

**DETERMINANTS OF STOCK MARKET DEVELOPMENT IN KENYA: AN ERROR
CORRECTION MODEL APPROACH****Kihato k. Wamburu**

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ABSTRACT

Stock market development is a multi-dimensional. It is usually measured by stock market size, liquidity, volatility, concentration, integration with world capital markets, and the legal rule (regulation and supervision) in the market. The financial stock market facilitates higher investments and the allocation of capital, and indirectly the economic growth. Sometimes investors avoid investing directly to the companies because they cannot easily withdraw their money whenever they want. But through the financial stock market, they can buy and sell stocks quickly with more independence. Most economic managers recognize that a well organized capital market is crucial for mobilizing both domestic and international capital. In many developing countries, however, capital has been a major constraint in economic development. The determinants of stock market development in Kenya, it is faced with a major challenge of non-normality of data which it recognized but did not correct before performing the regression analysis. This renders the results of the study spurious. This study was therefore motivated by the importance of stock market development to the economic growth of Kenya and by the inconsistencies in results on Kenya as well as the methodological challenges. The study sought to employ the error correction model to assess the determinants of stock market development in Kenya. This study used a descriptive approach. Descriptive studies are more formalized and typically structured with clearly stated hypotheses or investigative questions.. The findings of the study will be important to the Policy makers in their quest to develop the financial and stock market in Kenya as the results will point to the areas that need further review in order to develop the stock market in Kenya. The results of the study will also be important to researchers and academics as it will offer an insight on the modeling aspects of determinants of stock market development in Kenya and suggest areas that need further research by scholars in this area.

Keywords: *Stock Market Development in Kenya: An Error Correction Model Approach*

Introduction

The role of long-term capital in the economic development of a nation cannot be over emphasized. Most economic managers recognize that a well organized capital market is crucial for mobilizing both domestic and international capital. In many developing countries, however, capital has been a major constraint in economic development. Dailami and Atkin (1990) describe the provision of funds to finance domestic capital formation as a key factor in the prospects for long-term economic growth in developing countries. They observe that the reality of a much reduced supply of foreign funds from previous sources, such as commercial banks, compels governments in many developing countries to pay increased attention to capital market development as a way of improving domestic resource mobilization, enhancing the supply of long-term capital and encouraging the efficient use of existing assets. Dailami and Atkin (1990) contend that the ongoing debt crisis is serving to focus attention on the importance of equity rather than debt, particularly in the financing of risky projects with long gestation periods.

Stock market development is a multi-dimensional concept (Garcia and Liu, 1999). It is usually measured by stock market size, liquidity, volatility, concentration, integration with world capital markets, and the legal rule (regulation and supervision) in the market. Levine (1991) found a positive relation between financial stock market and economic growth by issuing new financial resources to the firms. Filer et al. (1999) examined stock market-growth nexus and exhibited positive casual correlation between stock market development and economic activity. Spears (1991) reported that in the early stages of development, financial intermediation induced economic growth. The financial stock market facilitates higher investments and the allocation of capital, and indirectly the economic growth. Sometimes investors avoid investing directly to the companies because they cannot easily withdraw their money whenever they want. But through the financial stock market, they can buy and sell stocks quickly with more independence. Levine and Zervos (1998) measured stock markets development along with different magnitude and have suggested strong statistically significant relationship between initial stock market development and subsequent economic growth. An efficient stock market contributes to attract more investment by financing productive projects that lead to economic growth, mobilize domestic savings, allocate capital proficiency, reduce risk by diversifying, and facilitate exchange of goods and services (Mishkin 2001; and Caporale et al, 2004). Stock market liquidity is still a reliable indicator of future long-term growth (Levine, 1996). Wachtel (2002); Trabelsi (2002); and Rioja and Valev (2003) have shown empirically that the financial system has a significant role and provides an important contribution to economic growth. Many other researchers argue that there is a positive correlation between financial development and economic growth (Goldsmith, 1969; Shaw, 1973; McKinnon, 1973 and King & Levine, 1993). They found that financial development is an important determinant of future economic growth of a country (International Journal of Financial Research Vol. 1, No. 1; December 2010).

Statement of the problem

It is by now widely recognized that a well functioning financial system is crucial to economic growth as theoretical and empirical work have shown how stock market development might boost long-run economic growth (Demirguc-Kunt and Levine, 1996a, Singh, 1997, and Levine and Zervos, 1998). As part of the financial system, the stock markets play important roles in economic growth. Then, the question of what determines stock market development becomes important. However, surprisingly, little work has been done on this issue. Studies on stock market development in Africa have been left out. Osei (1998) investigated the institutional factors affecting the development of Ghana Stock Market. Yartey and Adjasi (2007) investigated the issues and challenges affecting stock market development in sub-Saharan Africa. A study by Bitok et al., (2011) on the determinants of investor confidence for firms listed at the NSE found that political/economic stability, economic growth, and stock market liquidity play a key role in stock market development. More recently, Aduda, Masila and Onsongo (2012) studied the determinants of stock market development in Kenya and found that only institutional quality was a significant determinant of stock market development. There are therefore conflicting results as to the determinants of stock market development in Kenya. This could be due to methodological differences in terms of measures of variables and/or the techniques used in the data analysis. While Aduda et al., (2012) highlighted the determinants of stock market development in Kenya, it faced a major challenge of non-normality of data which it recognized but did not correct before performing the regression analysis. This renders the results of the study spurious. This study is therefore motivated by the importance of stock market development to the economic growth of Kenya and by the inconsistencies in results on Kenya as well as the methodological challenges. The study seeks to employ the error correction model to assess the determinants of stock market development in Kenya.

Research objectives

The objective of this study was to determine the determinants of stock market development in Kenya.

Specific objectives

1. To review the stock market development in Kenya.
2. To investigate the effect of macroeconomic factors such as real income levels/price levels, stock market liquidity, CPI (Inflation), etc. on the stock market development in Kenya.
3. To assess the effect of institutional factors such as rule of law, anti-directors right and one share one vote, on the stock market development in Kenya.
4. To investigate the social/political and economic stability on the development of stock market in Kenya.

Importance of the Study

This study will add onto the growing body knowledge of stock market development in developing countries in Africa as it will show how a number of factors affect stock market development in Kenya. The will also be important to the Policy makers in their quest to develop the financial and stock market in Kenya as the results will point to the areas that need further review in order to develop the stock market in Kenya. The results of the study will also be important to researchers and academics as it will offer an insight on the modeling aspects of determinants of stock market development in Kenya and suggest areas that need further research by scholars in this area.

Scope of the Study

This study shall focus on the determinants of stock market development. Thus, the conceptual scope was limited to the discussion on stock market development and its determinants as was reviewed in the literature. The study also focused on the stock market development in Kenya and therefore was limited to the Kenyan market and more specifically the Nairobi Securities Exchange. Since this is the only securities exchange market in Kenya, the study has no choice but to restrict itself to the NSE. This study covered eleven years from 2003 to 2013 where the variables in the study was observed for the entire eleven year period on average monthly basis. The period covered shall therefore be limited to the eleven year period under review.

Literature Review

Osie (1998) analysed the factors affecting the development of an emerging capital market with a specific focus on the Ghana stock market. The study looked at the institutional factors affecting the development of the Ghana stock market. The study found and concluded that the most significant factors impinging on the development of the Ghana stock market as far as the local people are concerned are lack of national awareness, lack of knowledge about stock markets and low incomes of the bulk of the people. This translates into the low number of listed stocks, the low rate of listings, poor patronage in the market and other limitations. In a study by de Jong and Semenov (2002) on the factors determining cross-country differences in stock market activity, the authors focused on the deeply rooted norms and values in the society represented by the position of countries on cultural dimensions. The study revealed that stock markets are relatively more important in countries where inhabitants accept more uncertainty and regard competition as a good way of interacting. Therefore, culture is an important determinant of stock market development.

Allahawiah and Al Amro (2012) investigated the factors affecting stock market prices in Amman Stock Exchange. The study focused on firm-specific variables such as dividend policy, management quality, financial position, firm size, and nature of business collected from both primary and secondary sources. All the variables had positive and significant effects on stock market prices. This study therefore revealed that firm-specific factors are important determinants

of stock market development. The IMF Study by Yartey (2008) examined the institutional and macroeconomic determinants of stock market development. The study found out that macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of stock market development in emerging market countries. The results also showed that political risk, law and order, and bureaucratic quality are important determinants of stock market development.

Yartey (2007) found that a percentage point increase in financial intermediary sector development tends to increase stock market development in Africa by 0.6 points controlling for macroeconomic stability, economic development, and the quality of legal and political institutions. Garcia and Liu (1999) examined the macroeconomic determinants of stock market development in a sample of Latin American and Asian countries. The results showed that macroeconomic factors such as real income, savings rate, financial intermediary development, and stock market liquidity are important determinants of stock market development. Aduda et al., (2012) investigated the determinants of development in the Nairobi Stock Exchange. The regression results found that stock market liquidity, institutional quality, income per capita, domestic savings and bank development were important determinants of stock market development. The regression analysis reported no relationship between stock market development and macroeconomic stability - inflation and private capital flows.

Bitok et al., (2011) investigated the determinants of investor confidence for firms listed at Nairobi Stock Exchange. The results showed that political/economic stability, economic growth, and stock market liquidity play a key role in stock market development in Kenya. Cherif and Gazdar (2010) studied the influence of macroeconomic environment and institutional quality on stock market development. The study found that income level, saving rate, stock market liquidity, and interest rate influence stock market development with the expected theoretical signs. The study also found that the institutional environment as captured by a composite policy risk index does not appear to be a driving force for the stock market capitalization in MENA region. Using a cross sectional regressions and a dynamic panel generalized-method of moments (GMM) estimator for a sample of 65 countries over 1960-1995 period, Boyd et al. (2001) provided evidence that there is a significant and economically important negative relationship between inflation and financial development.

Ben Naceur et al. (2007) examined the macroeconomic determinants of stock market development in the MENA region. Using an unbalanced panel data from 11 MENA countries (over 1979-1999) and employing fixed and random effects specifications, they found that saving rate, credit to private sector, the ratio of value traded to GDP and inflation change are the important determinants of stock market development. El-Wassal (2005) investigated the relationship between stock market growth and economic growth, financial liberalization, and foreign portfolio investment in 40 emerging markets between 1980 and 2000. The result showed

that economic growth, financial liberalization policies, and foreign portfolio investments were the leading factors of the emerging stock markets growth.

Pagano (1993) shows that regulatory and institutional factors may influence the efficient functioning of stock markets. For example, mandatory disclosure of reliable information about firms may enhance investor participation, and regulations that instil investor's confidence in brokers should encourage investment and trading in the stock market. La Porta et al (1996) also find that institutional variables such as rule of law, anti-director rights, and one share one vote are important predictors of stock market development. There is also a substantial amount of research trying to identify the impact of the institutional quality on financial development. This strand of research goes back to the seminal contributions of La Porta, Lopez. de-Silanes, Sheifler and Vishny (1997 and 1998) on how the legal rules covering protection of corporate shareholders and creditors, the origin of these rules, and the quality of their enforcement affect financial development. Applying the propositions of La Porta et al. (1997 and 1998) to the transitions economies, Pistor, Raiser and Stanislaw (2000) found that the effectiveness of legal institutions has a stronger impact on equity and credit market development.

Empirical review

In the empirical literature of stock market development, an often-cited paper related to our study is Yartey (2008). This study examines the macroeconomic and institutional determinants of stock market development. Using a panel data of 42 countries over 1990 to 2004, he found that income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of stock market development. He also provides evidence that institutional factors such as law and order, political risk, and bureaucracy quality are important determinants of stock market development.

Research Gap

As the review shows, there are a number of studies which have focused on the determinants of stock market development but very few studies, if any, have focused on the African stock markets. In Kenya, the studies which have been done in the past on the same have focused on specific determinants. The present study focuses on both the macroeconomic as well as institutional determinants of stock market development. Further, a new approach – the error correction model - is used to study the same. This is a deviation from the past studies.

Data Analysis/Findings

Regression analysis

This study adopted the co-integration and error correction methodology, which overcome the problems of spurious or false regression, caused by non-stationary time-series data and also informs of the long run relationship as well as short-run dynamics in the same model.

$$Y_{i,t} = \alpha_i + \beta_1 \text{MACRO}_{i,t} + \beta_2 \text{INST}_{i,t} + \mu_{i,t},$$

where $Y_{i,t}$ the dependant variable, is defined as MCAP, MACRO is a matrix of macroeconomic variables made up of income level, saving rate, investment rate, credit to private sector, M3 to GDP, stock market liquidity, and macroeconomic instability. The INST variable is the indicator of institutional quality, i is the unobserved country specific fixed effect, and $\mu_{i,t}$ is the error term for each observation.

The study adopted the Engle and Granger (1987) two steps procedure in co-integration. Firstly, an analysis was made to find the order of integration of the data sets. Secondly, the ordinary least squares (OLS) regression was done to estimate the equation for those macroeconomic variables where co-integration could be found (Nkang, Abang, Akpan and Offem, 2007). The first process is the stationarity test (unit root test) and the second process is the cointegration test. In the co-integration test, the residuals obtained in the long-run co-integration regression will be used as explanatory variables to specify a dynamic error correction model (ECM), which was estimated via OLS regression.

In order to establish the statistical significance of the independent variables on the dependent variable (Stock market development in Kenya.) regression analysis was employed. The regression equation took the following form.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

Where;

Y = Stock market development in Kenya.

X_1 = **macroeconomic factors**

X_2 = **institutional factors**

X_3 = **social/political and economic stability**

In the model, β_0 = the constant term while the coefficient $\beta_{ii} = 1 \dots 3$ was used to

measure the sensitivity of the dependent variables (Y) to unit change in the predictor

Variables. μ is the error term which captures the unexplained variations in the model. The coefficient of determination also called the R square is 60.8% as shown in table 4.4. This means that the combined effect of the predictor variables (macroeconomic factors ,institutional factors and social/political and economic stability) explains 60.8% of the variations in Stock market development in Kenya.. Table 4. 3 displays the regression coefficients of the independent variables. The results indicated macroeconomic factors ,institutional factors and social/political and economic stability are statistically significant in explaining stock market development in Kenya.. Macroeconomic factors was positive and significantly related to stock market development in Kenya.(B=4.879, pvalue=0.000). This implies that an increase in macroeconomic factors ion by one unit leads to an increase in stock market development in Kenya.by 4.859 units. Institutional factors also positively and significantly related to stock market development in Kenya.(B=2.330, pvalue=0.021). This implies that an increase in institutional factors by one unit leads to an increase in stock market development in Kenya.by 2.330 units. Social/political and economic stability was positively and significantly related to stock market development in Kenya.(B= 1.712, pvalue=0.024). This implies that an increase in ocial/political and economic stability by one unit leads to an increase in stock market development in Kenya. by 1.712 units.

Regression Coefficients

Model		B	sig
1	(Constant)	6.002	0.002
	macroeconomic factors	5.879	0.000
	institutional factors	2.330	0.021
	social/political and economic stability	1.712	0.024

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.735 ^a	.608	.824	.547

Econometric analyses have shown that most time-series data sets are non-stationary, meaning that they have a tendency to increase or decrease over time; therefore, an error correction

mechanism becomes imminent in most time series analyses. The consequence of non stationary data is that the asymptotic convergence theories (such as weak law of large numbers) that is found in statistical estimation theory are violated and such data should not be used in regression analyses, because such regression would yield false estimates as stated by Nkang, Abang, Akpan and Offem (2007).

The Augmented Dickey Fuller (ADF) test was used to test for the stationary of data (unit root tests). The ADF includes the first difference in lags in such a way that the error term is distributed as white noise. Co-integration is said to exist between non-stationary variables if their linear combination, namely the residuals of the co-integrating regression are stationary (Engle and Granger, 1987; Hendry; 1986). Thus, falseness can only be avoided if a stationary co-integrating relationship is established between the variables. The error correction form requires modeling co-integrated series. When variables are co-integrated, there exists a valid ECM describing their relationship, with the implication that co-integration between variables involved is a precondition for the ECM (Engle and Granger, 1987). The study used the ADF and applied them to the residuals of the co-integrating regression. If the residuals of the bivariate co-integrating regression are found to be stationary, implying co-integration, one will be guided towards specifying an error correction mechanism, which is the second step of the Engle-Granger two-step process.

Conclusion

The study concluded that in the poorest developing countries, firms rely mostly on internal resources and informal credit markets for financing. Commercial banks are the main financial institutions. The loan contracts of commercial banks are generally short term, since formal direct credit markets for long term debt or equity do not exist, thereby constraining both corporate and economic growth (Demirgüç-Kunt, 1992). Engberg (1975) recognizes the need for capital markets even for less-developed economies. He contends that capital markets can significantly raise the level of domestic savings and contribute to a more efficient allocation of such savings among competing uses. According to Engberg (1975) through the capital market, a variety of financial assets, carrying different risks, yields and liquidity, is added to the traditional types of financial assets such as demand and savings deposits. Also, he further observes that the availability of this wider range of financial assets will induce people to increase their rate of current savings. The reason is that the 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 the users of capital market funds, including business, government and individuals, will tend to increase the efficiency with which capital is used, with direct effect on the growth rate of the economy.

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