MODELING THE DETERMINANTS OF LONG TERM ECONOMIC GROWTH IN GHANA

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ABSTRACT
Ghana Stock Exchange plays a vital role in determining the rate of growth of the Ghanaian economy. Whatever yardstick one may employ to assess the performance of the Ghana Stock Market towards investment growth as well as growth in the entire economy, the contribution of stock market to the growth of an economy cannot be undermine. Employing cointegration and Error Correction model, the study suggest the dominants of stock market capitalization, foreign direct investment, Exchange rates, interest rates and inflation in determining the long term economic growth in Ghana. Our results on one hand show that, inflation rate and interest rate are slower in their effect on economic growth since it takes time for them to trickle-down effect on the economy. This is because, the rate of growth in inflation and interest rates are far slower than the rate of growth in GDP. On the other hand, lagged LGDP, market capitalization rate and exchange rate are shown to greatly influence the rate of economic growth in Ghana. The negativity of the error correction term (ECT) confirms that the model will return to equilibrium after a diversion from its equilibrium value in the short run and converge in the long run to its equilibrium value.
Keywords: Long term Growth, Determinants, GDP, Stock exchange, Cointegration, Units Roots

INTRODUCTION
African economies have performed remarkably well in terms of achieving economic growth rates of over 5% for the past seven years, yet it is the least developed the world over. A lot needs to be done to lift the continent from the severity of extreme poverty, unemployment and overall economic deprivation and underdevelopment. To sustain the current level of economic growth and encourage both domestic and foreign investment in the continent, Africa needs rapid expansion, development and modernization of its financial markets. Empirical studies evidenced that deeper and better functioning of financial markets through financial liberalization can stimulate economic growth. The growing importance of stock market around the world has reinforced the belief that finance is an important ingredient for growth. All over the world, the role of long-term capital in the growth and development process of every nation cannot be over-emphasized. Financial intermediation through the capital markets has the potential of promoting greater efficiency and growth in the economy provided that a sound institutional, legal and regulatory framework is put in place.
Most economists recognize that a well-organized capital market is crucial for mobilizing both in the domestic and international capital. Brealey and Myers (1990) argue that the mechanism of financial intermediation deals with mobilizing financial resources and channeling them into feasible economic investment. However, in many developing countries, capital has been a major constraint in economic

development, since credits are always available just for a short-term. Also, Dailami and Alkim (1990) describe the provision of funds to finance domestic capital for nation as a key factor in the prospects of long term economic growth in developing countries. Dailami and Alkim(1990) observe that the reality of a much reduced supply of foreign funds from previous sources, such as commercial banks, compel governments in many developing countries to pay increased attention to capital market development as a way of improving domestic resource mobilization. This is expected to enhance the supply of long-term capital and encouraging the efficient use of existing assets crisis. Dailami and Alkim (1990) later contend that the ongoing debt is serving to focus attention on the importance of equity rather than debt, particularly in the financing of risky projects with long gestation periods.

The role of financial system is considered to be the key to economic growth. A well-developed financial system promotes investments by identifying and financing business opportunities, mobilizing savings, allocating resources efficiently, helping diversity risks and facilitating the exchange of goods and services (Mishkin, 2001). Stock market performance has therefore assumed a developmental role in global economics and finance following the impact they have exerted in corporate finance and economic activity. Stock markets, according to Paudel (2005), due to their liquidity, enable firms to acquire much needed capital quickly, hence facilitating capital allocation, investments and growth.

Stock market activity is thus rapidly playing an important role in determining the level of economic activities in most countries. Thus stock markets have an important role to play in financial liberalization and deepening. Pardy (1992) contends that apart from providing a means of diversifying risk for both capital raisers and investors, stock markets could play other roles. For instances, they are a mechanism for capital allocation and corporate monitoring and a means for government to exercise market based rather than directs fiscal and monetary policies. Engberg (1975) recognizes the need for capital market and how it can significantly raise the level of domestic savings and contribute to a more efficient allocation of such funds among competing uses. Engberg (1975) further observes that the unavailability of these range of financial assets mentioned above will induce people to increase their rate of current savings. The reason is that, capital market enables savers to achieve a better wealth composition and also permits adjustments to be made in the wealth composition with speed and at low cost whenever circumstances change. Moreover, competition among users of stock market Funds, including individuals, business and governments, will tend to increase the efficiency with which capital is used, with direct effect on the growth rate of the economy. A stock markets' development has an important role to play in economic development. Shahbaz et al (2008) argue that stock market performance is an important wheel for economic growth as there is a long-run relation between stock market performance and economic growth. Stock market performance has the direct impact in corporate finance and economic development. A growing body of literature has affirmed the importance of financial system to economic growth. Financial market especially stock markets have grown considerably in developed and developing countries over the last two decades.

Furthermore, Claessens, et al (2004) stated that several factors have aided in the growth process of many nations, importantly improved macroeconomic fundamentals, such as more monetary stability and higher economic growth. General economic and specific capital markets reforms, including privatization of state-owned enterprises, financial liberalization, and an improved institutional framework for investors, have further encouraged capital market performance.

OVERVIEW OF GHANA STOCK EXCHANGE

Ghana Stock Exchange was incorporated in July 1989, as a private company limited by guarantee under Ghana's companies code 1963 (Act 179). It was given recognition as an authorized stock exchange under the Exchange Act of 1971 in October 1990 and first trading on the floor was in November 1990. In April 1994 it was converted into a public company limited by guarantee. This simply means that it is a legalized market place where shares and stocks of firms or companies and the Government can be bought and sold, and also a market for secondary securities (i.e. shares/stocks that have already been issued and are in the hands of investors).

Currently, the GSE has thirty-five (35) ordinary shares (companies), one (1) preference share, two (2) corporate bonds and three (3) government debts. All types of securities are listed. The criteria for listing includes capital adequacy, profitability, spread of shares, years of existence and management efficiency. GSE All share index is the main index of the Exchange (www.gse.com.gh).

Since its inception, the performance of the Ghana Stock market has varied considerably. For instance in 1993, the GSE was the 6th best index performing emerging stock market with a capital appreciation of 116%. In 2008 the GSE All Share Index was up 60%. As at 31st December, 2008, the GSE's market capitalization was GH¢17.9 billion representing an increase of 44% (www.gse.com.gh). The manufacturing and brewing sectors currently dominate the exchange. A distant third is the banking sector while other listed companies fall into the insurance, mining and petroleum sectors. Most of the listed companies on the GSE are Ghanaian. However there are some multinationals too. Potential changes at the Exchange include the introduction of automated trading and the listing of some of the state banks. These changes are aimed at making the Exchange more relevant, efficient and effective. (www.gse.com.gh).

For some times now, the linkage between financial intermediation and economic growth has been a subject of debate among academics, policy makers and economists around the world. There have been attempts to empirically assess the role of stock markets (financial liberalization) and economic growth. The link between stock market and economic growth has varied in methods and results. There exist two great controversies in the predictions. On one side, financial liberalization (stock markets capitalization) promotes long-term growth. For example Greenwood and Smith (1996) show that stock markets lower the cost of mobilizing savings, facilitating investments into the most productive technologies. Bencivenga, et. al. (1996) and Levine (1991) have argued that stock market liquidity (i.e. the ability to trade equity easily) plays a key role in economic growth. It has been argued by Kely (1984) and Holmstrom and Tirole (1993) that liquidity increases investors incentive to acquire information on firms and improve corporate governance thereby facilitating growth. Similarly Chen et. al (2004) elaborated the nexus between stock market and output growth and concluded that the rate of stock returns is a leading indicator of growth. Also Arestic et al. (2001) using time series on five industrialized countries also indicated that stock market play a role in growth. In another interesting study to support this relationship, Adjasi and Biekpe (2005) established a significantly positive effect of stock market development on economic growth in countries classified as upper middle –income economies.

On the other hand, a second view on the stock market, economic growth nexus casts doubt on the contribution of stock markets to long-term growth. Apart from the view that stock market may have no real effective growth effects, there are theoretical constructs that show that stock market development may actually hurt economic growth. For example Stiglitz (1985; 1994) questioned the role of stock markets in improving information asymmetries and also argues that stock markets quickly reveals information through price changes creating a free-rider problem that reduces investor incentives to conduct costly search. Also, Shleifer and Vishny (1986),Bencivenga and Smith (1991) and Bhide (1993) argued that liquidity stock markets may hurt growth since savings rates may reduce due to externalities in capital accumulation. Diffuse ownership may also negatively affect corporate governance and invariably the performance of listed firms thus impeding the growth of stock markets. Demirguc-Kunt (1996) also questioned the contribution of liquidity itself to long-term growth and stressed that increased liquidity may deter growth through three channels. Firstly, it may reduce saving rates through income and substitution effects. That is if savings rates fall enough and if there is an externality attached to capital accumulation, greater stock market liquidity may slow economic growth. Secondly, by reducing the uncertainty associated with investments, greater stock market liquidity may reduce saving rates because of the ambiguous effects of uncertainty on savings; lastly, stock market liquidity encourages investor myopia, adversely affecting corporate governance and thereby reduces economic growth.

Despite alternative views, empirical works continue to show largely some degree of positive relationship between stock market and economic growth. Surprisingly few empirical studies of the relationship between stock markets and economic growth are available using data on the Ghana stock exchange (see Adjasi, 2005, Coleman and Agyire 2006). One such study is by Levine and Zervos (1998) that asks whether stock markets are merely burgeoning casinos or a key to economic growth and to examine this

issue empirically. Levine and Zervos (1998) found a positive and significant correlation between market stock performance and long-run growth. There is the need therefore to assess whether the performance of the market is importantly linked with economic growth in Ghana or it is just a market ladder with gambling instinct and process of the partakers. An important issue worth noting is whether there was the need for establishing a stock market and to examine the effects of financial liberalization on economy growth in Ghana. However, the market has been fully established and has been trading successfully in financial instruments or stocks for about two decades now.

Objectives of the Study

The main objective of the study is to examine the effect of Ghana Stock Exchange performance on economic growth in Ghana. The specific objectives of the study are to:

- ➢ Empirically evaluate the effects of determinants of economic growth in Ghana.
- ➢ Examine the overall performance of the Ghana Stock Exchange (GSE)
- ➢ Contribute significantly to the body of scanty empirical literature on the subject using data on Ghana.
- ➢ Determine the Causality between economic growth and its determinants

LITERATURE REVIEW

Theoretically, stock markets are expected to accelerate economic growth by providing a boost to domestic savings and increasing the quantity and the quality of investment. In particular, stock markets can encourage economic growth by providing an avenue for growing companies to raise capital at lower cost. Additionally, companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of a credit crunch. Better savings mobilization may increase the savings rate and investment demand and mobilized additional funds to enhance growth. If efficient stock markets enable savings to be allocated to investment projects with higher returns, the rate of return to savers increases, making savings more attractive. As a result, more savings are channeled to the corporate sector. The stock market is also expected to ensure through the takeover mechanism that past investments are also most efficiently used. A free stock market from corporate control is expected to provide the best guarantee of efficiency in the use of assets. The presumption is that, if management does not maximize firm value, another economic agent may take control of the firm, replace management, and reap the gains from a more efficient firm. Singh (1971, 1997), argue that the actual operation of the pricing and takeover mechanism even in well-functioning stock markets lead to short termism and lower rates of long term investment particularly in firm specific human capital. It also generates perverse incentives, rewarding managers for their success in financial engineering rather than creating new wealth through growth. In addition, empirical evidence shows that the takeover mechanism does not perform a disciplinary function and that competitive selection in the market for corporate control takes place much more on the basis of size rather than performance. Bhide (1994) further argue that stock market liquidity may negatively influence corporate governance because very liquid stock market may encourage investor myopia. Since investors can easily sell their shares, more liquid stock markets may weaken investors' commitment and incentive to exert corporate control. These problems are further magnified in emerging market countries with their weaker regulatory institutions and greater macroeconomic volatility. These serious limitations of the stock market have led many analysts to question the importance of the system in promoting economic growth in emerging markets.

The activities of the stock exchange fall into two broad categories, the primary and secondary markets. The primary market is concerned with the initial issuance of securities. Such an issue can take any of the following forms: offer for subscription, offer for sales, by introduction, private placement and rights issue. The market for outstanding securities (the secondary market) enhances the new issues market in many ways, by providing the means by which investors can monitor the value of their shares and liquidate them when they so desire. The secondary market augment the supply of funds to the primary market stated somewhat differently. If there were no secondary market in which investors could cash their investment in listed securities they choose, many investors may not buy new issues in the first place. From the

perspective of the overall economy, the secondary market is particularly important, as it makes it possible for the economy to ensure long-term commitments in real capital.

Governments sometimes play certain budgetary measures and fiscal directive could be employed to ensure that the bulk of the available funds are invested in government securities, thereby leaving very little for investment in private securities. It should be noted that this has been the case in the Ghana Stock Exchange, to some extent, under the term on which government securities are issued through the market. However, in favor of the important role which governments of many less developed countries have to play in promoting the development of their countries, raising funds through the capital market might be the method of mobilizing the necessary finance. This is important for development and device to encourage more people to participate in the developmental process. The prime objective of the Bank of Ghana is to pursue sound financial and macroeconomic policies aimed at maintaining price and monetary stability and ensuring overall control of the financial sector. The capital market in Ghana serves as an economic indicator of performance of government. The Bank of Ghana Act (2002) provided direct and indirect regulation on the capital market. The Bank of Ghana regulates the capital market in that only with its permission can other banks invest, and controls the movement of securities inside and outside the country. Through these exchange measures, therefore, the level of activities in the market is regulated, controlled and maintained at a congenial level.

Empirical Literature

Empirical evidence linking stock market development to economic growth has been inconclusive even though the balance of evidence is in favor of a positive relationship between stock markets and economic growth. Levine and Zervos (1998) find that various measures of stock market activity are positively correlated with measures of real economic growth across countries, and that the association is particularly strong for developing countries especially in the African economies. The arguments for stock market activities were supported by various empirical studies, such as Levine and Zervos (1993); Atje and Jovanovic (1993); Levine and Zervos (1998). Although these studies emphasize the importance of stock market development in the growth process, they do not simultaneously examine banking sector development, stock market development, and economic growth in a unified framework. On the other hand, Levine and Zervos (1993); Atje and Jovanovie (1993); Levine and Zervos (1998); Reusseau and Wachtel (2000) and Beck and Levine (2003) show that stock market development is strongly correlated with growth rates of real GDP per capital. More importantly, they found that stock market liquidity and banking development both predict the future growth rate of the economy when they both enter the growth regression. They concluded that stock markets provide different services from those provided by banks. This is also consistent with the work by Levine and Zervos (1995) and the argument by Demrgue-Kunt (1994) that stock market can give a big boost to economic development.

Stock exchange are expected to accelerate economic growth by increasing liquidity of financial assets, making global risk diversification easier for investors, promoting wiser investment decisions by saving-surplus units based on available information, forcing corporate managers to work harder for shareholders' interests, and channeling more saving to corporations. In accordance with Levine (1991), and Benchivenga and Smith and Starr (1996) they emphasized the positive role of liquidity provided by stock exchanges on the size of new real asset investments through common stock financing. Investors are more easily persuaded to invest in common stocks, when there is little doubt on their marketability in stock exchanges. This in turn, motivates corporations to go to public when they need more finance to invest in capital goods. Another important contribution of stock exchanges to economic growth is through global risk diversification opportunities they offer. However, Saint-Paul (1992); Deveraux and Smith (1994) and Obstfeld (1994) argue quite plausibly that opportunities for risk reduction through global diversification make high risk, high return domestic and international projects viable, and, consequently, allocate savings between investment opportunities more efficiently. Stock prices determined in exchanges, and other publicly available information help investors make better investment decisions. Better investment decisions by investors mean better allocation of funds among corporations and, as a result, a higher rate of economic growth. Inefficient capital markets prices already reflect all available

information, and this reduces the need for expensive and painstaking efforts to obtain additional information (Stiglitz, 1994). Form the point of view of Schumpeter (1912), technological innovation is the force underlying long-run economic growth, and that the cause of innovation is the financial sector's ability to extend credit to the entrepreneur.

Garcia and Liu (1999) examined the macroeconomic determinants of stock market development in a sample of Latin American and Asian countries. The results show that GDP growth, domestic investment, and financial intermediary sector development are important factors. Yartey (2007) also in a similar study finds that a percentage point increase in financial intermediary sector development tends to increase stock market development in Africa by 0.6 points controlling for other factors including macroeconomic stability, economic development, and the quality of legal and political institutions. Rapach (2002) established a very interesting finding in support of the earlier studies on the relationship between macroeconomic variables and economic growth. He concluded that increase in inflation does not result in persistent depreciation of share real value. Exchange rate as an indicator of a currency movement is a monetary variable that affect prices of stock in a way similar to the inflation variable. Depreciation of the local currency makes import expensive compared to export. Import companies increase production cost, all the cost cannot be passing on to the consumers because of the competitiveness of the market. Ayadi (1998) investigated the stock return seasonalities in low-income African emerging markets using monthly market indices for the Ghanaian stock market, Nigerian stock market, and Zimbabwean stock market. In the study, he finds the absence of seasonality in stock returns on the Nigerian and Zimbabwean stock markets and confirms the presence of seasonality in stock returns for Ghana. These results provided the baseline the measuring stock volatilities in the African Stock markets.

Kyereboah and Agyire-Tettey (2006) in a recent study using quarterly data on the Ghana Stock Exchange investigated the impact of macroeconomic indicators on the Stock market performance. 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. Using an EGARCH Model to estimate the Macroeconomic uncertainty and conditional stock-price volatility in frontier African markets, Charles K.D. Adjasi (2005) used quarterly data on the Ghana stock exchange to investigate the presence of price volatilities in stock. The study found that higher volatility in cocoa prices and interest rates increases volatility of the stock prices, whilst higher volatility in gold prices, oil prices, and money supply reduces volatility of stock prices. McKinnon-Shaw (1973) theories on finance and development 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. McKinnon (1973) further 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. In an interesting study by Wai and Patrick's (1973), they argued that securities markets have generally not contributed to economic development of those countries that created them. Stiglitz (1989) also contends that the contribution of securities markets as a source of funds is limited because of fundamental problems of enforcement, adverse selection and incentives undermining the protection of investors. According to Levine (1991), and Benchivenga et al (1996), there is a positive effect of liquidity provided by stock exchanges on the size of new real asset investments through common stock financing. Investors are more easily persuaded to invest in common stocks, when there is little doubt on their marketability in stock exchanges. This in turn, motivates corporations to go to public when they need more finance to invest in capital goods. Demirguc-Kunt and Levine (1996) point out that increased liquidity may deter growth via three channels. First, it may reduce saving rates through income and substation effects, second, by reducing the uncertainty associated with investments, greater stock market liquidity may reduce saving rates because

of the ambiguous effects of uncertainty on savings; third, stock market liquidity encourages investor myopia, adversely affecting corporate governance and thereby reducing growth.

METHODOLOGY

There are large bodies of knowledge in literature on the methodologies on the econometric modeling of the effects of financial liberalization on economic growth using data on emerging stock markets, however, few of such studies in the literature focused on the Ghana Stock Exchange (GSE). The relationship between financial liberalization and economic growth has been the central issue in the literature. This study therefore examines the association and causality between financial liberalization and economic growth based on Levine and Zervos's (1996) index to study effects of stock market development and long term growth. Despite the fact that many studies are based on cross-country comparison of stock market development, this study employed annual time series data (interpolated in quarterly data) on Ghana for the period 1990 to 2008. The study also employed the Engle and Granger causality test procedure to determine the direction of causality between stock market development and economic growth and to also determine how they evolve over time. The study will further examine the relationship between stock market performance and economic growth. Cointegration and the Johansen for multivariate time series analysis has become a useful framework for analyzing long-run relationships amongst time series variables. This study will therefore adopt these tests procedures.

Model Specification

The first and foremost step in modeling the relationship between two or more variables is to express this relationship in mathematical form (Koutsoyiannis (1977). This particular study adopted the prior model specification with some few modifications from the Dermirquc-Kunt and Levine (1996) in analyzing the effect of stock market performance on economic growth.

It is therefore necessary to specify a general linear form of the model as follows;

$$Y_i = \beta_0 + \beta_i X_i + \gamma_i FINL + \varepsilon_i \ldots\ldots\ldots (1)$$

Y = GDP Growth Rate

Xi, = vector of control variables measured in Ghana;

FINL = Financial Liberalisation (For purpose of this particular study, we will adopt the stock market capitalization as the measure of financial liberalization).

INFRAT= Inflation Rate

INTRAT = Interest Rate

EXRAT = Exchange Rate

FDI = Foreign Direct Investment

βo = regression constant, ε_i = regression error term

Specifically, we post the following model; Linear function model (linear variable and parameters) as:

$$Y = (FINL, FDI, INTRAT, EXRAT, INFRAT) \ldots\ldots\ldots \textbf{(2)}$$

Since we are interested in the effects of other macroeconomic variables together with stock market capitalization rate (MC) on economic growth in Ghana, the study estimated the above generalized model. Linearizing and taking the natural logarithm of both sides of the equation (2), we have

$$LogY_i = \beta_0 + \beta_1 LogFINL + \beta_2 LogFDI + \beta_3 LogEXRAT + \beta_4 LogINTRAT + \beta_5 LogIFRAT + \varepsilon_i$$

$$\ldots\ldots\ldots (3)$$

Where, e_i, is a white noise

B_{is} are the parameters or coefficients to be estimated in the model

Let

LogY = LY

LogFINL = LFINL

LogINFRAT =LINFRAT

LogINTRAT = LINTRAT

LogFDI = LFDI

LogEXRAT= LEXRAT

Thus, the final equation specified becomes;

$$LY_i = \beta_0 + \beta_1 LFINL + \beta_2 LFDI + \beta_3 LEXRAT + \beta_4 LINTRAT + \beta_5 LINFRAT + \varepsilon_i \ldots\ldots\ldots (4)$$

Sources of Data
The data for the study consists of annual time series from 1990 to 2008 and interpolated into quarterly data. All the macroeconomic data stock market developments were extracted from International Monetary Fund- 2009 World Economic Outlook whereas the other variables were extracted from World Development Indicators CD-ROM.

Variable Definitions
Economic growth
Real income has been found to be highly correlated with the size of the stock market. We use the log GDP per capita to measure Economic growth. According to demand driven hypothesis, the expansion of an economy will create new demand for financial services. Such increase in demand will exert pressure to establish larger and more sophisticated financial institutions to satisfy the new demand for their services. The performance of the Ghana economy in terms of GDP growth rates shows a downward trend in GDP growth between 1990 and 1995 and thereafter, GDP growth experienced fluctuations until 2008 though it grew steadily. The Ghana Stock market has significantly influenced the growth and development process of Ghana.

Financial Liberalization
This variable is represented by stock market capitalization. It captures the performance of the market and it is one of the independent variables in our regression analysis. We measure stock market development by market capitalization as a proportion of GDP. This measure equals the total market value of listed shares divided by GDP. Its selection is motivated by data availability and also based on the Dermirguc-Kunt and Levine (1996) model.

Foreign Direct Investment Inflows
Foreign capital inflows can make significant contributions to the host country's economic growth and development by lessening and cushion shocks resulting from low domestic saving and investment. The Balance of Payments Manual published by the International Monetary Fund in 1993 defines Foreign Direct Investment as an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. Increase in FDI inflow is hypothesized to have a positive effect on economic growth. Foreign direct investment flows serve as additional source of raising funds to supplement investment and domestic savings.

Interest Rate
The relationship between interest rates and economy growth is well established. An increase in interest rate will increase the opportunity cost of holding money and investors substitute holdings interest bearing securities for share hence falling stock prices. Lower interest rates reduces the opportunity cost of borrowing funds hence increases investment that certainly translates into economic growth (increased incomes). The Treasury bill rate is used as a measure of interest rate in this study because investing in Treasury bill is seen as opportunity cost for holding shares. High-treasury bill rates encourage investors to purchase more government instruments and makes funds available for investment.

Inflation Rate
High rates of inflation increase the cost of living and a shift of resources from investments to consumption. This leads to a fall in the demand for market instruments which lead to reduction in the volume of stock traded. Also the monetary policy responds to the increase in the rate of inflation with economic tightening policies, which in turn increases the nominal risk-free rate and hence raises the discount rate in the valuation model.

ESTIMATION

For the general econometric model equation as shown above, the ordinary Least Squares, though it has the best linear unbiased estimator (BLUE), it assumes that the variables are stationary at their levels. If the considered variables are not stationary at their levels, then OLS regression will often result in "seemingly good regression", the usual spurious regression suggesting economically meaningless regression. In the presence of this problem, the regressions usually have very significant coefficients but have no economic meaning based on economic theory. Since OLS assumes that the disturbances are white noise, the implication could be that the residuals are inconsistent with the assumption.

Testing for Unit Root and Cointegration

The Augmented Dickey-Fuller test statistic is employed to test for the order of integration of the considered time series variables with only a constant. Since most economic variables have the tendency to increase over time, the test for stationarity or unit roots is justifiable in that most macroeconomic variables becomes stationary after differencing them. Most time series variables are classified as being integrated of order d, denoted as I (d), that is, if the series must be differenced d times in order to become stationary then it contains d unit root. The economic interpretation of cointegration is that, two or more series are linked to form a long run equilibrium even though they may be non-stationary (they may contain stochastic trends). If the variables are non-stationary then they will never move closer to each other over time and the difference between them will be stationary (stable). Cointegration therefore mimics the existence of this long run equilibrium to which this economic variables converge over time. If the series are cointegrated, then we have information about their long run behaviour of the variables and the coefficients are interpreted as the long run multipliers. The Johansen test for cointegration procedure will be employed. The use of an Error Correction Model becomes necessary since the short-run and long-run effects are separated and clearly distinguished and can be readily estimated. The models are balanced if the variables are cointegrated and therefore the problems of spurious regressions are avoided.

Testing for Causality

The cointegration technique pioneered by Engle and Granger (1987), made a significant contribution towards the test for causality. So long as two variables have a common trend, causality (in the Granger sense, not in the structural sense), there must exist in at least one direction of causality, (Granger, 1988,). This Granger (or temporal) causality can be detected through the vector error-correction model derived from the long run cointegrating vectors.

RESULTS

Diagnostic Tests of the Model

The summary statistics shows that, the difference between the maximum and minimum values is wide apart and the standard deviation is also high indicating a high level of fluctuations in GDP growth rate. Table 1shows the summary descriptive statistics of the variables used for the study using annual data that are interpolated into quarterly data from the period 1990 to 2008. The Jarque-Bera statistics for normality shows that all the variables are not randomly distributed at 5% level of significance. The variables used for the study includes;

Table 1: Summary Statistics

	LY	LFINL	LFDI	LINFRAT	LINTRAT	LEXRAT
Mean	10.16456	5.990134	0.206369	2.981941	-1.377643	7.886125
Median	10.24390	5.801907	0.234087	2.828866	-1.235625	7.923757
Maximum	11.88082	9.949021	1.495423	4.139728	-0.711397	9.165694
Minimum	7.500132	1.015231	-2.690574	2.192350	-2.368874	5.751200
Std. Dev.	1.377148	2.713060	0.840521	0.541259	0.495506	1.182721
Skewness	-0.357475	-0.393955	-0.988487	0.487557	-0.582132	-0.452415
Jarque-Bera	5.169574	3.070521	15.44706	5.316289	6.284120	6.526459
Probability	0.075412	0.215400	0.000442	0.070078	0.043194	0.038265

Growth Rate=Y, FINL= Financial Lineralization, INFRAT= Inflation Rate, EXRAT=Exchange Rate, INTRAT= Interest Rate, FDI= Foreign Direct Investment.

Results of Units roots test using the ADF-Statistic
Under this test, a variable is stationary if the ADF probability-value is less than the conventional 5% critical value. The results of the unit roots test based on both the Augmented Dickey- Fuller test statistic with only a constant are displayed below.

Table 2: Results of Unit Roots test

	Level	Prob*	First Difference	Prob*	Order of integration	Lag Length
LY	-3.013806	0.0027***	-2.967933	0.00088**	I(0)	0
LFINL	-1.184518	0.6752	-4.209124	0.0015**	I(1)	1
LFDI	-2.381922	0.1507	-6.595896	0.0000**	I(1)	1
LINFRAT	-2.994908	0.0037***	-3.775064	0.0007**	I(0)	1
LINTRAT	0.571107	0.9877	-0.831090	0.0026**	I(1)	1
LEXRAT	-1.884729	0.3373	-3.353456	0.0166**	I(1)	1

1%		**-3.552666**
5%		**-2.914517**
10%		**-2.595033**

The results from Table 2 show that only GDP and Inflation rate are stationary at their levels. However, all the variables are stationary at their first difference. In other words, all other variables are integrated of the same order I (1) except the two variables (GDP and Inflation rate I (0) are. This implies that GDP and Inflation rate are stationary at their levels and the other all the variables contain unit roots (non stationary) at their level at both 1% and 5% significance level.

Results of Causality Test
In order to formally establish a directional causality between log of GDP and stock market capitalization in Ghana, we employed the Engle and Granger causality procedure. The result is displayed below.

Granger Causality Test Results

(Table 3) Granger Causality Tests

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
LFINL does not Granger Cause LY	67	2.55954	0.0733
LY does not Granger Cause LFINL		1.37094	0.0381

Under the Null hypothesis that Financial liberalization does not Granger cause GDP growth and that GDP growth does not Granger cause financial liberalization, The results using the probability value in both cases are greater than the 5% level of significance (0.05), we reject the null hypothesis and conclude that there is bi -directional causality between LY and LFINL and the other way run. In conclusion, financial liberalization causes economic growth while Economic growth also causes liberalization of financial markets. The result also showed that both Economic growth and financial liberalization are positively correlated.

Testing for Cointegration
Using the Johansen test procedure to investigate the number of cointegration relationships, the results are displayed below.

Table 4: Johansen Cointegration relationship

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.527397	47.96799	40.07757	0.0053
At most 1	0.392880	31.93789	33.87687	0.0837
At most 2	0.278432	20.88503	27.58434	0.2832
At most 3	0.166299	11.64032	21.13162	0.5834
At most 4	0.145222	10.04247	14.26460	0.2092
At most 5 *	0.091894	6.169195	3.841466	0.0130

 Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level

The Johansen hypothesized cointegration relationship displayed above indicates a unique cointegration relationship between the variables. The study estimated a vector error correction model to evaluate the effects of financial liberalization on economic growth in Ghana. This will enable us capture the long run relationship between the variables. This is done by simply introducing the error correction factors to reconcile both the short run and long run relationship. This error correction term (ECT) measures the

speed to which GDP adjust to its long run equilibrium after disequilibrium. This then provides us with information about the proportion of disequilibrium error accumulated in the previous periods that are corrected in the current period. The study further estimated a specific or parsimonious Error Correction Model by including only the first differenced variables without their lags from the over- parameterized model. The choice of a zero lag length is just for convenience.

Table 5:Results of the Vector Error Correction Model

Dependent Variable: **DLY**
Method: Least Squares
Included observations: 64 after adjustments

Variable	Coefficients	Std. Error	t-Statistic	Prob.
DLY(-1)	0.823168	0.071480	11.51612	0.0000
DLFINL	0.071190	0.016060	4.432600	0.0493
DLFDI	0.041631	0.006996	5.950700	0.0042
DLINFRAT	0.014328	0.004983	2.875674	0.0349
DLINTRAT	-0.034170	0.008298	-4.117864	0.0284
DLEXRAT	-0.066922	0.020870	-3.206646	0.0022
ECM(-1)	-0.570626	0.260957	-2.186666	0.0204
C	0.006081	0.002563	2.372520	0.1754
R-squared	0.894940	Mean dependent var		0.056431
Adjusted R-squared	0.869308	S.D. dependent var		0.030713
S.E. of regression	0.014752	Akaike info criterion		-2.478466
Sum squared resid	0.012186	Schwarz criterion		-3.208605
Log likelihood	183.3109	F-statistic		31.01304
Durbin-Watson stat	1.993929	Prob(F-statistic)		0.000000

D and L represent the first difference operator and the logarithm of the variables respectively. All the variables remains as previously defined.

Table 6 Results of Diagnostic Test

Diagnostic Test	F-Statistics	Probability
Normality Test: Jarque Bera	12.7203	0.000000
Serial Correlation (Breusch-Godfrey test)	0.00354	0.742910
ARCH test for Autoregressive conditional Heteroscasticity	2.16168	0.108941
Ramsey Reset test for Specification	2.95399	0.163453
White tests for Heteroscesdasticity	1.953454	0.519112

The diagnostic test for normality using the Jarque-Bera statistic, Breusch-Godgrey test for serial correlation, ARCH test for Autoregressive conditional heteroscedasticity, the white heteroscedasticity

test, and the Ramsey Reset test for specification errors. The diagnostic test result above shows that the regression residuals are normally distributed with no serial correlation. Also, all the parameters are stable with a correctly specified model.

DISCUSSION

The result shows an adjusted R^2 of 0.869; implying that about 86% of variations in GDP are explained by the regression. The F-statistic also significant at both 1% and 5% level indicating that the overall result is good. The Durbin-Watson statistic of 1.99 shows no serial correlation. The coefficients of the regression show that the growth rate of GDP is dependent positively on its previous year's growth. The coefficient of lagged GDP indicates that a percentage increases in GDP the previous year will lead to about a 0.82% increase in GDP in the current year. This implies that GDP may be following an AR (1) process and that it takes time for income to trickle down into the economy. The results also show that an increase in rate of stock market capitalization (financial liberalization) in Ghana by just a one percent will positively caused about a 7.1% increase in GDP growth. This suggests that financial liberation positively affect economic growth in Ghana. The result again finds that foreign direct investment positively affect Economic growth in that percentage increase in FDI will increase GDP growth by 4.1%.

Inflation was equally estimated to have significant positive effect on economic growth in Ghana. Since the effect of inflation is felt with time, it is the lag of inflation that turns to affect growth. The result therefore favors the general assertion that it takes time for investors to adjust their portfolio due to the lagging effect of changing inflation. The Exchange rate also estimated to negatively affect economic growth and indicates the fact that the Ghana economy has benefited from major depreciation of the cedi as they do receive the proceeds from their sale on the international market in foreign currency. Furthermore, Interest rate which measures the opportunity cost of borrowing fund is established to significant contribute negatively to economic growth. However, the negative coefficient is expected since increases in interest rate crowds out private investment and slows down the rate of growth in an economy. Interestingly to our analysis is that, the Error Correction term (ECM) as a measure of the speed to which the growth rate of GDP adjusts to its long-run equilibrium is negative (correctly signed) and significant at one percent level with an absolute value less than unity, the results indicates a stable error correction mechanism in which GDP growth eventually converges to the long-run equilibrium level after a deviation. The results indicate that the speed of adjustment to the long run equilibrium level is relatively high with a coefficient of 0.5706. This suggests that about 57 percent of any previous disequilibrium in the long run will be corrected in the short term. This indicates that the model will quickly adjust itself to equilibrium after a deviation.

SUMMARY

Ghana Stock Exchange plays a vital role in determining the rate of growth of the Ghanaian economy. However, whatever yardstick one may employ to assess the performance of the Ghana Stock Market towards investment growth as well as growth in the entire economy, the contribution of stock market to the growth of an economy cannot be undermine. The overall results suggest that stock market capitalization, foreign direct investment, Exchange rates, interest rates and inflation significantly affects economic growth in Ghana. Our results on one hand show that, inflation rate and interest rate are slower in their effect on economic growth since it takes time for them to trickle down into the economy. This is because, the rate of growth in inflation and interest rates are far slower than the rate of growth in GDP. On the other hand, lagged LGDP, market capitalization rate and exchange rate are shown to greatly influence the rate of economic growth in Ghana. The negativity of the error correction term (ECT) confirms that the model will return to equilibrium after a diversion from its equilibrium value in the short run and converge in the long run to its equilibrium value.

CONCLUSION

This result is generally in agreement with the theoretical and empirical literature. For instance, Garcia and Liu (1999) found that income level and financial intermediary development have positive impacts on

stock market development in a sample of Latin American and Asian countries. Demirguc-Kunt and Levine (1996) examined the relationship between stock market development and financial intermediary development in developing countries and found that most stock market indicators are highly correlated with financial intermediary development. Countries with well-developed stock markets may tend to have well-developed financial intermediaries. The findings of this paper have important policy implications for emerging market countries.

First, financial liberalization make a very significant contribution to economic growth. It is therefore important to initiate policies to foster growth and development as countries liberalize their financial systems. Second, the development of well-developed banking sector is important for stock market development in emerging markets. At the early stages of its establishment the stock market is a complement rather than substitute for the banking sector. Developing the banking sector may promote stock market development. Therefore, Support services from the banking system contribute significantly to the development of the stock market and may have growth stimulating effects. Third, domestic investment is an important determinant of stock market development in emerging markets. To promote stock market development emerging markets countries can encourage investment by appropriate policies. Fourth, stock market liquidity has a positive effect on stock market development. Improving stock market liquidity in emerging markets can be another approach of promoting stock market development. Well established institutions reduce political risk, an important factor in investment decisions.

The development of good quality institutions such as law and order, efficient bureaucracy, and democratic accountability is therefore crucial for stock market development in emerging economies. The influence of Stock Market performance, FDI and Inflation and exchange rate on economic growth cannot be overemphasized. It is perceived that if the Bank of Ghana is able to fulfill its mandate of price stability and encourage FDI then operators of the stock market will keeps expectation so high that investors will be abreast with the happenings as well as the great benefit of the stock market and consequently on economic growth. One can also maintain that the operation of the Ghana Stock Exchange depends very largely on the degree of the freedom permitted to the exchange in dealings with pricing of securities, maintenance of strict standards and many other purposeful innovations. Inflation affects savings and investment decisions through different channels. Generally, unanticipated inflation distorts the planning horizon of economic units. It lowers the real interest rate holding all other factors constant. With respect to savings, inflation has a negative impact on savings because it lowers the real interest rate and the latter having a positive impact on savings.

Interest and exchange rates are financial prices for credit and foreign currencies, respectively. They both affect resource allocation, production levels, prices and profitability. Ultimately, fluctuations in these reflect in share prices. Interest rate was found to have a negative and but statistically weak effect on the performance of stock markets. The lending rate which is a very important determinant when it comes to the direction of the flow of funds in a country showed it has considerable effect on the performance of the performance of the exchange

RECOMMENDATIONS

For the stock market to achieve its objective of accelerating growth, the findings of the study have important policy implications for emerging market countries and economies; With these results, it is important to highlight that;

- ➢ There is need to implement prudent macroeconomic policies in order for a country to derive maximum benefits from stock markets. In order to enable the capital market in general and stock market in particular to take full advantage of the various opportunities and cope with challenges, interest rates, inflation, must be reduced. This must be done in relation to appropriate monetary policies to ensure macroeconomic stability.
- ➢ Arowolo, 1971; Van Agtmeal, 1984; Drake, 1985) have argued for the positive contribution of stock markets to economic development. According to them, the conclusion that securities markets in developing countries do not continue to contribute to economic development might

have resulted from the malfunctioning of these institutions but not from their inability to induce growth prospects in these countries.

➢ Foreign direct investment flow into the country lessons shocks in the economy resulting from low saving and investment. Therefore, foreign direct investment serves as a stimulus to the growth of the Ghanaian economy by mobilizing additional funds to for investment and growth.

➢ The prime objective of the Bank of the Bank of Ghana should be maintaining price stability in the economy as macroeconomic stability is a key factor for enabling the growth process of every economy.

➢ With macroeconomic stability, Exchange rates should be left to be determined freely be the market forces of demand and supply of foreign currency so as to stimulate growth.

REFERENCES

Alagided, P., Panagiotidis, T.. (2009). Modeling stock return in Africa's emerging equity markets. International Review of Financial Analysis. (in press)

Anari, A. and Kolari, J., (2001). "Stock prices and inflation", *Journal of Financial Research* 24, 587–602.

Anthony Kyereboah-Coleman and Kwame F. Agyire-Tettey (2006), Impact of macroeconomic indicators on stock market performance. The case of the Ghana Stock Exchange. *(The Journal of Risk Finance, research paper)*

Ayadi F.O., Dufrene U.B., and Chatterjee A. (1998) "Stock return seasonalities in low-income African emerging markets", *Managerial Finance*, 24 (3), pp. 22-32.

Ayadi, O.F., (1994) "The Efficiency of Price Discovery in the Stock Market and Macroeconomic Variables: An Empirical Investigation", African Review of Money, Finance and Banking, pp. 33-55.

Baumol, J. William, 1960, The Stock Market and Economic Efficiency, (New York: Furham University Press).

Bhide, Amar, 1994, "The Hidden Cost of Stock Market Liquidity," Journal of Financial Economics, Vol. 34, pp. 31–51.

Bracker, K., Koch, P.D., 1999. Economic Determinants of the Correlation Structure Across International Equity Markets. J. Econ. Bus. 51, 443-471.

Calderon-Rossell, R. Jorge, 1990, "The Structure and Evolution of World Stock Markets," in S.Ghon Rhee and Rosita P. Chang (eds.), Pacific Basin Capital Markets Research Causality, UEL, Department of Economics Working Paper, No. 5 May 1996.

Charles K.D. Adjasi (2007), Macroeconomic uncertainty and conditional stock-price volatility in frontier African markets. Evidence from Ghana *(The Journal of Risk Finance, research paper)*

Claessens, S. (1995) "The Emergence of Equity Investment in Developing Countries: Overview", *The World Bank Economic Review*, 9. (1), pp. 11-17.

Cole, R., Moshirian, F., WU Q.. (2008). Bank stock return and economic growth. Journal of Banking & Finance, 32, 995-1007.

Cosh, A.D., Hughes, A. and Singh, A.(1992), .Openness, Financial Innovation, Changing Patterns of Ownership, and the Changing Structure of Financial Markets. Banuri, T. and Schor, Country Tests using Alternative Institutional Measures," *Economics and Politics*, Vol. 7, pp. 207–287.

De Santis, Giorgio and Selahattin. Imrohoroglu, 1997, "Stock Returns and Volatility in Emerging Financial Markets," Journal of International Money and Finance, Vol. 16, pp. 561–579.

DeFina, R.H., (1991), "Does Inflation Depress the Stock Market?", *Business Review*, Federal Reserve *Bank of Philadelphia*, 3-12.

Demirguc-Kunt, Asli, and Vojislav Maksimovic, 1998, "Law, Finance, and Firm Growth, Journal of Finance, Vol. 53, pp. 2107–2137

Demirguc-Kunt, Asli, and Ross Levine, 1996, "Stock Markets, Corporate Finance and Economic Growth: An Overview," The World Bank Economic Review, Vol. 10 (2), pp. 223–239.

Dermirguc-Kunt. A and Levine R. (1995a), .Stock Markets, Corporate Finance, and Economic Growth: An Overview., The World Bank Economic Review, Vol 10, No. 2: 223-239.

Diamonte, Robin L., John M. Liew, and Ross L. Stevens, 1996, "Political Risk in Emerging and Developed Markets," Financial Analysts Journal, Vol. 52 (3), pp. 71–76.

Dumas, B., Harvey C.R., Ruiz P., 2001. Are correlations of stock returns justified by subsequent changes in national output? Working paper.

Durham, J. Benson, 2002, "The Effects of Stock Market Development on Growth and Private Investment in Low Income Countries," Emerging Markets Review, Vol. 3 (3), pp. 211– 232. *Economic Review*, 84 (5), pp. 1310–29.

El-Erian, Mohamed and Manmohan S. Kumar, 1995, "Emerging Stock Markets in Middle Eastern Countries," Paper presented at the World Bank Conference on Stock Markets, Corporate Finance and Economic Growth, Washington DC, February 16–17.

Engle, R. F. and C. W. J. Granger, 1987. Cointegration and Error Correction: Representation, Estimation and Testing. Econometrica 55, 251–276.

Errunza, V.R., 1983. "Emerging Markets - A New Opportunity for Improving Global Portfolio Performance", Financial Analysts Journal, Vol. 39 (5), 51-58.

Claude B.,Campbell R. Harvey, and Tadase E. Viskanta, 1996a, "Expected Returns and Volatility in 135 Countries," Journal of Portfolio Management, Spring, pp. 32–48. 1996b, "Political Risk, Economic Risk and Financial Risk", *Financial Analysts Journal*, Vol. 52 (6), pp. 29–46.

El-Wassal, A. Kamal, 2005, "Understanding the Growth in Emerging Stock Markets," Journal of Emerging Market Finance, Vol. 4 (3), pp. 227–261.

Fama, E.F., (1981), "Stock Returns, Real Activity, Inflation and Money", *American Economic Review* 71, 545-565

Frankel, A. Jeffrey, 1993, "The Internationalisation of Stock Markets,"*NBER Working Paper 4590*, Cambridge: National Bureau of Economic Research.

Gan, C., Lee, M., Young, H.W.A. and Zhang, J., (2006), "Macroeconomic Variables and Stock Market Interaction: New Zealand Evidence", *Investment Management and Financial Innovations*, Volume 3, Issue 4

Garcia, F. Valeriano, and Lin Liu, 1999, "Macroeconomic Determinants of Stock Market: *Journal of Business* 59, 383-403. *Journal of Monetary Economics,* 1982, Vol. 9, No. 3, pp. 545-565.

Gibbons, R.S. and Hess, P. (1981), "Day of the Week Effects and Asset Return", *Journal of Business*, 54, pp.579-96.

Granger, C, 1969. Investigating causal relations by econometric models and cross-spectral methods. Econometrica 37, 424-438.

Granger, C.W.J., (1986), "Developments in the Study of Cointegrated Economic Variables", *Oxford Bulletin of Economics and Statistics* 48, 213-27.

Greene, W.H., 1993. Econometric Analysis. Prentice Hall, New Jersey.

Gujarati D. N. (1995), ' Basic Econometrics', International Edition, Third Edition, McGraw-Hill, Inc.

Garcia, V.F. and L. Liu, 1999. 'Macroeconomic Determinants of Stock Market Development',Journal of Applied Economics, 2(1): 29–59.

GIPC (2007), GIPC Quarterly Report, January 2007, Accra; Ghana Investment Promotion Centre.

Granger 1981 Granger, C. W. J., 1981, Long memory relationships and the aggregation of dynamic models, Journal of Econometrics 14, 227-38.

Granger, C.W.J., 1986. "Developments in the Study of Cointegrated Economic Variables", Oxford Bulletin of Economics and Statistics 48, 213-27.

GSE (1995), GSE Quarterly Report, March 1995, Accra; Ghana Stock Exchange.

GSE (2007),GSE Quarterly Report, June 2007, Accra; Ghana Stock Exchange.

Gultekin, N. B. (1983), "Stock market returns and inflation: evidence from other countries", *Journal of Finance* 38, 49-65.

Jaff, J. and Westerfield, R. (1985b), "Patterns in Japanese common stock returns: day of the week and turn of the year effect", *Journal of Financial Quantitative Analysis*, 20, pp. 261-72.

Jaff, J., Westerfield, R.L. and Ma, C. (1989), "A twist on the Monday effect in stock prices: Evidence from the U.S. and foreign stock markets", *Journal of Banking and Finance*, 13, pp. 641-50.

Keim, B.D. and and Stambaugh, R.F. (1984), "A further investigation of the weekend effect in stock returns", Journal of Finance, 39, pp. 819-840.

King, G. Robert and Ross Levine, 1993, "Finance and Growth: Schumpeter Might be Right," *The Quarterly Journal of Economics,* Vol., 108 (3), pp. 717–737.

Lee, B.S, (1992), "Causal Relationships Among Stock Returns, Interest Rates, Real Activity, and Inflation", *Journal of Finance, 47, 1591-1603.*

LeRoy, S. F., Porter, R.. (1981). The present value relation: Tests based on variance bounds. Econometrics, 49, 555-577.

Levene, H., (1960), "Robust tests for equality of variances in contribution to probability and Statistics", Ed) 1, Olkin: *Stanford University Press*, Palo Alto.

Levine R. and Zervos S. (1996), .Stock Market Development and Economic Growth., The World Bank Economic Review, 10(2): 323-339.

Levine, Ross and Sara Zervos, 1998, "Stock Markets, Banks, and Economic Growth," *American Economic Review*, Vol. 88, pp. 536–558.

Masih, A.M., Masih, R., 1997. Dynamic Linkages and the Propagation Mechanism Driving Major International Stock Markets: An Analysis of the Pre-and Post-Crash Eras. Q. Rev. Econ. Finance 37, 859-885.

Masih, A.M., Masih, R., 1999. Are Asian stock market fluctuations due mainly to intra-regional contagion effects? Evidence based on Asian emerging stock markets. Pacific-Basin Finance J. 7, 251-282.

Mishkin, Frederic, 2001, "Financial Policies and the Prevention of Financial Crises in Emerging Market Countries," NBER Working Paper No. 8087, (Cambridge: NBER).

Moberek, A., Keasey, K.. (2000). Weak-form market efficiency of an emerging market: Evidence from Dhaka Stock market of Bangladesh, ENBS Conference paper, Oslo, Norway.

Rapach, D. E. (2002). "The long-run relationship between inflation and real stock prices". *Journal of Macroeconomics*, 24, 331–351

Riddell R. (1992), .Zimbabwe to 1996 - At the Heart of a Growing Region., The Economist Intelligence Unit (EIU), Special Report No. M205, Economic Prospect Series.

Rogalski, R., (1984), "New findings regarding day of the week returns over trading and nontrading period", *Journal of Finance*, 39, 1603-14.

Roll, R., 1992. Industrial structure and the comparative behavior of international stock market indices. Journal of Finance 47, 3-41.

Serra, A.P., 2000. Country and industry factors in returns: evidence from emerging markets stocks. Emerg. Mark. Rev. 1, 127-151.

Sheng, H.C., Tu, A.H., 2000. A study of cointegration and variance decomposition among national equity indices before and during the period of the Asian financial crisis. J. Multinatl Financ. Manage. 10, 345-365.

Shiller, R. J.. (1981). Do stock prices move too much to be justified by subsequent changes in dividend? American Economic Review,71, 421-436.

Singh A. (1993), .The Stock-Market and Economic Development: Should Developing Countries Encourage Stock-Markets?., UNCTAD Review, 1993.

Singh A. and Javed H. (1992), .Corporate Financial Structures in Developing Countries.

Smidt, S. (1988), "Are seasonal anomalies real? A ninety-year perspective", *Review of Financial Studies*, 1, 403-25.

Smirlock, M. and Starks, L., (1986), "Day of the week and intraday effects in stock returns",*Journal of Financial Economics*, 17, 197-210. Smith G., Quantitative Methods; Scarramozzino P., Quantitative Methods

Smith, K.L., Brocato, J., Rogers, J.E., 1993. Regularities in the data between major equity markets: evidence from Granger causality tests. Appl. Finance. Econ. 3, 55-60.

Snedecor, G. W. and Cochran, W.G. (1976), Statistical Methods. Ames: Iowa State University Press.

Soenen L.A. and Hennigar E.S. (1988). "An Analysis of Exchange Rates and Stock Prices: The US

Experience Between 1980 and 1986"*Akron Business and Economic Review*19 : 71-76

Viale, A. M., Kolari, J. W., Fraser, D. R.. (2009). Common risk factors on bank sectors. Journal of Banking & Finance, 33, 464-472.

WANG J., Meric, G., LIU Z., Meric, I.. (2009). Stock market crashes, firm characteristics, and stock returns. Journal of Banking and Finance.

White, H., 1980. A Heteroscedasticity Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity. Econometrics 48, 817-838.

Wohar and Mark, E.. (2006). What drives stock prices? Identifying the determinants of stock price movements. Southern Economic Journal.

Wolf, H.C., 1998. Determinants of emerging market correlations. In: Levich, R. (Ed.), Emerging Market Capital Flows. Kluwer Academic Publishers, Great Britain, pp. 219-235.

Wong, W. K., LIU B., ZENG Y.. (2009). Can price limits help when the price is falling? Evidence from transaction data on the Shanghai Stock exchange. China Economic Review, 20, 91-102.

WU C. S., LIN J. L., TIAO G. C., Cho, D. D.. (2005). Is money demand in Taiwan stable? Economic Modeling, 22, 327-346. Economic Journal, 107(May): 771–82.

World Bank, 2008. World Development Indicators April 2008. Washington: The World Bank.

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

Yartey, C. A., 2008. "The Determinants of Stock Market Development in Emerging Economies: Is South Africa Different" IMF Working Paper 08/38. Washington DC: International Monetary Fund.