureaucracy with excessive bureaucracy or red tape, government ineffectiveness with low personnel quality, institutional failure which deteriorates government capacity to cope with national problems as a result of institutional rigidity that reduces the economic growth. The better the bureaucracy the quicker decisions are made and the more easily foreign investors can go about their business. Figure 4 also show that 46% of emerging

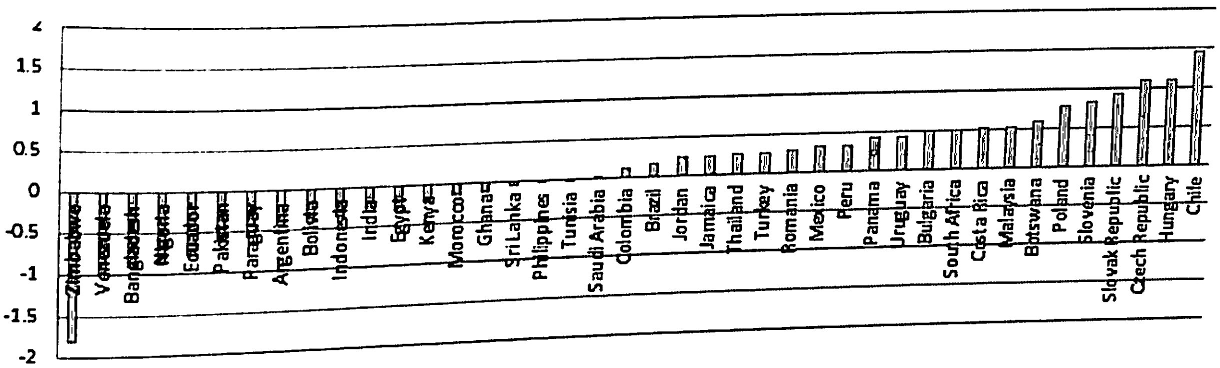


Figure 5. Regulatory quality (Source: WDI and FDI, 2011).

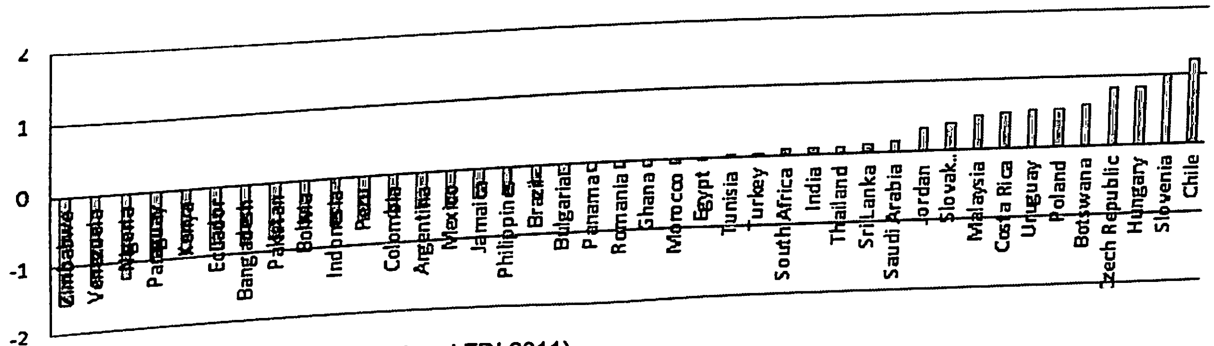


Figure 6. Role of law (Source: WDI and FDI 2011).

economies sampled for this article have positive government effectiveness. Chile and Malaysia have the highest positive value with Zimbabwe and Nigeria having the highest absolute negative value.

Regulatory quality (RQ)

The regulatory quality indicator of WGI defines the capacity for government to formulate and implement sound policies and regulations that permit and promote private sector development. It covers the concept of business start-up formalities set by government, the difference between government-regulated administrative prices and self-controlled market prices, the ease of market entry for new firms, and the competition regulation arrangements between or among businesses. In developing countries particularly, the rural region regulations on local financial services, local businesses, and agricultural produce market may determine the quality of this indicator as well. Other factors affecting regulatory quality indicators also include financial institutions' transparency, public sector contracts open to foreign bidders, anti-protectionism measures to other countries, and reduction of subsidies to specific industries. As portrayed in Figure 5, 56% of the emerging economies countries sampled had good regulatory quality and 44% bad. Chile, Hurgary, Czech Republic, Slovenia, Poland and Botswana were identified as countries with good regulatory quality respectively. On the other hand Zimbabwe, Venezuela, Bangladesh and Nigeria were tagged with bad regulatory quality.

Rule of law (RL)

There different interpretation given to rule of law due to the ethical nature of the word. This paper we are using the meaning given by legal profession as impartial judiciary, the right to fair and public trial without undue delay, equality of all before the law. These are fundamental of rule of law (IBA, 2009).

However, in Asian traditional and cultural contexts, they view good governance as rule by leaders who are benevolent and virtuous. Chu et al. (2008) indicated that throughout East Asia, only South Korea, Japan, and Hong Kong have societies that are robustly committed to a law bound state. On the other hand, Thi (2008) concluded that rule of law in Thailand, Cambodia, and most of Asia is weak or nonexistent. The term 'rule of law' is the enforceability of government, direct financial fraud, money laundering and organized crime, losses and costs of crime, quality of police, the independence of members of judiciary from political influences of the government, etc. Of the total sample 44% of the emerging economies sampled were tagged with practicing rule of law whiles the rest had bad records in relation to rule of law as depicted in Figure 6. Once again

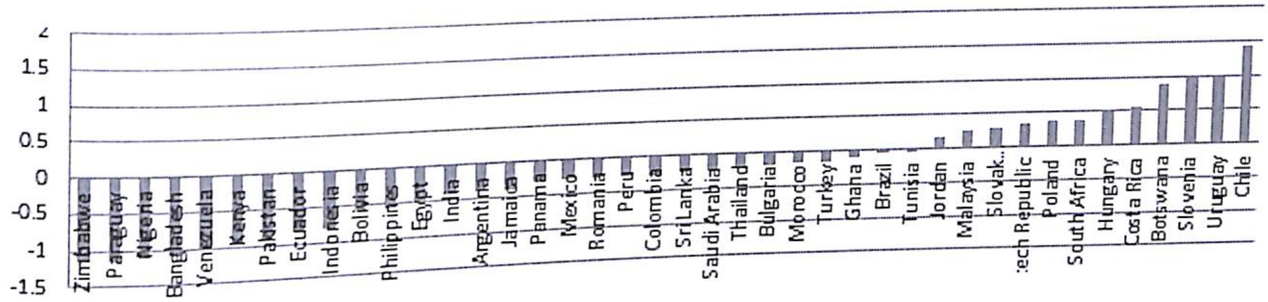


Figure 7. Control of Corruption Source: WDI and FDI 2011

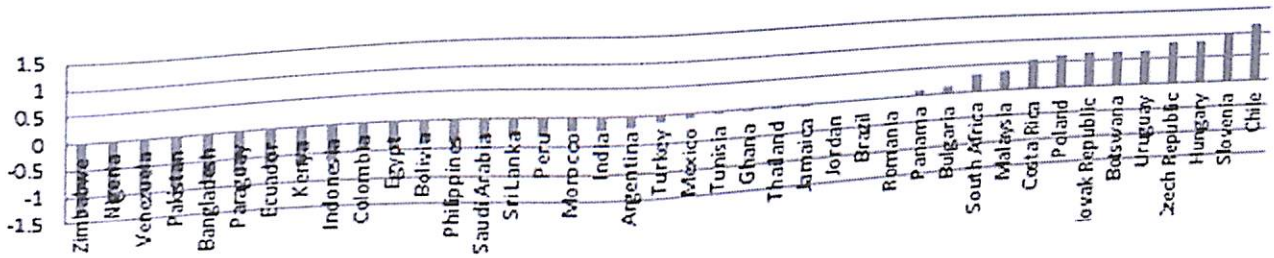


Figure 8. Institutional quality (Source: WDI and FDI 2011).

hile and Slovenia were on top whiles Zimbabwe and enezuela were at the tale of end of countries with bad ecord on rule of law.

ontrol of corruption (CC)

orruption can be explained in many different ways. ransparency International (2007) and Chinhamo and humba (2007) explained corruption as the abuse of ublic power, office, or resources by government officials employees for personal gain. The control of corruption dicator is measured by the frequency of corruption, onyism, and government efforts to tackle corruption. 6% of emerging economies sampled were tagged as aving good record on control of corruption. Brazil and unisia were neutral in relations to whether good or bad. s Chile, Uruguay, Slovenia and Botswana are ranked gh in terms of good policies to control corruption, mbabwe, Paraguay and Nigeria were rank high for poor ntrol of corruption as shown in Figure 7.

titutional quality

is is a composite index computed by row average of ponent of institutional quality computed by the earcher. The data used to compute the composite ex is from World Development Indicator (WDI). Figure elow shows how good an emerging economy is term stitutional quality. A value of 2.5 means very good negative 2.5 means bad institutional quality. Of the emerging economies sampled for this article 39% of them on the average are classified as having good institutional quality with the remaining 71% having bad institutional quality. Out of 39% countries like Chile, Slovenia, Hurgary, Czech Republic, Urguay and Botswana came on the top respectively in relation to good institutional quality. Zimbabwe, Nigeria, Venezuela, Pakistan and Bangladesh were also identified as emerging economies with bad institutional quality as depicted in Figure 8.

Statistical analysis

We examine the impact of institutional variables on stock market performance using different estimation techniques. Table 2 presents the results of pooled ordinary least square (OLS) estimate. We include as regressors institutional quality. The high correlation among the governance indicators motivates the use of separate regressions for each governance variable to avoid multicollinearity problems. When the explanatory variables are highly correlated, it becomes difficult to disentangle the separate effects of each of the explanatory variables on the dependent variable and would lead to substantial increases in the standard errors of the coefficient estimates of the governance indicators. Statistical inference based on these standard errors would be problematic. The use of each governance indicator separately for each regression overcomes these problems.

Column 1 in Table 2 is the baseline regression model where we used a composite index that takes into

Table 2. Result from OLS estimation.

Variable	SMC	SMC	SMC	SMC	SMC	SMC	SMC
Market liquidity	0.805***	0.828***	0.824***	0.815***	0.822***	0.805***	0.827***
Credit to private sector	0.496***	0.568***	0.591***	0.496***	0.591***	0.496***	0.568***
Credit to private sector squared	-0.001*	-0.005*	-0.004*	-0.007*	-0.003*	-0.002*	-0.005*
Consumer price index	-0.0904*	-0.098*	-0.089*	-0.091*	-0.086*	-0.094*	-0.097*
Secondary school enrolment	0.148**	0.112*	0.098*	0.148**	0.092*	0.171**	0.112*
GDP	4.181**	3.062*	2.081*	3.381**	2.814*	4.182**	3.112*
Investment	1.981	2.981	2.31	1.981	2.081	1.981	2.001
Institutional quality	4.601*	-	-	-	-	-	-
Control of corruption	-	25.15***	-	-	-	-	-
Voice and accountability	-	-	17.49*	-	-	-	-
Rule of law	-	-	-	30.61***	-	-	-
Regulatory quality	-	-	-	-	2.667	-	-
Political stability	-	-	-	-	-	5.882*	-
Government effectiveness	-	-	-	-	-	-	12.37*
Secondary school enrolment and voice and accountability	0.109*	0.289*	0.189*	0.112*	0.188	0.188*	0.183*
N	615	615	615	615	615	615	615
Sigma_u	0.786	0.801	0.802	0.876	0.831	0.772	0.786
Sigma_e	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rho	-	-	-	-	-	-	-

consideration all elements of institutional quality. The results show market liquidity, credit to private sector (banking sector development), GDP (economic growth), secondary school enrolment and institutional quality are all significant and the signs positive, indicating a percentage point increase in these variables will bring about an improvement in stock market performance. Investment in this case tends out insignificant. On the other hand consumer price index and square of credit to private sector are negative and significant indicating an inverse relationship with stock market performance. The variable of interest secondary school enrolment and institutional quality are all positive and significant as expected at 10 percent significance level indicating that a percentage point increase in secondary school enrolment and institutional quality increases stock market performance by 0.148 and 4.601 respectively. This outcome indicates that institutional environment is a good predictor of stock market performance in emerging economies. If we simply look at the coefficient on secondary school enrolment (E), we will incorrectly conclude that a percentage point increase secondary school enrolment will lead to 0.481 improvements in stock market performance. But this coefficient supposedly measures the effect when institutional quality is zero, which is not interesting because the minimum institutional quality from this sample is not even zero. Also since the p-value for the F test of this joint hypothesis is 0.003, so we certainly reject the null hypothesis of $\varphi_1 = 0$, $\beta_{12} = 0$. Using the mean value of institutional quality we compute $\frac{\Delta SMC}{\Delta E}$. Because secondary school enrolment is measured as percentage, it means that a 1% percentage point increase in secondary school enrolment increase stock market capitalization of emerging economies by 0.506 standard deviations from the mean stock market capitalization. This finding is consistent with the results Winful et al. (2013).

The problem with institutional quality is that it tells us very little about which aspect of institutional quality attention should be directed towards. Also because of multicollinearity problem, we introduce the elements of institutional quality one at time to determine its effect on stock market performance. To remedy this deficiency, the article studies the effect of the components of the index of institution quality on stock market performance. The results are show in table 2 below from the second column onwards. In column two of Table 2 we replace the composite index of institutional quality with control of corruption to determine its effect on stock market performance. The results shows that control of corruption have significant effect on stock market performance. With effect of secondary school enrolment on corruption we determine the partial effect of control of corruption on stock market performance. The indication here is that as emerging economies put in place measures to reduce control of corruption they affect positively on stock markets of emerging economies. The sign is as expected. We fail to reject the hypothesis that there is

Table 3. Result from FE.

SMC	SMC	SMC	SMC	SMC	SMC	SMC
0.801***	0.788***	0.808***	0.902***	0.881***	0.803***	0.801***
0.408***	0.533***	0.408**	0.413***	0.406**	0.408***	0.348***
-0.005*	-0.001*	-0.004*	-0.041*	-0.017*	-0.003*	-0.004*
-0.0193	-0.0396	-0.0102	-0.031	-0.119	-0.0101	-0.0193
0.547**	0.322*	0.441**	0.422*	0.547*	0.417*	0.523*
5.043**	1.062*	5.043*	3.062*	5.043*	5.043**	5.043**
1.981	0.784	1.981**	0.784	1.981	1.981	1.981
0.801*	-	-	-	-	-	-
-	0.720**	-	-	-	-	-
-	-	0.767***	-	-	-	-
-	-	-	0.278	-	-	-
-	-	-	-	0.284	-	-
-	-	-	-	-	0.298**	-
-	-	-	-	-	-	1.138*
0.115*	0.229*	0.176*	0.443**	0.308**	0.437*	0.437*
615	615	615	615	615	615	615
36.13	28.21	34.01	35.66	28.95	36.13	36.63
17.75	17.24	14.75	16.54	13.75	17.65	17.65
0.805	0.716	0.805	0.715	0.616	0.805	0.634

positive effect between control of corruption and stock market performance of emerging economies. The ability of the judiciary to enforce contractual rights of shareholders impinges on the likelihood of managerial expropriation and ultimately the profitability of firms. All other dimensions of institutional quality with exception of regulatory quality are having positive coefficients and have an estimated coefficient that obtains statistical significance at the 10% level as shown in Table 2 below. Legal systems supportive of investor protections tend to increase the amount of funds risk-averse investors are willing to channel towards firms. Aggarwal et al. (2002) find that fund managers invest less in countries with poor legal environments and low corporate governance standards. This is supported by the higher shareholder returns in countries with better governance systems. If the quality of legal institutions is considered a sub-set of the quality of governance, then the results are consistent with Lonbardo and Pagano (2000) but contrary to Demirguc-Kunt and Maksimovic (1998).

However, the latter authors failed to control for global risk factors in their analysis, which could explain the variation in the results. If institutional quality influences transaction costs associated with firm operations, then it would be expected that the excess return on equity would be higher in countries which rate highly on institutional structure. Reduction in transaction costs would enlarge the profitable project opportunity set available to firms and thus the demand for equity. This, in connection with reduced agency costs due to better institutional enforcement increases return to shareholders.

We introduce an interactive term to allow as determine the partial effect of secondary school enrolment with respect to the dimensions of institutional quality. This is because of influence of institutional quality on secondary school enrolment. The result shows explicitly that there is statistically significant in all interaction between secondary school enrolment with respect to various dimensions institutional quality shown in Table 2.

AIC analysis confirms that the interaction term should be included in the model. The adjusted–R2 for the OLS estimates shown in column one to seven respectively indicate the percent of systematic variations explained by the variables in the models. The F-values for the various models estimates are significant at the less than 1 percent level, indicating a significant linear relationship between the dependent variable (SMC) and the independent variables taken together.

Table 3 below presents different assumptions about the correlation structure of the errors which is used to analysis panel data the fixed effects and random effects. With the FE we explore the relationship between predictor and outcome variables with countries. Each emerging economies has its own individual characteristics that may or may not influence the predictor variables. Using FE the assume is that something within the individual emerging economies may bias the predictor or outcome variables and we need to control for this. The other assumption is that time-invariant characteristics are unique to individual emerging economies and should not be correlated with other emerging economies characteristics. An effect of the atures of fixed-effects technique is that they cannot be sed to investigate time-invariant causes of the ependent variables.

Using RE we assume that the error terms are orrelated. The rationale behind random effects model is at, unlike the FE model, the variation across emerging conomies is assumed to be random and uncorrelated ith the independent variables included in the model. A mparison of the consistent FE with the efficient RE stimates using the Hausman specification test, rejects e RE estimates at $p<0.05$ in favor of the fixed-effects odel. The results from random effect are not reported in is article.

The results of the FE are as shown in Table 3. The esult confirms the pooled OLS results on economic rowth, market liquidity, and credit to private sector, onsumer price index, financial market performance and econdary school enrolment in Table 2. The composite ndex for institutional quality is again significant. As we onsidered the various dimensions of institutional quality sing FE technique, rule of law and regulatory quality end out to be insignificant in explaining stock market erformance.

Surprisingly, when voice and accountability is ntroduced investment tends out to significant in xplaining stock market performance as shown in column hree. F test of less than 1% for the columns of Table 3 mplies that models are okay and all the explanatory ariables are different than zero. A test for heteroskedasticity of a p-value of 0.000 for the seven estimates using fixed effect rejected the null hypothesis of homoskedasticity. To correct the problem of heteroskedasticity we used robust fixed effects. The robust fixed effect results are not different from Table 3. The *robust fixed effect* results are not shown in this article. *Lagram-Multiplier* test of serial correlation fail to reject null hypothesis and we conclude that the data does not have first-order autocorrelation. Clustering the data by countries did not give different results from fixed effect.

Ramsey RESET test using powers of the fitted values of the dependent variable Stock Market Capitalization reject the null hypothesis that the model has no omitted variables at all the traditional significance levels. The article failed to rejects the null hypothesis for the simple reason that the lag of the dependent variable which is expected to explain variation in dependent variable is missing in the model. According to Nickel (1981) introducing lag of the dependent variable into the model give rise to dynamic panel bias. The difficulty in applying OLS to this empirical problem is that lag of SMC is correlated with the fixed effects in the error term. Correlation between a regressors and the error violates an assumption necessary for the consistency of OLS.

To improve efficiency of our results from the previous techniques discussed above we introduce the GMM technique and the outputs are as shown in Table 4. Using GMM estimation technique we address the endogenous problem by instrumenting the lag of the dependent variable and any other similarly endogenous variables with variables thought uncorrelated with the fixed effects. The first column of Table 4 is the baseline regression control for variables such as; market liquidity, credit to private sector, financial sector performance, consumer price index, GDP, investment, secondary school enrolment and institutional quality.

The results as shown in Table 4 column one below, shows that explanatory variables are positive and significant with the exception of credit to private sector squared and consumer price index which tend out to be negative and significance and signs as expected. Investment is insignificant but with the expected sign.

The implication of the results is that percentage point increases in market liquidity increases stock market capitalization by 0.792. The sign is as expected because although profitable investments require long run commitment to capital, savers prefer not to relinquish control of their savings for long periods. Liquid equity markets ease this tension by providing assets to savers that are easily liquidated at any time, while simultaneously allowing firms permanent access to capital that are raised through equity issues there by increasing the market value of firms. Market liquidity boosts investors' confidence. A negative coefficient of -0.008 for credit to private sector squared is expected since money market and capital market tend to substitute each other as financing vehicle for investors. That is very high levels of banking sector development have negative impact on growth of stock market because stock markets and banks tend to substitute as financing vehicles. It was also established that consumer price index influence stock market performance of emerging economies negatively as expected at significance level of 1%. This is because high inflation rate does not encourage long term financing for which the capital market seeks to address. These results do not contradiction the findings of Ali (2011) and Yartey (2008) as reviewed in this article.

Secondary school enrolment and economic growth has significant positive influence on stock market performance. An increase in the secondary school enrolment brings about 0.383 and 3.271 changes in stock market capitalization at 1% and 5% significant levels respectively. We fail to reject the null hypothesis that economic growth and secondary school enrolment have no significant effect on stock market performance. It is also established that composite institutional quality has 2.91 influences on stock market performance also at 1% significance level. The result suggests that policies that seek to improve institutional quality are important for stock market performance in emerging economies. Interestingly, investment which is not significant using the OLS and fixed effect tends significant from column one to seven in the Table 4. The null hypothesis that the population moment condition are correct is not rejected

Results from GMM estimation dependent variable (SMC).

	(GMM1)	(GMM2)	(GMM3)	(GMM3)	(GMM3)	(GMM3)	(GMM3)
ck market capitalization	0.164***	0.189***	0.179***	0.179***	0.179***	0.179***	0.179***
t liquidity	0.792***	0.764***	0.747***	0.732***	0.747***	0.801***	0.722***
to private sector	0.407***	0.415***	0.349***	0.149***	0.366***	0.283***	0.349***
to private sector squared	-0.008***	-0.005***	-0.006***	-0.008***	-0.013***	-0.011***	-0.009***
mer price index	-0.343***	-0.272***	-0.238***	-0.338***	-0.274***	-0.381***	-0.238***
dary school enrolment	0.383***	0.352***	0.463***	0.471***	0.375***	0.581***	0.477***
	3.271**	4.112*	2.761*	2.761*	2.761*	2.761*	2.761*
ment	1.973*	1.74**	2.03**	1.973*	1.911*	1.973*	1.74**
tional quality	2.91***	-	-	-	-	-	-
ol of corruption	-	2.937**	-	-	-	-	-
and accountability	-	-	1.620**	-	-	-	-
of law	-	-	-	2.67*	-	-	-
latory quality	-	-	-	-	5.20***	-	-
cal stability	-	-	-	-	-	4.527*	-
nment effectiveness	-	-	-	-	-	-	9.022*
action effect SE/IQ	3.291**	2.263**	2.327**	4.255**	3.290**	4.301**	4.291**
	574	574	574	574	574	574	574
rder autocorrelation	0.034	0.035	0.045	0.058	0.048	0.049	0.047
order autocorrelation	0.864	0.773	0.653	0.753	0.588	0.583	0.657
an test of overidentifying ictions	0.382	0.551	0.754	0.771	0.731	0.728	0.731

tics in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01.

cause Sargan p=0.382 is greater than 0.05 as shown column one of Table 4. For the test of autocorrelation the errors, we except to reject at order 1 but not at her order for us to concluded that the errors are ially uncorrelated. AR(1) of (0.034) which is less than 5 and AR(2) of 0.864 implies that the error are not ially correlated. The F-value (which is a measure of overall goodness of fit of the regression) of 0.000 is hly significant at 1% level thus the hypothesis of a ificant linear relationship between dependent and ependent variables is validated as a group.

The problem with the concept of institutional quality is t it tells us very little about the influence of specific ponents of institutional quality on stock market formance and hence which aspect of institutional lity should policy maker pay attention to if stock kets are to perform well. Yartey (2007) for instance, that these components are important for stock ket performance in African countries. To resolve this ciency the article investigates the effects of the ponents of the index of institutional quality on stock ket performance. This exercise is done in column 2 to Table 4 as shown. We examine the effect of all the components of institutional quality on stock market rmance one at time. Results show that all the six ponents have positive significant influence on stock ket performance in emerging economies. The signs as expected. The article suggests that development od policies to improve on components of institutional quality is an important determinants of stock market performance in emerging economies. The finding also affirms that secondary school enrolment has positive significant influence of 0.352, 0.352, 0.463, 0.471, 0.375, 0.581 and 0.477 respectively from column one to seven respectively on stock market performance at different significant level. Increased investment in human capital is expected to affect income per capita positively. That is emerging economies with better educated work force or populace can easily adopt new technologies and innovate new technology domestically which leads to wealth maximization of firms thereby increasing their market value.

We also find that market liquidity, credit to private sector, credit to private sector squared, economic growth, consumer price index and lagged of the dependent variable to be significant and also with the expected signs for all the seven columns. It is interest to note that by accounting for dynamic nature of the data and solving the endogeneity problem all components of institutional quality which were insignificant in Table 3 tend out significant with the right signs.

The implication is that ability of institutional quality to enforce contractual rights of shareholders impinges on the likelihood of managerial expropriation and ultimately the profitability of firms. Legal systems supportive of investor protections tend to increase the amount of funds risk-averse investors are willing to channel towards firms. Managers invest less in countries with poor legal

...ironments and low corporate governance standards. ...e payoffs from institutional quality improvements ...lude not only larger stock markets, but also greater ...egration with world capital markets via the influx of ...pital. Better governance environments increases ...urns to shareholders by reducing both transaction ...sts and agency costs.

Himmelberg et al. (2004) stated that lack of investor ...otection forces company insiders to hold higher ...ctions of the equity of the firms they manage. These ...gh holdings subject insiders to greater levels of ...osyncratic risk, which in turn increases the risk ...emium and, therefore, the marginal cost of capital. The ...sults of Lombardo and Pagano (2002) confirm the view ...Shleifer (1999), who emphasizes that, in order to reap ...e benefits from market-oriented reforms, policy makers ...emerging economies must make sure that a fair level ...aying field is established, so that investors can focus ...eir attention on exploiting growth opportunities without ...aring for their property rights.

Autocorrelation 1 (AR 1) of 0.035 which is less than ...05 and AR (2) of 0.773 imply that the errors are not ...erially correlated for column two. The F-value (which is ... measure of the overall goodness of fit of the ...egression) of 0.000 is highly significant at 1% level thus ...e hypothesis of a significant linear relationship between ...ependent and independent variables is validated as a ...oup. Sargan test of over identifying restrictions of 0.551 ...pports the results. The same applies to the other ...olumns of Table 4.

The inclusion of an interaction between secondary ...chool enrolment and components of institutional quality ... due to the fact that strong institutional quality creates ...e environment for more of the populace to have ...ducation. We are interested in the effects of secondary ...chool enrolment on stock market performance in ...merging economies so we need to determine the partial ...ffect of secondary enrolment on stock market ...erformance. If we simply look at the coefficient on ...econdary school enrolment (E), we will incorrectly ...onclude that a percentage point increase in secondary ...chool enrolment will lead to 0.471 improvements in ...stock market performance for instance column four. But ...his coefficient supposedly measures the effect when ...nstitutional quality is zero, which is not interesting ...ecause the minimum value of institutional quality from ...his sample is not even zero. Also since the p-value for ...he F test of this joint hypothesis is 0.003, so we certainly ...eject the null hypothesis of $\varphi_1 = 0$, $\beta_{12} = 0$. Using the ...ean value of the various components of institutional, we ...ompute the partial effect. For column two for instance ...e used the mean of control of corruption to compute the ...artial effect of secondary school enrolment on stock ...arket performance.

$$= 0.352 + 0.189(0.186) = 0.387$$

Because secondary school enrolment is measured as percentage, it means that a 1% percentage point increase in secondary school enrolment increase stock market capitalization of emerging economies by 0.387 standard deviations from the mean stock market capitalization.

To determine the partial effect of secondary school enrolment on SMC for column two for instance we replace the interaction variable with $(CC - 0.186) * E$. We then run the regression which gives as the new coefficient on secondary school enrolment (E), the estimated effect at CC=0.186, along with its standard error. Running this new regression gives the standard error of 2.66 as 0.07, which yields t= 7.93. Therefore at the average CC, we conclude that secondary school enrolment (E) has a statistically significant positive effect on Stock Market Capitalization of emerging economies. The sign is as expected. The sign for education is positive because school enrolment has been on the increase since early part 1990 in most emerging economies under study. The trend has been so because government contribution to education for emerging economies has been on the ascendency over the last 10 decade. Most countries have introduced free and compulsory basic education and this have increased enrolment in many countries.

The results also established that market liquidity, economic growth, lagged dependent variable and credit to private sector have positive and significance influence on stock market capitalization. Credit to private sector squared and macroeconomic stability variable (consumer price index) on the other hand have negative and significance effect on stock market capitalization. The reasons that can be attributed to this inverse relation between consumer price index and stock market performance is that multinational corporations are set up after studying the macroeconomics of the host country. Any change in the macroeconomics of a country will affect a multinational corporation. For a multinational corporation to grow and thrive, the macroeconomics of the host country should be stable. The host country is like an anchor which gives a corporation the stability at its roots. When the corporation spreads its wings over developing nations, it is a known factor that the macroeconomics in a developing nation will be volatile. Hence stability of Macroeconomics in the host country is extremely important for a multinational corporation.

Stable low inflation (consumer price index) encourages higher investment which is a determinant of improved productivity and non-price competitiveness. Control of inflation helps to main price competitiveness for exporters and domestic businesses facing competition from imports. Stability breeds higher levels of consumer and business confidence. The maintenance of steady growth and price stability helps to keep short term and long term interest rates low, important in reducing the debt-servicing costs of people with mortgages and businesses with loans to repay. A stable real economy helps to anchor stable expectations and this can act as an incentive for an economy to attract inflows of foreign direct investment.

Market liquidity concerns such as why liquidity changes over time, why large trades move prices up or down, and why these price changes are subsequently reversed, and why some traders willingly disclose their intended trades while others hide them. These issues have been established to have positive and significant effect on stock market performance of emerging economies.

All six component of institutional quality had the right signs. According to the International Monetary Fund (IMF, 2007), Institutional quality is important for stock market performance because efficient and accountable institutions tend to broaden appeal and confidence in equity investment. Equity investment thus becomes gradually more attractive as political risk is resolved over time. Therefore, the development of good quality institutions can affect the attractiveness of equity investment and lead to stock market performance. This is because institutional quality supportive of investor protections tend to increase the amount of funds risk-averse investors are willing to channel towards firms. Managers invest less in countries with poor legal environments and low corporate governance standards. The payoffs from institutional quality improvements include not only larger stock markets, but also greater integration with world capital markets via the influx of capital. Better governance environments increases returns to shareholders by reducing both transaction costs and agency costs. All these go to improve on the performance of stock market. Policy makers in emerging economies must make sure that a fair level playing field is established, so that investors can focus their attention on exploiting growth opportunities without fearing for their property rights.

The p-value of Sargan test of overidentifying restrictions 0.731 and first and second order of autocorrelation of 0.048 and 0.631 support the results as consistent and efficient. The Sargan test for the null hypothesis of valid specification is used to test whether these instruments are valid. The test failed to reject the null hypothesis in all the regressions implying that the instruments are valid. This indicates that the model has high explanatory and predictive power. The Wald test for joint significance of the dependent variables strongly rejected the null hypothesis that the coefficients on all the variables are jointly equal to zero for all the models shown in Table 4.

Conclusion

It has been established that components of institutional quality also have positive influence on stock market performance of emerging economies. By this findings policies tailored to reduce corruption, government effectiveness, political stability, voice and accountability, regulatory quality and rule of law should be taken seriously and encouraged. The payoffs from strong institutional quality include not only larger stock markets, but also greater integration with world capital markets via the influx of capital. Better governance environments increases returns to shareholders by reducing both transaction costs and agency costs. All these go to improve on the performance of stock market. This study findings have important policy implications for emerging economies that development of good quality institutions can affect the attractiveness of equity investment and lead to stock market performance. Also emerging economies should improve their institutional framework because strong institutional quality reduces political risk which is an important factor in investment decision. Policy makers must sure that a fair level playing field is established, so that investors can focus their attention on exploiting growth opportunities without fearing for their property rights.

Policy implications

The findings of this article have important policy implications for emerging economies. The new phase of developmental economics has achieved much in helping us understand this unexplored channel of causation since Bagehot (1873).

The result suggests that policy makers in emerging economies must not concentrate all their efforts on technological innovation, investment in physical capital but rather emerging economies must follow a parallel policy agenda of improving the quality of their institutions and Labor force. In addition, these policies should focus on the institutional qualities that affect stock market performance most such as rule of law, government effectiveness, political instability, and voice and accountability. This implies that adopting market-friendly policies, providing an effective judiciary system, making contracts enforceable by law, building political stability, providing effective government service, and strengthening civil liberty and political rights should be the major policy agendas of these countries.

In situations where these factors were not significant in explaining stock market performance it suggests that emerging economies can set aside those variables at least in the short run but in the long run they have to work on them. Technical inefficiency is not the only channel through which bad governance may translate into poor performance of the stock market. Head of states should spearhead promulgation of fiscal responsibility act along the lines of Financial Administration Act of United States of America that would require the government to commit itself to fiscal discipline and provide for transparency and impose sanctions. To hence political accountability, we ed to establish political institutions which could hold the ernment accountable, as pertains in developed ntries. Civil society should assume the lead role in plifying the voice of the people and demanding greater mestic accountability, but said governments and nors should support this by ensuring that more relevant ormation is provided, and is in a format and language ople can understand.

It is obviously costly to build institutions from scratch hen imported blueprints can serve just as well. Much of e legislation establishing a SEC like watchdog agency r securities markets, for example, can be borrowed holesale from those countries that have already learned w to regulate these markets by their own trial and ror. The same goes perhaps for an anti-trust agency, a ancial supervisory agency, a central bank, and many her governmental functions. One can always learn from e institutional arrangements prevailing elsewhere even they are inappropriate or cannot be transplanted. Some cieties can go further by adopting institutions that cut eper.

onflict of Interests

he authors have not declared any conflict of interests.

EFERENCES

emoglu D (1998). Why Do New Technologies Complement Skills? Directed Technical Change and Wage Inequality. Q. J. Econ. 113(4):1055-1090.
emoglu D, Johnson S, Robinson JA (2001). An African Success Story: Botswana, MIT Department of Economics Working Paper No. 01-37. Available at SSRN: http://ssrn.com/abstract=290791 or http://dx.doi.org/10.2139/ssrn.290791
emoglu D, Angrist J (2001). How Large are the Social Returns to Education: Evidence from Compulsory Schooling Laws" in B. Bernanke and K. Rogoff (eds.) NBER Macroeconomic Annual, (2000) (Cambridge, MA: The MIT Press) 9-59.
cemoglu D (2002). Directed Technical Change. Rev. Econ. Stud. 69(4):781-810.
cemoglu D, Aghion P, Zilibotti F (2006). Distance to Frontier, Selection and Economic Growth. J. the European Econ. Assoc. 4(1):37-74.
alderon-Rossell RJ (1991). The Determinants of Stock Market Growth," in S. Ghon, Rhee and Rosita P. Chang (eds.), Pacific Basin Capital Markets Research Proceeding of the Second Annual Pacific Basin Finance Conference, Vol. II, Bangkok, Thailand, 4–6 June, Amsterdam: North Holland).
offee J (1999). Privatization and corporate governance: the lessons from securities market failure. Columbia Law School Center for Law and Economics Studies Working Paper 158, New York, NY.
emirguc-Kunt A, Maksimovic V (1998). Law, finance and firm growth. J. Financ. 53:2107-2137.
dison H (2003). Testing the Links; How strong are the links between institutional quality and economic performance, J. Financ. Dev. 40(2):35-37. http://www.imf.org/external/pubs/ft/weo/2003/01/index.htm.
ani A, Ngassam C (2008). Effect of institutional factors on stock market development in Asia, Am. J. Finance Account. 1:2
am B, Piesse J (2010). Barriers to the Development of Small Stock Markets: A Case Study of Swaziland and Mozambique. J. Int. Dev. 22:1018-1037.
mmelberg C, Hubbard G, Love I (2004). Investor protection, ownership, and the cost of capital. World Bank Policy Research Working Paper 2834, Washington, DC.
Hooper V, Sim AB, Uppal A (2009). Governance and stock market performance, J. Econ. Syst. 33:93-116. http://ro.uow.ed.au/commpapers/115.
International Finance Cooperation (1991) IFC Fact book, New York : IFC International Finance Cooperation (1996) IFC Fact book, New York : IFC.
Johnson S, Shleifer A (1999). Coase vs. the Coasians. NBER Working Paper 7447, Cambridge, MA.
Kemboi JK, Taru DK (2012). Macroeconomic Determinants of Stock Market Development in Emerging Markets: Evidence from Kenya, Research J. Financ. Account. 3(5):57-68.
Knack S, Keefer P (1995). Institutions and economic performance:
La Porta R, Lopez -de Silanes F, Andrei S, Robert V (1998). Law and Finance, J. Polit. Econ. 106:1113-1155.
La Porta R, Lopez-de Silanes F, Andrei S, Robert V (1997). Legal Determinants of External Finance, J. Financ. 52:1131-1150.
Levine R (1996). Stock Markets: A Spur to Economic Growth, Finance & Development, International Monetary Institute, Washington, D.C.
Levine R, Zervos S (1998). Stock Markets, Banks, and Economic Growth, Am. Econ. Rev. 88:536-558.
Levine R, Zervos S (1996). Stock Market Development and Long-run Growth, Policy Research Working Paper 1582.
Lombardo D (2000). Is there a cost to poor institutions? SIEPR Discussion Paper 00-019, Stanford, CA.
Lombardo D, Pagano M (2000). Legal determinants of the return on equity. CSEF Discussion Paper 24, Naples.
Lombardo D, Pagano M (2002). Law and equity markets: a simple model. CSEF Discussion Paper 25, Naples. MA.
North DC (1995). The Adam Smith Address: Economic Theory in a Dynamic Economic World." Business Economics: 7.
North D (1994). Economic performance through time. Am. Econ. Rev. 84:359-368.
Sala-i-Martin X (1997). I Just Ran Four Million Regressions." National Bureau of Economic Research (Cambridge, MA) Working Paper No. 6252, November 1997.
Sobhee SK (2009). Do Better Institutions Help to Shrink Income Inequality in Developing Economies? Evidence from Latin America and Sub-Saharan Africa.", Paper presented at the PEGnet (Poverty and Economic Growth network) Conference, The Hague, Netherlands, 3-4 Sept.
Subramanian A, Roy D (2001). Who can explain the Mauritian Miracle: Meade, Romer, Sachs or Rodrik, IMF working paper. 7:3.
World Development Indicator (2011), World Bank Group, World Bank, http://data.worldbank.org/data-catalog/world-development-indicators.
William E, Ross L (1997). Africa's Growth Tragedy: Policies And Ethnic Divisions, Quarterly Journal of Economics. Retrieved on the 24th March 201; qje.oxfordjournals.org/content/112/4/1203.full.pdf.
Winful EC, Kumi-Koranteng P, Owusu-Mensah M (2013). Investment Education" on Stock Market Performance: Case of GSE, J. Contemp. Manage. ID: 1929-0128-2013-04-29-17
Yartey CA (2008). Determinants of Stock Market Development in Emerging Economies: Is South Africa Different? IMF working Paper-WP/08/32 Washington, International Monetary Fund.
Yartey CA, Adjasi CK (2007). Stock Market Development in Sub Saharan Africa: Critical Issues and Challenges, IMF Working Paper, WP/07/209.

Appendix 1. Mean of Indicators of stock market performance and elements of institutional quality1996 – 2011.

Country	Total value traded (% of GDP)	SMC (% of GDP)	Turnover Ratio (%)	No. of Listed Comp	GDP per Capita $	Institutional quality elements					
						Cc	Va	Rol	Rq	ps	geff
Argentina	3.75	30.10	23.36	135	4285.75	-0.4034	0.29274	-0.54595	-0.449	-0.158	-0.04
Bangladesh	3.77	5.47	54.44	216	377.21	-1.0853	-0.419	-0.88288	-0.9328	-1.236	-0.708
Bolivia	0.11	14.26	0.97	27	1020.64	-0.5842	-0.0207	-0.71315	-0.4165	-0.58	-0.441
Botswana	0.88	23.03	5.38	16	4981.22	0.89018	0.58373	0.604985	0.60495	0.9571	0.5529
Brazil	19.67	38.61	53.21	464	4582.71	-0.0226	0.38306	-0.30584	0.17987	-0.121	-0.062
Bulgaria	2.08	13.03	13.13	402	3437.66	-0.2042	0.50559	-0.18042	0.49189	0.2576	0.0326
Chile	12.06	95.18	12.66	252	6669.80	1.41986	0.97859	1.244058	1.47027	0.5722	1.2025
Colombia	2.65	25.02	9.93	117	3295.39	-0.2673	-0.3235	-0.62147	0.12835	-1.822	-0.146
Costa Rica	0.67	9.72	5.29	17	4683.95	0.55271	0.9973	0.50956	0.52709	0.6717	0.2557
Czech Republic	12.64	23.77	53.42	265	11852.47	0.35474	0.94333	0.84427	1.10567	0.8756	0.8707
Ecuador	0.38	7.16	5.20	47	2903.80	-0.8574	-0.2572	-0.91583	-0.8018	-0.744	-0.782
Egypt	12.29	34.88	27.11	690	1158.47	-0.4762	-1.0205	-0.06214	-0.3276	-0.627	-0.329
Ghana	0.45	15.37	3.29	26	486.02	-0.1112	0.19119	-0.09981	-0.1357	-0.071	-0.06
Hungary	15.57	20.22	66.30	46	9372.58	0.52146	1.03645	0.848601	1.10686	0.8661	0.8262
India	44.04	47.66	103.11	4845	641.97	-0.4185	0.38603	0.102799	-0.3277	-1.168	-0.051
Indonesia	11.72	26.66	47.89	294	1195.98	-0.8133	-0.3025	-0.70697	-0.3783	-1.395	-0.351
Jamaica	3.88	117.63	3.14	39	4178.91	-0.3978	0.54104	-0.44346	0.25653	-0.215	0.1539
Jordan	39.69	109.20	29.04	169	2135.87	0.16751	-0.5878	0.332669	0.25026	-0.305	0.145
Kenya	1.58	23.49	5.68	55	528.17	-0.9503	-0.4172	-0.96109	-0.2284	-1.18	-0.556
Malaysia	68.64	162.95	39.58	748	4919.38	0.26401	-0.3936	0.497353	0.53187	0.2162	1.0591
Mexico	8.52	27.38	32.97	168	7468.29	-0.2926	0.14942	-0.5209	0.33923	-0.529	0.193
Morocco	7.98	38.12	17.58	60	1796.14	-0.1556	-0.6245	-0.0692	-0.1643	-0.357	-0.112
Nigeria	1.73	14.40	8.53	189	684.49	-1.1099	-0.8482	-1.24584	-0.8989	-1.7	-1.021
Pakistan	31.50	19.38	167.50	683	631.11	-0.9354	-0.9798	-0.8272	-0.6124	-1.944	-0.549
Panama	0.55	24.84	2.75	22	4573.13	-0.3139	0.496	-0.14782	0.43084	0.029	0.0989
Paraguay	0.12	3.37	5.17	54	1558.13	-1.1311	-0.3213	-1.00916	-0.5856	-0.787	-0.938
Peru	3.58	31.72	16.37	225	2706.04	-0.2706	-0.0817	-0.65427	0.34411	-0.955	-0.309
Philippines	12.26	51.51	23.53	219	1123.98	-0.5756	0.04629	-0.42186	-0.0458	-1.336	-0.046
Poland	8.11	19.12	61.71	238	7199.95	0.36823	0.97555	0.560471	0.79406	0.6237	0.5508
Romania	1.45	10.79	21.14	2963	4280.12	-0.2833	0.40729	-0.10001	0.30437	0.1844	-0.328
Saudi Arabia	73.95	61.17	84.02	87	13402.12	-0.2407	-1.6093	0.156765	0.02081	-0.281	-0.219

Source: Computed by researcher using data from WDI and FDI 2011.